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(54) **A RETAINER FOR RETAINING A HANDLE END OF A BRUSH**

(57) A retainer for retaining a handle end of a brush, comprising: an end attachable to a mount (28a-h); another end (26a-h) comprising a collar to which the handle end of the brush can be secured, wherein the collar has: one or more indentations (144; 214), holes (174; 204),

and/or protrusions (154, 164; 184; 194) therein or thereon for facilitating the securing of the handle end in the collar, wherein, when the handle end is secured in the collar, spinning of the mount causes spinning of the brush about its length.

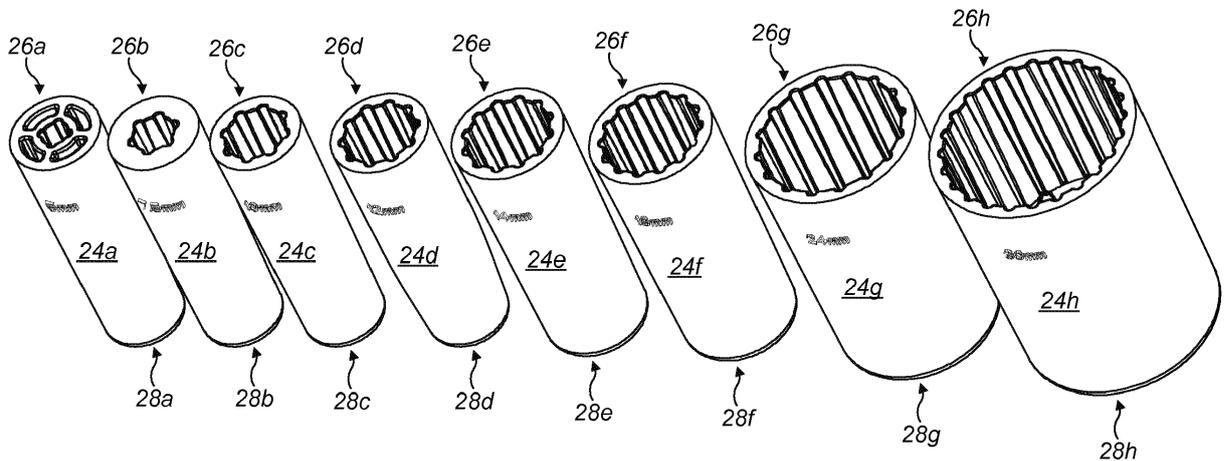


FIG. 2A

Description

Field of the Invention

[0001] The invention relates to a retainer for retaining a handle of a brush, particularly a makeup brush, such that the brush can be spun.

Background

[0002] Used makeup brushes harbour bacteria. Such bacteria may be harmful to skin or to the general health of users of such makeup brushes, particularly as makeup brushes are typically used to apply makeup to the face, where skin is delicate. Effective cleaning of makeup brushes can be problematic.

[0003] A solution, which the inventor devised, that is effective at cleaning makeup brushes is to attach a handle of a makeup brush to a motorised device, which can be operated to spin the brush about its length. The fibrous end of the brush can then be spun in a cleaning liquid and then spun in air for drying. In order to attach the handle to the motorised device, the motorised device includes a mount attached to an end of a rotatable drive shaft, and a connector piece couples the mount to the brush handle, such that the brush extends lengthwise with an axis of the drive shaft.

[0004] Such a device has to be able to retain and spin brushes having handles of many different shapes and sizes. Accordingly, it is known to provide such a motorised device with several connector pieces, each configured to accommodate a brush of a different size. Each connector piece can be removed from the device and replaced with another.

[0005] Unfortunately, sometimes brushes come loose from known connector pieces. Also, sometimes it is difficult to remove a brush from a known connector piece. Furthermore, a large number of connector pieces may be required to retain brushes with handles of a wide variety of different shapes and sizes. It is an object of the present invention to address such problems.

Summary of the Invention

[0006] In accordance with an aspect of the present invention, there is provided a retainer adapted to retain a handle end of a brush, comprising: an end attachable to a mount; another end comprising a collar in which the handle end can be secured, wherein the collar has an irregular, or stated slightly differently, "non-smooth," interior surface to facilitate securing of the handle end in the collar, wherein, when the handle end is secured in the collar, spinning of the mount about a spinning axis thereof causes spinning of the brush about the axis.

[0007] The problems described above are at least partially addressed. The collar or the retainer as a whole may be formed of a resilient material, permitting flexibility or deformation. The irregular interior surface facilitates

deformation of and/or gripping may the collar, thus facilitating the securing of the handle end in the collar. In some embodiments, the collar may be stretched over the handle end. The irregular interior surface may have at least one of: one or more protrusions extending from the interior surface, one or more indentations in the interior surface, and one or more holes through the collar from the interior surface to an exterior surface.

[0008] The collar may have an irregular exterior surface. The one or more protrusions in the interior surface may comprise a plurality of ridges, knurls, or other projections. The one or more of indentations in the interior surface may comprise a plurality of grooves or dimples.

[0009] The collar may have a concertinaed configuration, wherein ridges and channels in the concertinaed configuration extend lengthwise with respect to a length of the collar. The retainer may be formed of resiliently deformable material, such that the collar can be stretched from an unstretched configuration to a stretched configuration in order to locate and retain the handle end of a brush. The one or more ridges may be bevelled towards an opening of the collar. The one or more surfaces between a peak of a ridge and an adjacent trough of a channel may have a groove therein, extending substantially parallel or lengthwise with respect to a length of the peak.

[0010] The collar may be between 5 mm and 30 mm. The irregular surface may have surface features that are evenly spaced, circumferentially.

[0011] Preferred and/or optional features of the retainer are set out in the dependent claims. There is also provided a set comprising a plurality of such retainers. There is yet further provided a motorised device comprising such a retainer. Further, a retainer may be provided with a plurality of brushes having handle ends of different shaped and/or sized circumferences, which the respective retainer is adapted to retain. A plurality of brushes may be used with the set of retainers, or provided therewith, wherein a first of the retainers is configured to securely retain some of the brushes but not others, whereas a second of the retainers is configured to securely retain at least some of the other brushes but not those that the first retainer is configured to retain.

[0012] In accordance with another aspect of the invention, there is provided a method of cleaning or drying a makeup brush using a retainer and a handheld motorised device: securing a mounting end of the retainer to a mount on a drive shaft of a motorised device; securing an end of a handle of the makeup brush in a collar of the retainer by locating the end of the handle in the collar, wherein the collar has an irregular interior surface to facilitate securing of the handle end in the collar; locating a fibrous end of the makeup brush in a cleaning liquid for cleaning or in air for drying; operating the motorised device to spin the drive shaft and the makeup brush.

[0013] The irregular interior surface may have at least one of: one or more protrusions extending from the interior surface; one or more indentations in the interior surface; and one or more holes therethrough from the interior

surface to an exterior surface.

[0014] The one or more protrusions may have ridges, knurls or other projections. The one or more indentations may comprise a plurality of grooves or dimples. The collar has a concertinaed configuration, wherein ridges and channels in the concertinaed configuration extend lengthwise with respect to a length of the collar. The collar or the retainer as a whole may be formed of resiliently deformable or resiliently flexible material.

Brief Description of the Figures

[0015] For better understanding of the present invention, embodiments will now be described, by way of example only, with reference to the accompanying Figures in which:

Figures 1A to C are respectively front side, plan and underside view of a device;

Figure 2A to C are respectively perspective, cross-sectional and end views of brush retainers in accordance with embodiments of the invention;

Figure 3A shows diagrammatically parts of the device;

Figure 3B is a view of a bowl for retaining cleaning liquid;

Figure 4i is a view of an end of a brush retainer in accordance with an embodiment, the end being that into which an end of a makeup brush can be inserted;

Figure 4ii is a side view of the retainer, with a cross-section being indicated with broken lines;

Figure 4iii is a cross-sectional view of the retainer on a diameter of the retainer;

Figure 4iv is a perspective view of the retainer;

Figures 5i to 5iv, 6i to 6iv, 7i to 7iv, 8i to 8iv, 9i to 9iv, 10i to 10iv, 11i to 11iv, are 12i to 12iv are views of brush retainers in accordance with various different embodiments of the invention, where the particular nature of each view corresponds respectively to those of Figures 4i to 4iv;

Figure 13i is an end view of a brush retainer in accordance with another embodiment having a concertinaed configuration, the end view being from an end in which a handle end of a brush is located;

Figure 13ii is a side view of the retainer;

Figure 13iii is a cross-sectional view of the retainer;

Figure 13iv is an end view of the brush retainer from another end thereof;

Figures 13v is a perspective view of the brush retainer; and

Figures 14i to 14v are views of another brush retainer in accordance with another embodiment having a different concertinaed configuration, where the particular nature of each view corresponds respectively to those of Figures 13i to 13v.

Detailed Description of Embodiments

[0016] Embodiments of the invention relate to a connector in the form of a retainer, for retaining a handle end of a brush so that the brush can be spun by a motorised device about its length. A fibrous end of the brush can thus be spun in a cleaning liquid for cleaning and in air for drying.

[0017] The motorised device is intended for use with makeup brushes, but use of the device is not limited to such. The retainer may be used to retain paint brushes, for example. The retainer may be used generally for retaining ends of predetermined elongate implements or other members, particularly where spinning is beneficial.

[0018] Referring to Figure 1A, in an embodiment the device includes an elongate body 10, a user control in the form of a button 12, a first light 14, a second light 16, and a mount 18. The mount 18 enables attachment of a brush to the device using a retainer. The mount 18 comprises a base 22 and a cross-shaped mounting piece 20, as also indicated in Figure 1B.

[0019] Referring to Figures 2A, several brush retainers in accordance with embodiments are shown at 24a-h. A collar portion, in the form of brush grip end 26a-h, of each retainer is configured to receive and retain a handle end of a brush. Each of the retainers is sufficiently resilient and flexible in order to securely retain handle ends of a limited range of different sizes and shapes, such that a retained brush is securely retained during spinning. Together the brush retainers 24a-h can retain a wide variety of shapes and sizes of brush handle ends.

