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(54) **ADHESIVE BOTTLE AND CAP FOR AN ADHESIVE BOTTLE**

(57) Adhesive bottle comprising a bottom wall and a sidewall defining holding volume for adhesive, wherein the upper part of the sidewall defines an opening and is provided with a connection mechanism for connecting to a cap provided with an applicator for adhesive, wherein

the adhesive bottle comprises at least one protruding member arranged on an internal surface of the sidewall defining a swiping edge for swiping adhesive from the applicator.