[0020] As can be seen from Figures 2B and 2C, each retainer 24a-h has a mount end 28a-h. Each mount end 28a-h has a hole therein of the same or similar size and shape, and is to enable mounting on the mounting piece 20. The hole of each of the retainers 24a-h has a square cross-section. The mount 18 and each mount end 28a-h are respectively shaped to cooperate so that the respective retainer can be detachably secured to the mounting piece 20. Each of the retainers can be pushed onto the mounting piece 20 and, due to the nature of the material from which the retainers are made and the shape of the mounting piece 20, that is, the resiliently deformable nature of the material and friction with the mounting piece 20, the retainers 24a-h remain fixedly located on the mounting piece 20 during spinning of a brush. In variant embodiments, only a single retainer may be provided for use with the motorised device. In this case, the mounting piece 20 and the retainer need not be configured to be detachable; the retainer may, for example, be secured to the mounting piece with adhesive.

[0021] Each of the retainers 24a-h provides a generally cylindrical interior surface against which the handle of a makeup brush grips. In variant embodiments, the interior surface may have a generally non-cylindrical cross-section.

[0022] The interior surface is irregular, or non-smooth, and has a plurality of indentations in the form of grooves

therein extending lengthwise with respect to the retainer. In other words, grooves extend lengthwise with respect to an axis about which the retainer rotates. In embodiments, the grooves are evenly spaced, circumferentially. In variant embodiments, the grooves may taper in width relative to a circumference of the interior surface from the opening of the brush grip end 26a-h, to the mount end 28a-h. In variant embodiments, the grooves may be deeper near the opening through which an end of a brush handle is inserted than further into the brush grip end. In variant embodiments, the grooves may, for example, extend diagonally relative to the axis or in a wavelike manner. In embodiments, the grooves may be arranged in other manners that gives rise to increased ability to flex the brush grip end, such that range of brush handle end sizes that a retainer can retain is increased, and/or deforming of the retainer when pushing of the brush hand end into the retainer requires less force.

[0023] The cross-shaped cross-section of the mounting piece 20 usefully allows air to access the interior of an attached retainer and prevents a vacuum effect within the retainer preventing removal of the attached retainer from the mounting piece and/or an attached brush from the retainer. The cross-shaped mounting piece 20 bulges at an end thereof remote from the body 10 of the device. In other words a diameter across the cross shaped piece tapers towards the motorised device. This helps with securing of the mount end 28a-h on the mounting piece 20.

[0024] Referring to Figure 3A, the device includes a microcontroller 40, an electric motor 42 and a battery 44, all operatively coupled. The first and second lights 14, 16 and the button 12 are also operatively coupled to the microcontroller 40.

[0025] The microcontroller 40 comprises a processor 46, a memory 48, a clock 50, and input/output interfaces 52 operatively connected by a bus. Computer program codes are stored in the memory executable by the processor to result in the microcontroller 40 having the functionality ascribed to it herein. The electric motor 42 includes a drive shaft (not shown), which the electric motor 42 is configured to rotate about an axis thereof. The body 10 has an aperture therein through which the drive shaft extends. The mount 18 is mounted on the drive shaft. The retainers 24a-h are respectively configured so that when a retainer 24a-h is mounted on the mounting piece 20 and a brush retained by the retainer 24a-h is spun, the brush spins substantially coaxially with the axis of the shaft.

[0026] The microcontroller 40 is configured to control the electric motor 42. The button 12 is operable to cause the microcontroller 40 to cause the electric motor 42 to initiate spinning of the drive shaft. The microcontroller 40 is configured to control the first light 14 and the second light 16 to indicate status to the user, for example, whether, further to initiating spinning, the user should move the fibrous end from being in liquid to air.

[0027] The battery 44 is accessible through a cap 30 in a base 32 of the device, as indicated in Figure 1C. The

battery 44 is coupled to the microcontroller 40 and the electric motor 42 to power the device. The battery 44 is in the form of replaceable batteries such as the AA kind, although other types of battery may be used instead. Alternatively, the device can include a charging port enabling connection of an exterior power supply to the battery 44 for charging of the battery 44. The charging port may be configured in any one of a variety of ways. For example, the device may include a micro-USB port. Preferably, such a port is covered during use of the device by an openable seal to prevent the possibility of ingress of cleaning liquid into the charging port. Alternatively, the device may lack a battery, and be connectable to a mains power supply.

[0028] The inventor has found that a preferred rate at which the brushes should be spun is between 2300 and 3300 revolutions per minute (rpm). Different brushes for cleaning using the device have different masses. The electric motor 42 is preferably configured to spin brushes in this range. To rotate a brush in this range, the electric motor 42 may require a greater supply of power to spin a heavier brush than a lighter brush and the motor and the microcontroller 40 may be configured accordingly. In embodiments, the microcontroller 40 may be configured to enable the user to select a higher power for a heavier brush and a lower power for a lighter brush using the button 12.

[0029] Referring to Figure 3B, a receptacle in the form of a bowl 50 comprises a lower portion 52, which retains the cleaning liquid, and an upper portion 54, which serves as a spray guard. The upper portion 54 defines a circular aperture through which a fibrous end of a brush is inserted to locate the fibrous end in the cleaning solution. An annular piece of plastic 56 is located around a rim to protect the upper portion 54, since the brush may hit the sides of the aperture in use. The bowl may be transparent, translucent or opaque. Other kinds of receptacle may be used to retain the cleaning liquid, and into which the fibrous end of a brush may be spun using the device. The cleaning liquid may be of any suitable liquid. For example, the cleaning solution may be a water based soap solution or alcohol based, or other.

[0030] In use, a retainer is selected from the available retainers 24a-h that is a suitable size for a particular brush that a user desires to clean. The selected retainer is then attached to the device by pushing the mounting end of the respective retainer onto the mounting piece 20. Before or after, the handle end of the brush is attached to the handle end of the brush by pushing the end of the handle into the retainer, causing the retainer to resiliently deform. In some embodiments, the retainer may be stretched over the handle end. The brush can then be spun using the device. The retainer and the brush are pulled apart after use. The retainer is also pulled from the mount 18 after use.

[0031] A preferred cleaning method includes the following steps:

- a) Submerging of the fibrous end in the cleaning liquid and preferably pushing the fibrous end against a base of the receptacle containing the cleaning liquid;
- b) Spinning the fibrous end in the cleaning liquid;
- c) Spinning the fibrous end in air, preferably in a space above the cleaning liquid and below a rim of the receptacle, so that material sprayed from the brush is blocked by the receptacle.

[0032] Other retainers in accordance with embodiments will now be described with reference to the remaining Figures. Like with the retainers shown at 24a-h, each of the retainers has a mount end having a hole for mounting on the mounting piece 20. Also, each of the retainers has a collar portion in the form of a brush grip end. Each of the retainers further has in the brush grip end thereof an irregular interior or exterior surface having at least one of: indentations, protrusions, and holes. The indentations are in an interior or an exterior surface of the brush grip end and the protrusions extend from the interior or exterior surface of the brush grip end. The holes extend through the material of the brush grip end from the interior surface thereof to the exterior surface. The indentations, protrusions and holes aid in securing of a handle end of a brush to the retainer, so that the brush can be attached to the mounting piece 20. In particular, the indentations and holes increase ability to deform the brush grip end to accommodate brush handle ends of different shapes and sizes, and the protrusions resiliently deform, typically with the rest of a brush grip end, to grip a brush handle end therein. According to some embodiments at least, the indentations, protrusions and the holes reduce the number of retainers that have to be provided in order to retain brushes of a wide range of shapes and sizes.

[0033] Referring to Figures 4i to 4iv, in an embodiment an interior surface 142 of a brush grip end of a retainer 140 has a plurality of indentations therein in the form of spaced dimples 144. These facilitate deforming or stretching of the retainer to receive a handle end of a brush.

[0034] Referring to Figures 5i to 5iv, in an embodiment an interior surface 152 of a brush grip end of a retainer 150 has a plurality of spaced projections 154 thereon, to facilitate gripping.

[0035] Referring to Figures 6i to 6iv, in an embodiment an interior surface 162 of a brush grip end of a retainer 160 has a plurality of spaced projections 164 thereon, to facilitate gripping. There are a greater number per unit area of the interior surface than on the retainer shown in Figures 5i to 5iv.

[0036] Referring to Figures 7i to 7iv, in an embodiment a brush grip end of a retainer 170 has a plurality of holes in the form of slits 172 therein. These facilitate deforming and/or stretching of the retainer to receive a handle end of a brush.

[0037] Referring to Figures 8i to 8iv, in an embodiment an interior surface 182 of a brush grip end of a retainer

180 has a plurality of spaced projections 184 thereon, to facilitate gripping. There are a lesser number per unit area on the interior surface than on the retainer shown in Figures 5i to 5iv.

[0038] Referring to Figures 9i to 9iv, in an embodiment an interior surface 194 of a brush grip end of a retainer 190 has a plurality of protrusions thereon, that is, is knurled or textured, for improved gripping.

[0039] Referring to Figures 10i to 10iv, in an embodiment a brush grip end of a retainer 200 has a plurality of holes 204 therethrough to facilitate stretching or deforming of the retainer to receive a handle end of a brush.

[0040] Referring to Figures 11i to 11iv, in an embodiment a brush grip end of a retainer 210 has a multitude of densely packed indentations therein in the form of dimples 214, to facilitate stretching or deforming of the retainer to receive a handle end of a brush.

[0041] Referring to Figures 12i to 12iv, in an embodiment an interior surface 224, 224a of a brush grip end of a retainer 220 is a plurality of protrusions, that is, is knurled or textured, for improved gripping. In this case, the knurled or textured surface is discontinuous along the length of the brush grip end.

[0042] The retainers described above with reference to figures from Figures 4i to 12iv are generally configured in the same way as the retainers described with reference to Figures 2A to 2C, other than in the specific way in which the protrusions, holes or indentations are configured, and are used in the same way.

[0043] Referring to Figures 13i to 13v and 14i to 14v, the two retainers shown have a generally concertinaed or corrugated configuration providing flexibility. To achieve the concertinaed or corrugated configuration, each retainer has a plurality of exterior ridges each with a corresponding interior channel, and a plurality of exterior channels each with a corresponding interior ridge. The ridges and channels are lengthwise with respect to the retainer, that is, from an opening of the mount end to an opening of the brush grip end.

[0044] The retainer 230 shown in Figures 13i to 13v has eight exterior ridges 232 and thus eight exterior channels 234 between the exterior ridges. The retainer 240 shown in Figures 14i to 14v has six exterior ridges 242 and thus six exterior channels 244 between the exterior ridges. In each case, the mount end 236, 246 of the respective retainer is configured for mounting on the mounting piece 20. Each retainer 230, 240 is resiliently deformable, such that it can be stretched from an unstretched configuration to a stretched configuration in order to locate and retain a handle end of a brush. In variant embodiments, the mount end 236, 246 need not be in a concertinaed or corrugated configuration. In variant embodiments retainers may have another number of outer ridges and outer channels, for example from 4 to 12.

[0045] At an opening of the brush grip end of each of the retainers 230, 240, each interior ridge 232, 242 is bevelled, as indicated at 239, 249. This facilitates location of a brush handle end into the brush grip end of the re-

tainer 230, 240.

[0046] A result of the concertinaed configuration is that an interior surface of each retainer 230, 240 comprises a plurality of peaks and troughs, a peak being at the apex of each ridge and a trough being at the base of each channel. As indicated at 238 and 248, in a surface between each peak and each trough, a groove is provided, which extends lengthwise parallel to the peaks and troughs. The groove extends midway between each peak and the adjacent trough. Such grooves 238, 248 have been found to improve flexibility of the retainers and help with stretching and gripping.

[0047] In variant embodiments, the ridges, channels, peaks, troughs and grooves do not extend lengthwise with the axis about which the retainer rotates in use. These may be otherwise oriented to achieve the wanted effects. For example, they may taper towards the motorised device.

[0048] In use, each retainer 230, 240 is stretched over a handle end of a brush to be retained. Pushing the brush handle end into the retainer may also cause such stretching. After cleaning, the brush is removed by pulling the brush and the retainer apart, the retainer 230, 240 returns to its initial unstretched configuration. Skilled persons will recognize that each retainer 230, 240 can securely retain, in sequence, two brush handles of significantly differing transverse sizes, due to the resilient deformability of ridges 232, 242.

[0049] A kit of a plurality of retainers configured to accommodate different sizes of brush may be provided, such that at least one of the retainers can be used to accommodate brush handle ends of a wide range of different sizes and shapes.

[0050] The retainers described above may be made from rubber (e.g. nitrile butadiene) and, or another resiliently deformable material. In variant embodiments, retainers may not be formed of a resiliently deformable material, particularly if the retainers are for use with brushes or other elongate members in which a handle is resilient.

[0051] It will be appreciated by persons skilled in the art that various modifications are possible to the embodiments.

[0052] Embodiments of the invention are not limited to any particular way in which the device is coupled to the drive shaft so that rotational movement is transmitted to the brushes. In variant embodiments, the mounting piece of the motorised device may be otherwise shaped, and the mounting portions configured to engage with such a mounting piece.

[0053] Embodiments of the invention are also not limited to requiring rotation of the brushes. In variant embodiments, the motorised device may be configured to cause a coupled brush to move with other than rotational movement, while causing that retained brushes to move in a manner that helps cleaning and/or drying of the brushes. For example, the movement may be rapid back and forth movement.

[0054] Whereas the retainers described above enable

spinning of an attached brush about its length, in alternative embodiments the brush may be retained such that it is offset with respect to a spinning axis and rotation of the brush is about the spinning axis. In such case the spinning axis is the axis of the drive shaft.

[0055] The applicant hereby discloses in isolation each individual feature or step described herein and any combination of two or more such features, to the extent that such features or steps or combinations of features and/or steps are capable of being carried out based on the present specification as a whole in the light of the common general knowledge of a person skilled in the art, irrespective of whether such features or steps or combinations of features and/or steps solve any problems disclosed herein, and without limitation to the scope of the claims.

Claims

1. A retainer for retaining a handle end of a brush, comprising:
 - an end attachable to a mount;
 - another end comprising a collar to which the handle end of the brush can be secured, wherein, to facilitate securing of the handle end in the collar, the collar has at least one of: one or more protrusions extending from the interior surface thereof, one or more indentations in an interior surface thereof, and one or more holes through the collar from the interior surface to an exterior surface, wherein, when the handle end is secured in the collar, spinning of the mount about a spinning axis thereof causes spinning of the brush about the axis.
2. The retainer of claim 1, wherein the at least one of the one or more indentations, the one or more holes and the one or more protrusions facilitates deformation of collar, thus facilitating the securing of the handle end in the collar.
3. The retainer of claim 1 or claim 2, wherein the collar has one or more indentations in an exterior surface of the collar.
4. The retainer of claim 1 or claim 2, wherein the collar has one or more protrusions in an exterior surface thereof.
5. The retainer of claim 3, wherein the one or more protrusions in the exterior surface comprise a plurality of ridges, knurls, or other projections.
6. The retainer of any one of the preceding claims, wherein the plurality of indentations in the interior

surface comprise a plurality of grooves or dimples.

7. The retainer of any one of claims 1 to 3, wherein the collar has a concertinaed configuration, wherein the one or more indentations comprise channels of the concertinaed configuration, and wherein ridges and the channels extend lengthwise with respect to a length of the collar. 5
8. The retainer of claim 7, formed of resiliently deformable material, such that the collar can be stretched from an unstretched configuration to a stretched configuration in order to locate and retain a handle end of a brush. 10
9. The retainer of claim 7 or claim 8, wherein, the one or more ridges are bevelled towards an opening of the collar. 15
10. The retainer of any one of claims 7 to 9, wherein one or more surfaces between a peak of a ridge and an adjacent trough of a channel have a groove therein, extending substantially parallel with respect to a length of the peak. 20
11. The retainer of any one of the preceding claims, wherein a diameter of the collar is between 5 mm and 30 mm. 25
12. A kit comprising a plurality of retainers, each in accordance with any one of the preceding claims, wherein the retainers are each configured to retain a plurality of brush handles each of different circumferences, one at a time, wherein a first of the retainers is configured to retain handles of a different range of circumferences than a second of the retainers. 30
13. A motorised device for spinning brushes, comprising: 35
- a mount; 40
- a retainer is in accordance with any one of claims 1 to 11, wherein the end is attached to the mount such that the spinning of the mount causes spinning of the brush about its length. 45
14. The motorised device of claim 13, wherein the motorised device is handheld.
15. A method of cleaning or drying a makeup brush using a resiliently deformable retainer and a handheld motorised device: 50
- securing a mounting end of the retainer to a mount on a drive shaft of a motorised device; 55
- securing an end of a handle of the makeup brush in a collar of the retainer by locating the end of the handle in the collar, wherein the collar has

an irregular interior surface to facilitate securing of the handle end in the collar;
 locating a fibrous end of the makeup brush in a cleaning liquid for cleaning or in air for drying;
 operating the motorised device to spin the drive shaft and the makeup brush.

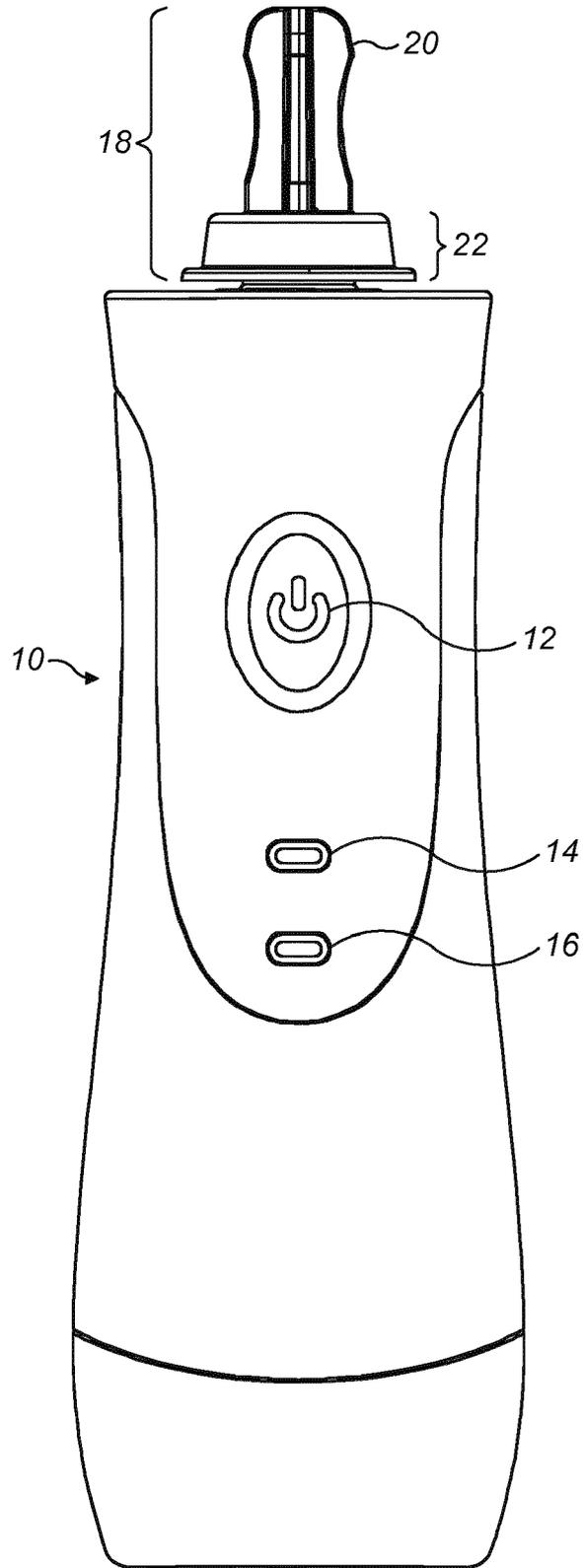


FIG. 1A

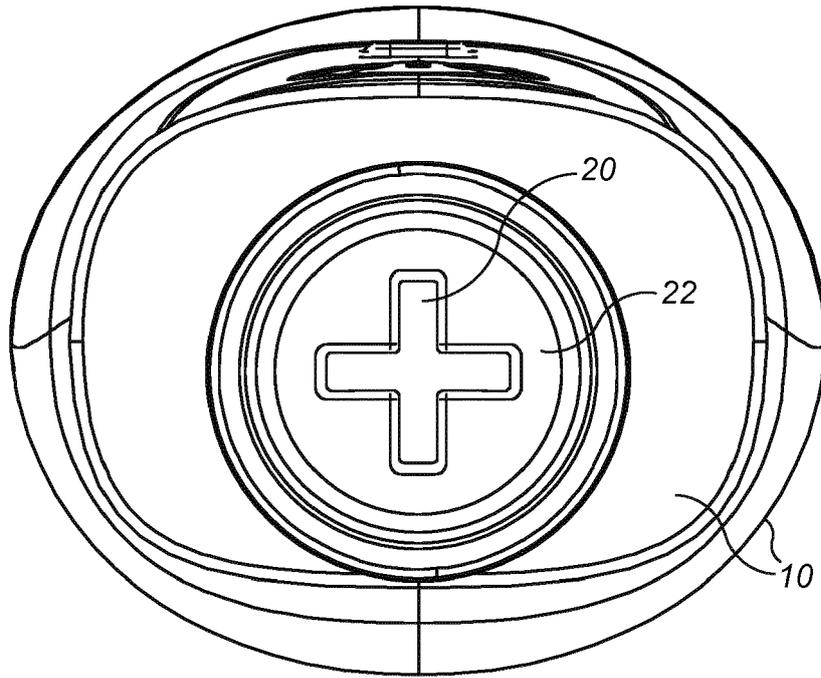


FIG. 1B

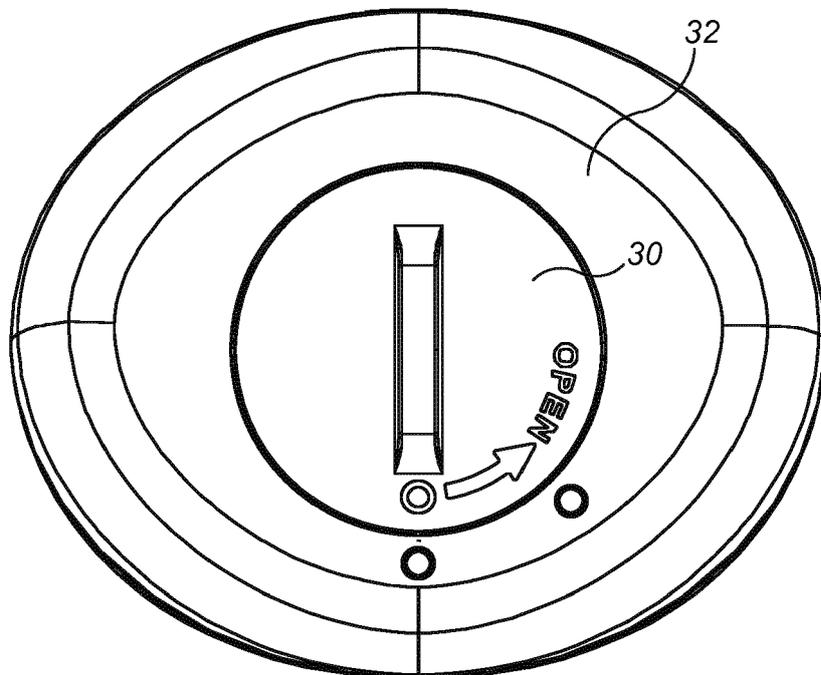


FIG. 1C

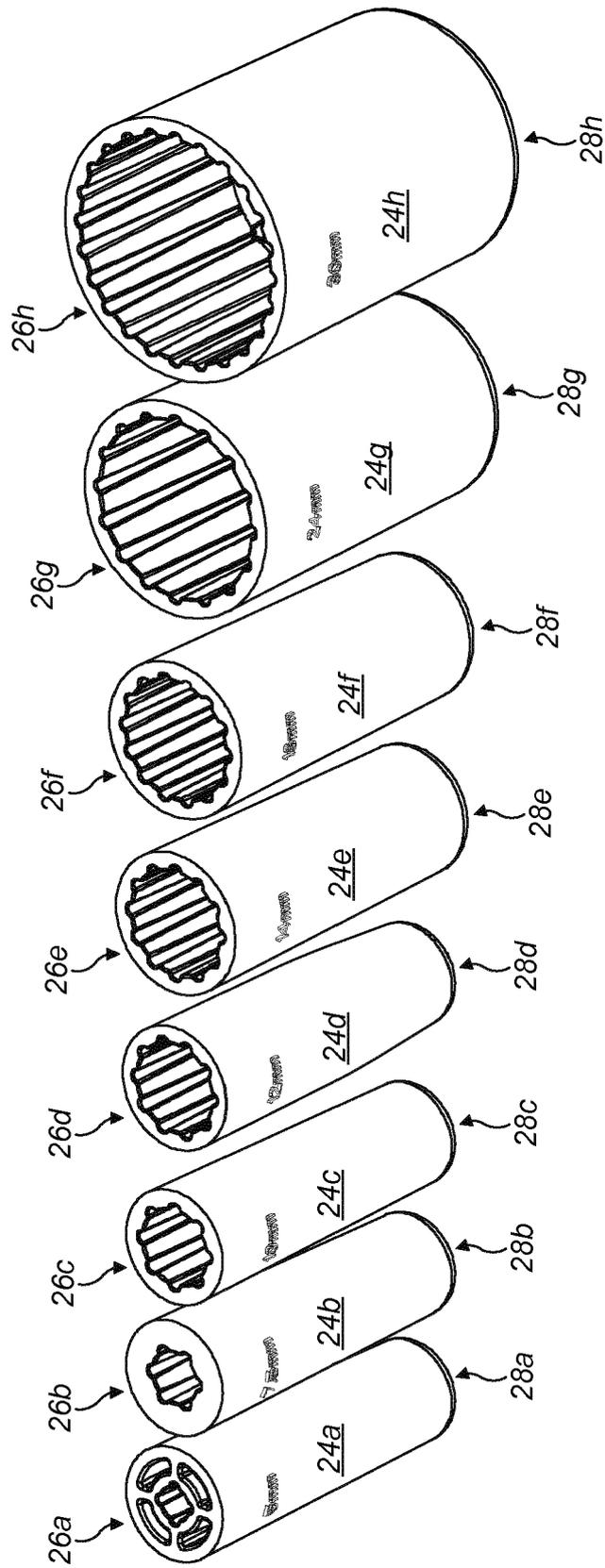


FIG. 2A

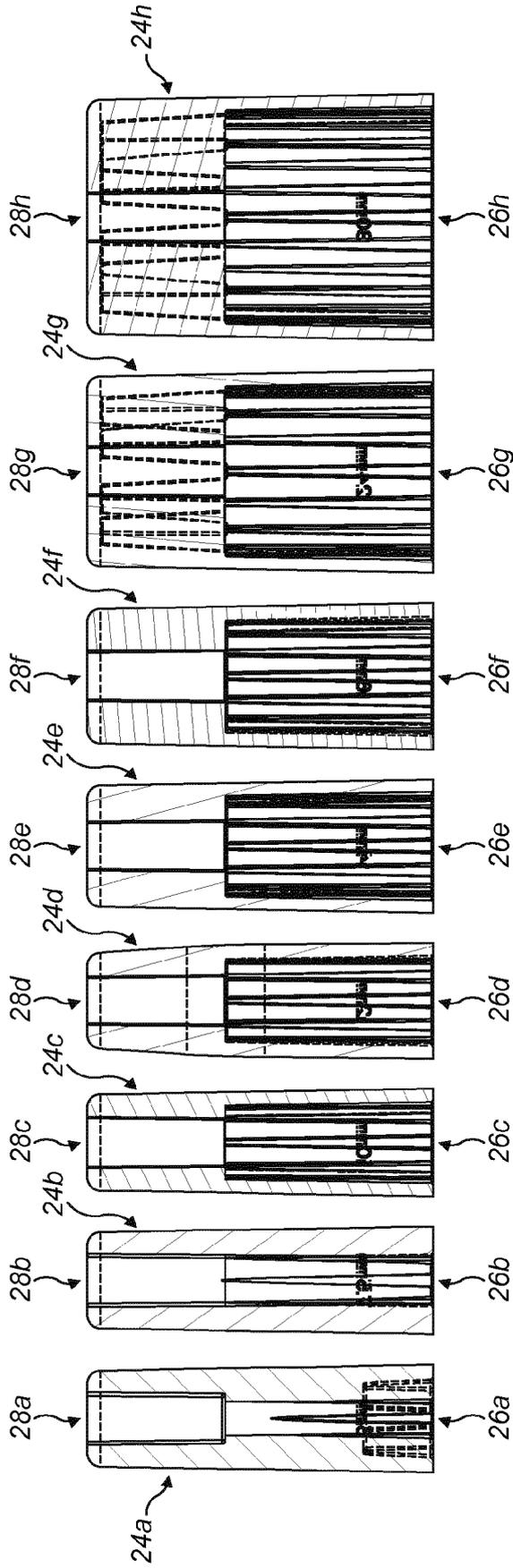


FIG. 2B

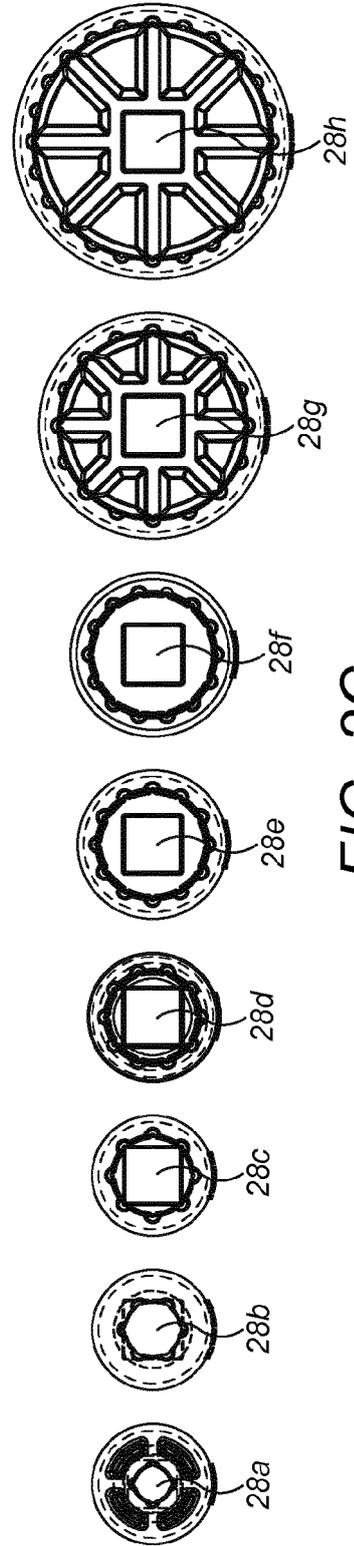


FIG. 2C

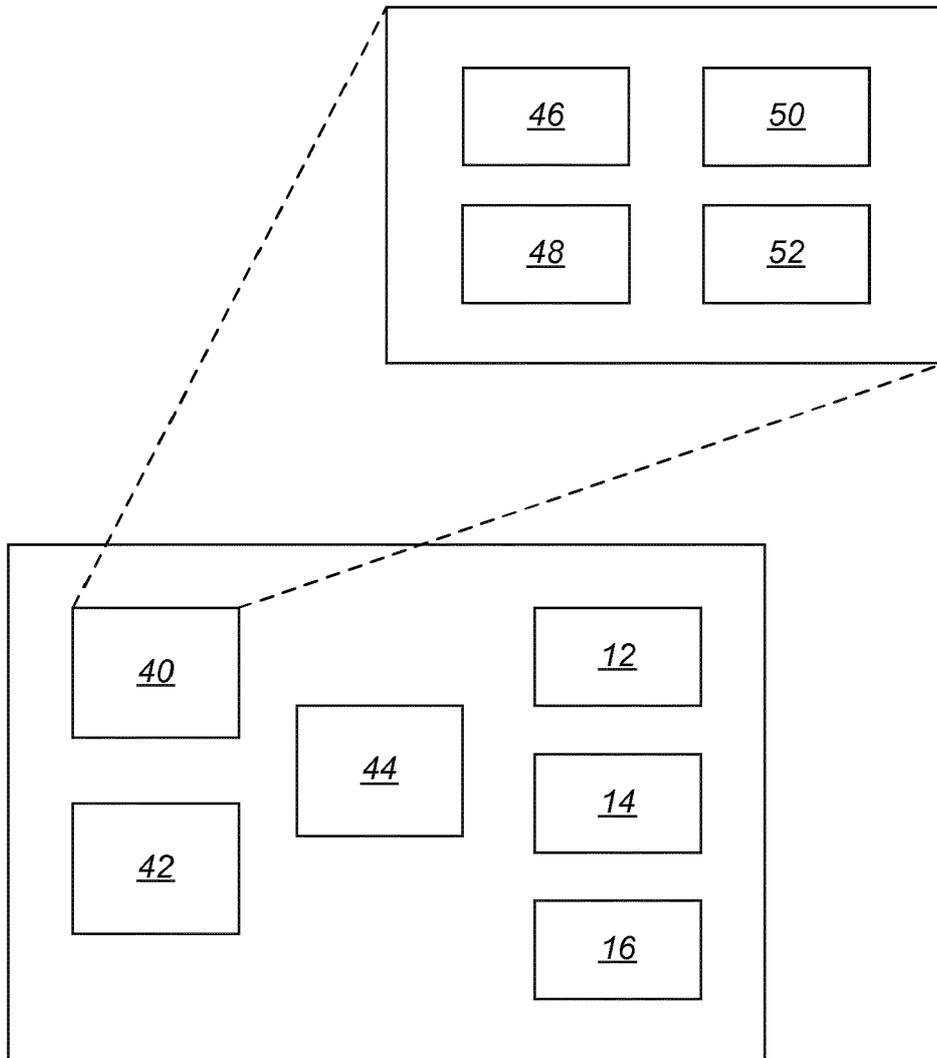


FIG. 3A

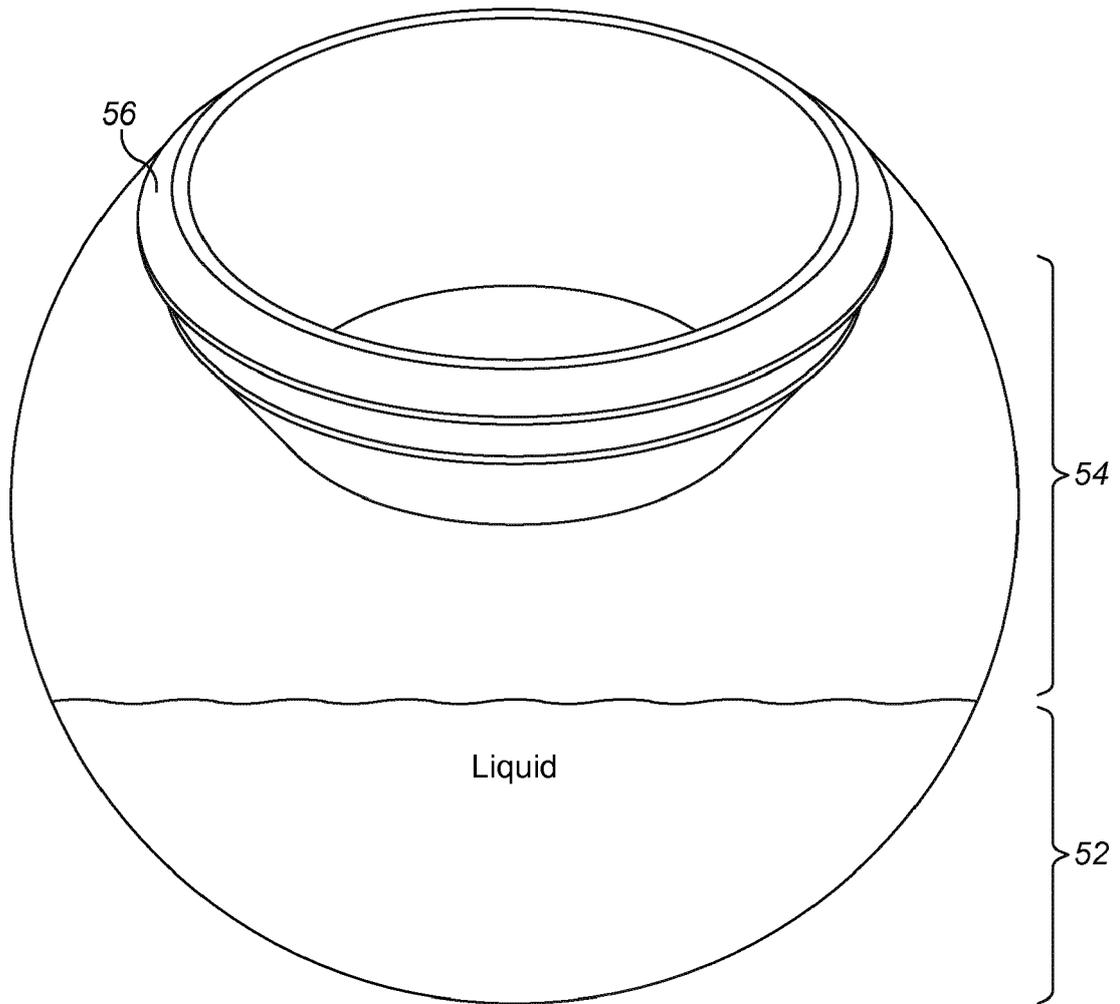
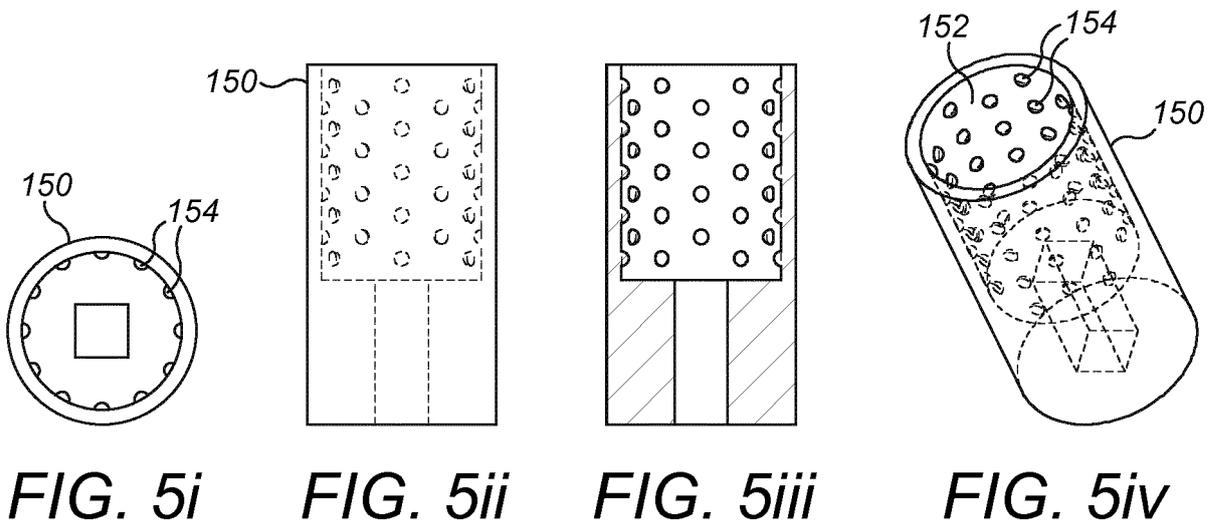
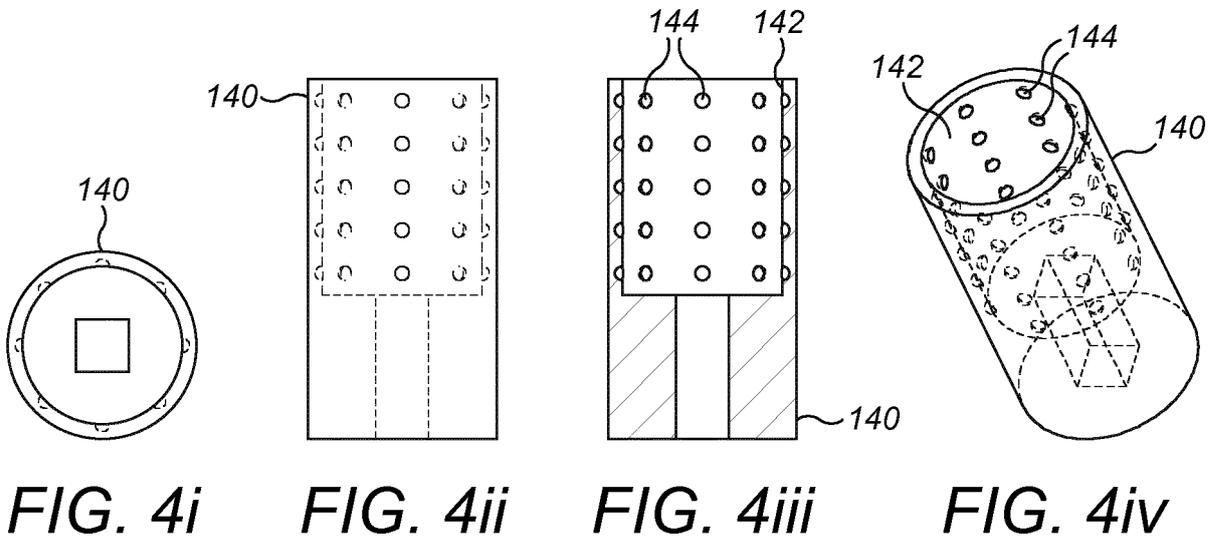
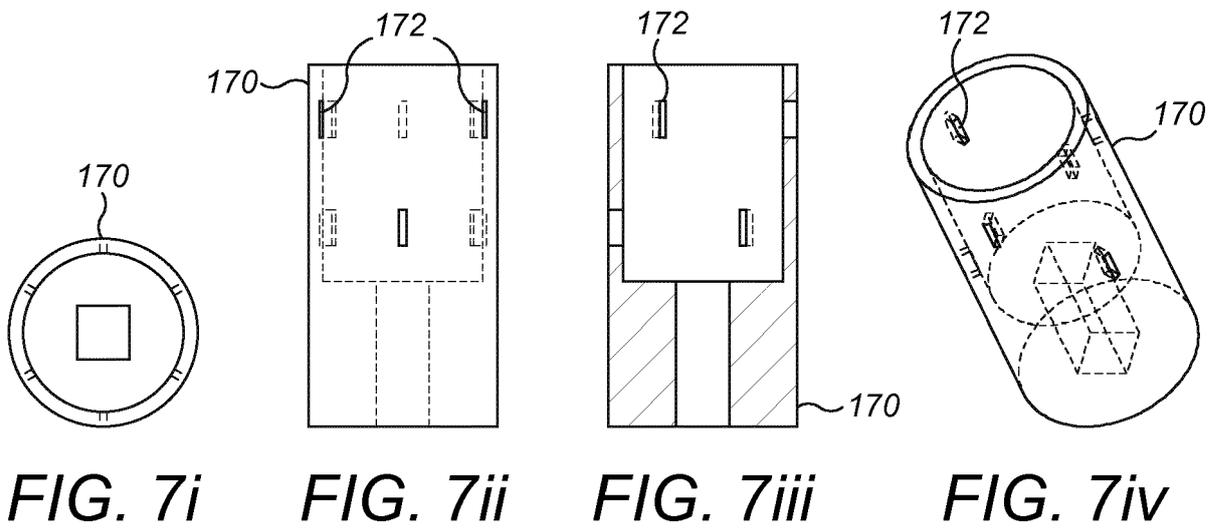
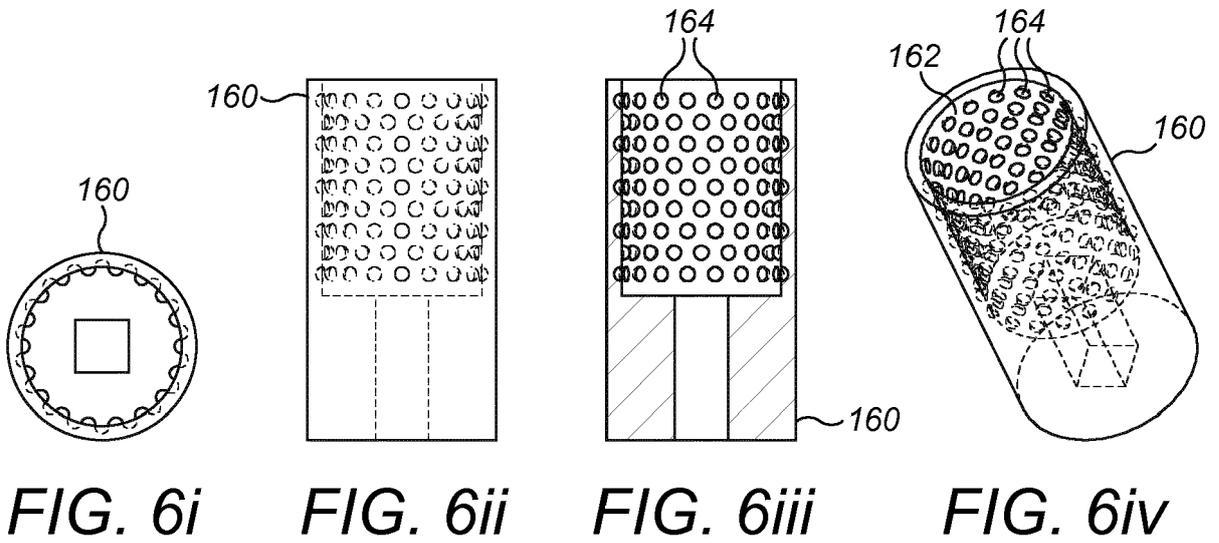
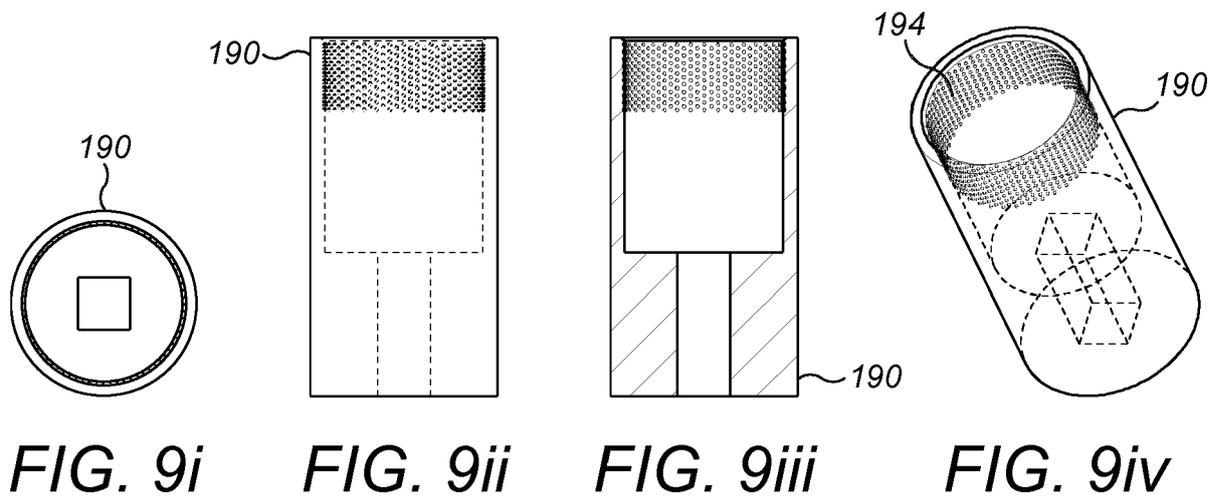
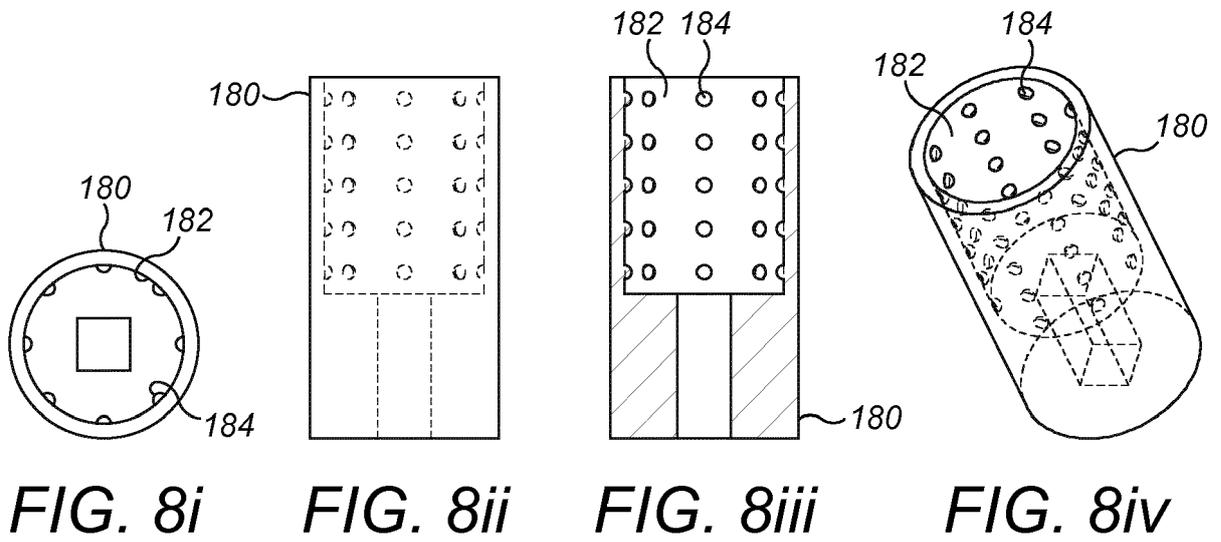


FIG. 3B







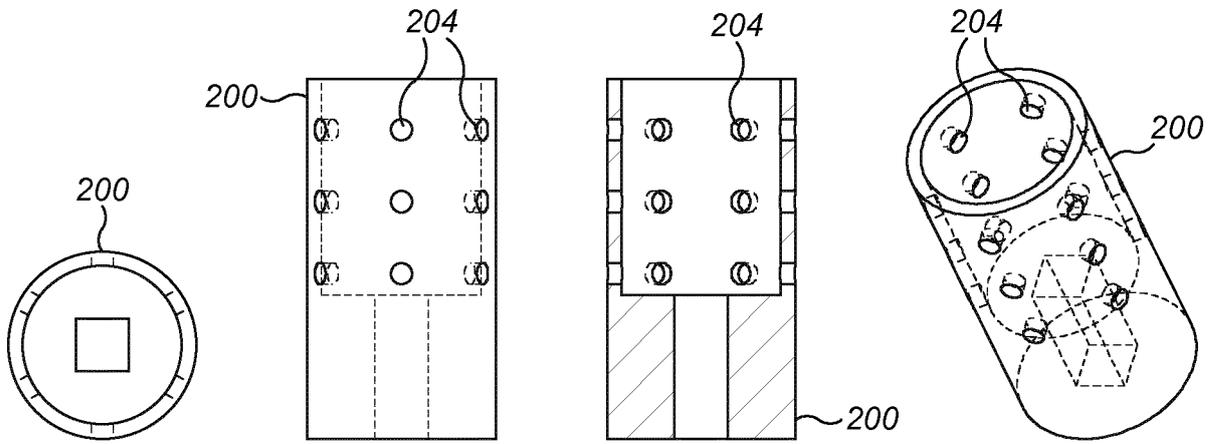


FIG. 10i **FIG. 10ii** **FIG. 10iii** **FIG. 10iv**

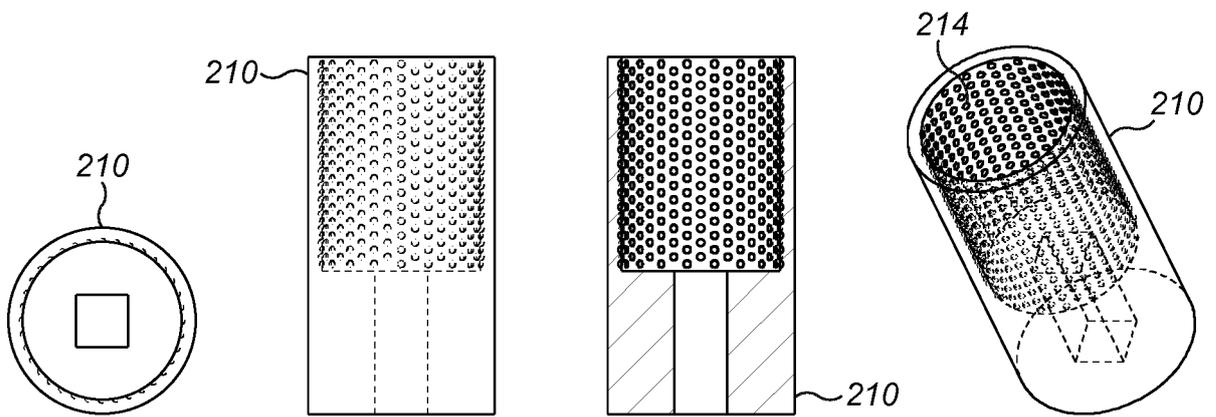


FIG. 11i **FIG. 11ii** **FIG. 11iii** **FIG. 11iv**

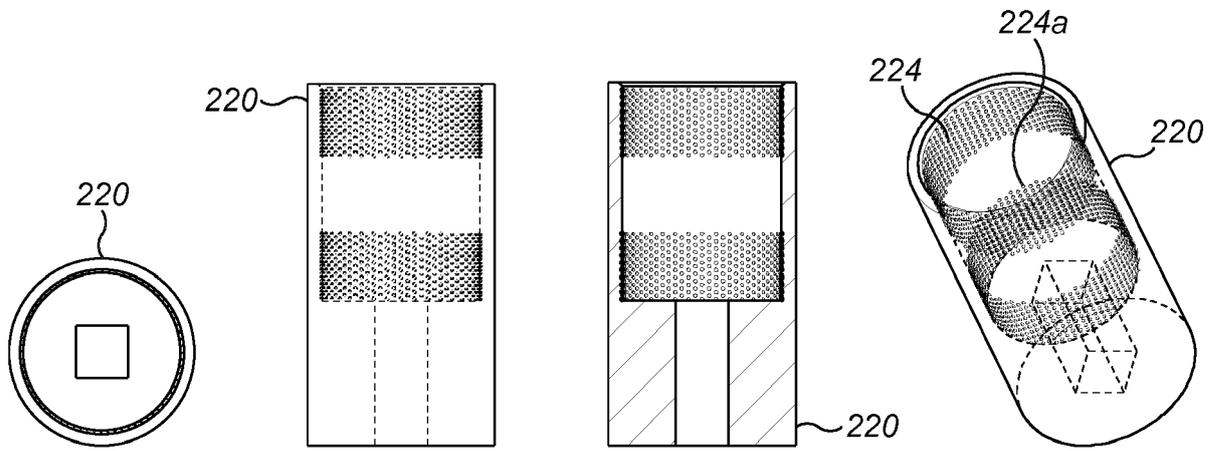


FIG. 12i *FIG. 12ii* *FIG. 12iii* *FIG. 12iv*

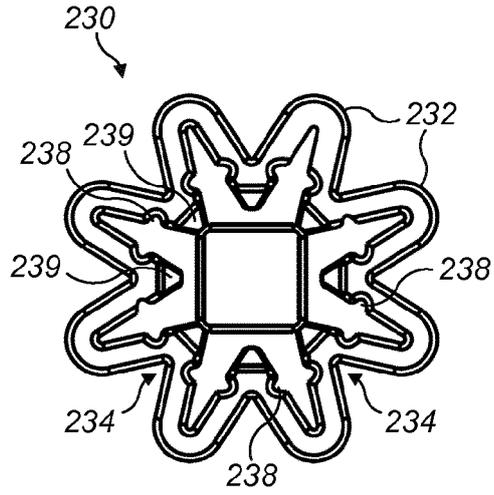
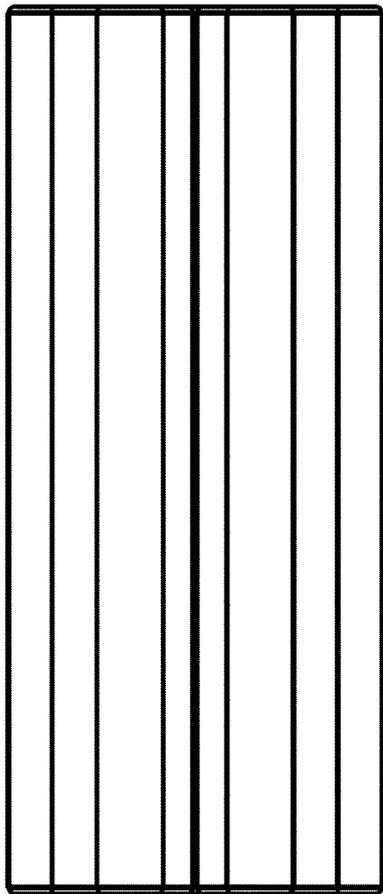


FIG. 13i

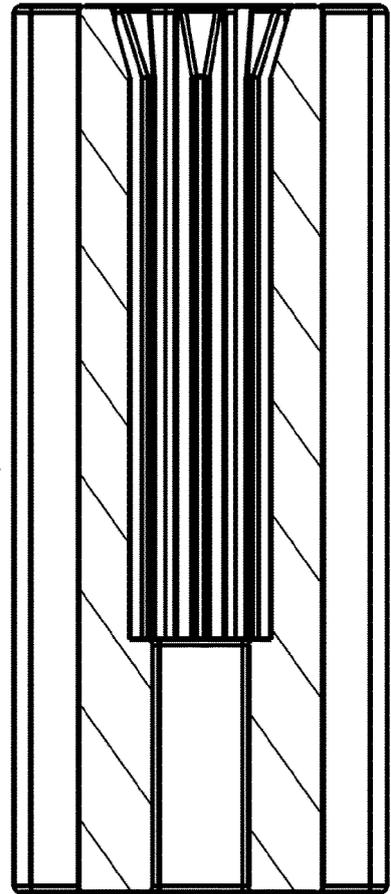


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FIG. 13ii

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FIG. 13ii

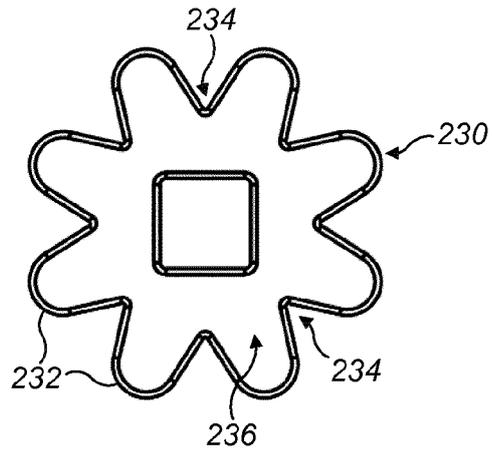


FIG. 13iv

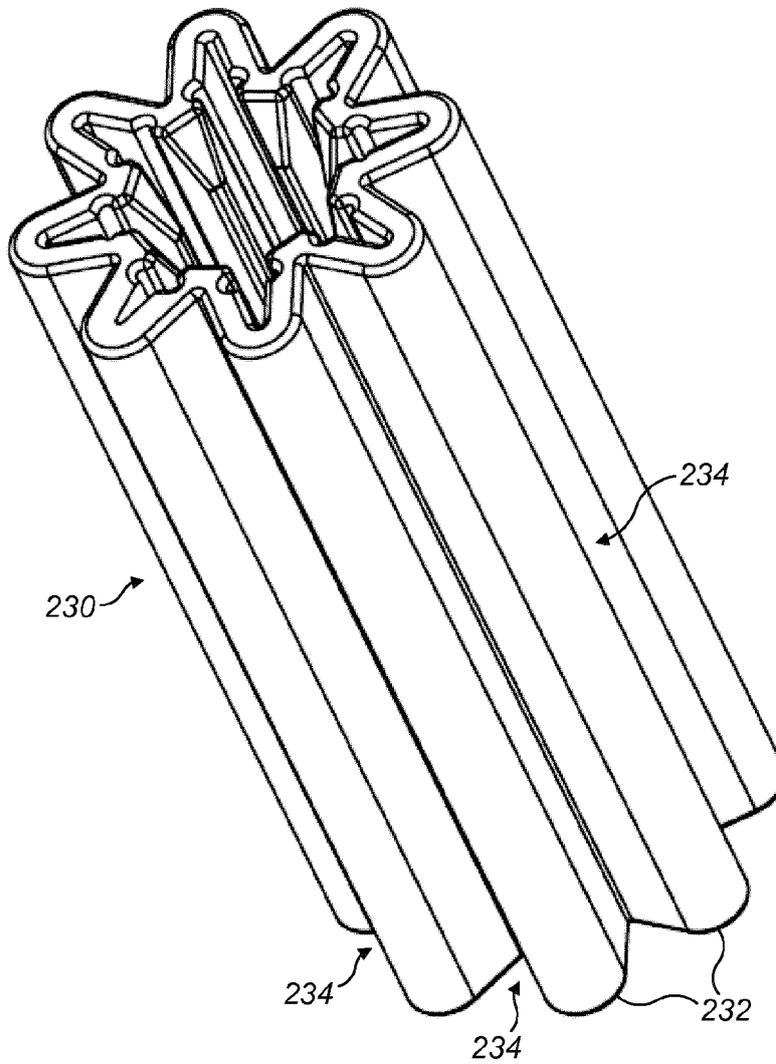


FIG. 13v

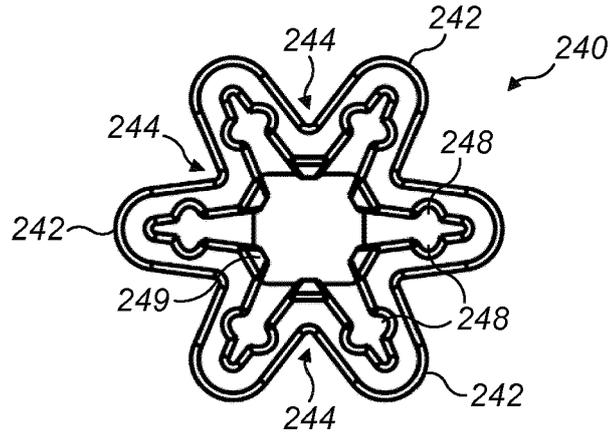


FIG. 14i

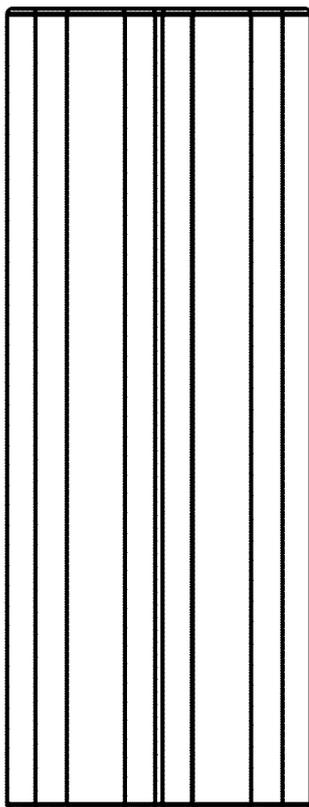


FIG. 14ii

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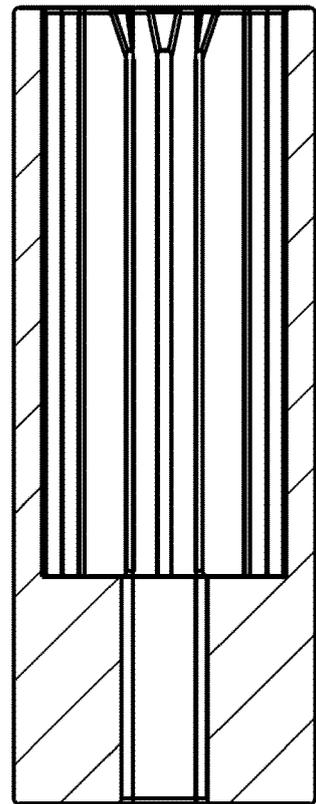


FIG. 14iii

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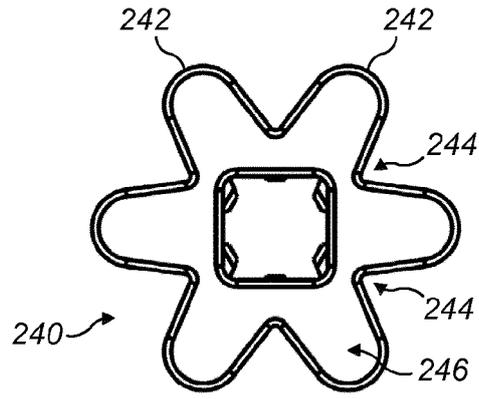


FIG. 14iv

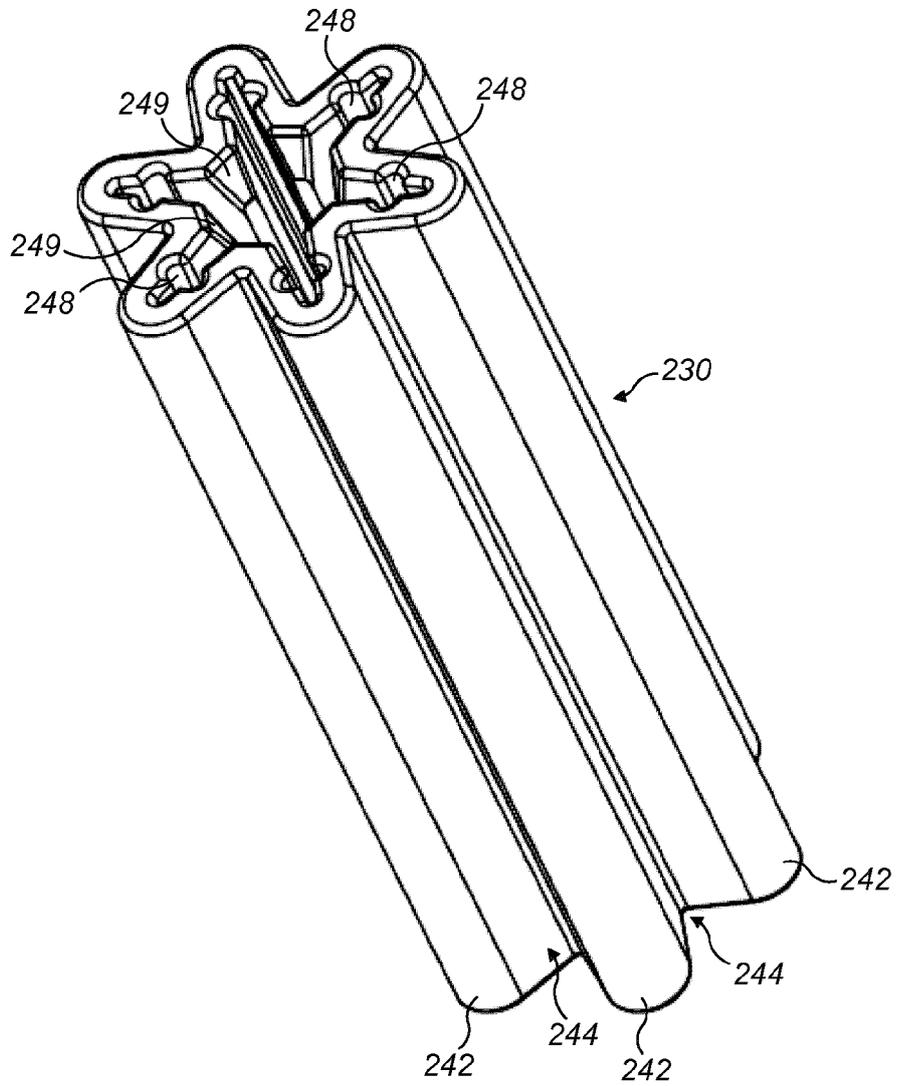


FIG. 14v



EUROPEAN SEARCH REPORT

Application Number
EP 18 18 0365

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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 3 925 908 A (DUNN KIRKLEY J) 16 December 1975 (1975-12-16) * abstract; figures 1-4 * -----	1-15	INV. A46B17/02 A46B17/06 B44D3/00
X	WO 2008/029215 A2 (DENTACK IMPLANTS LTD [IL]; VACHTENBERG OZ [IL]) 13 March 2008 (2008-03-13) * abstract; figure 2 * -----	1-11	
X	US 2002/011135 A1 (HALL WAYNE [US]) 31 January 2002 (2002-01-31) * abstract; figures 1-5 * -----	1,3-7, 9-12	
A,P	CN 106 073 144 B (ZHEJIANG RIFENG ELECTRICAL APPLIANCE CO LTD) 5 June 2018 (2018-06-05) * abstract; figure 1 * -----	1-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			A46B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 27 September 2018	Examiner Dal Bó, Paolo
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 18 18 0365

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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27-09-2018

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 3925908 A	16-12-1975	NONE	

WO 2008029215 A2	13-03-2008	EP 2076206 A2	08-07-2009
		ES 2594862 T3	23-12-2016
		KR 20090053846 A	27-05-2009
		US 2009208905 A1	20-08-2009
		US 2013108983 A1	02-05-2013
		WO 2008029215 A2	13-03-2008

US 2002011135 A1	31-01-2002	NONE	

CN 106073144 B	05-06-2018	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82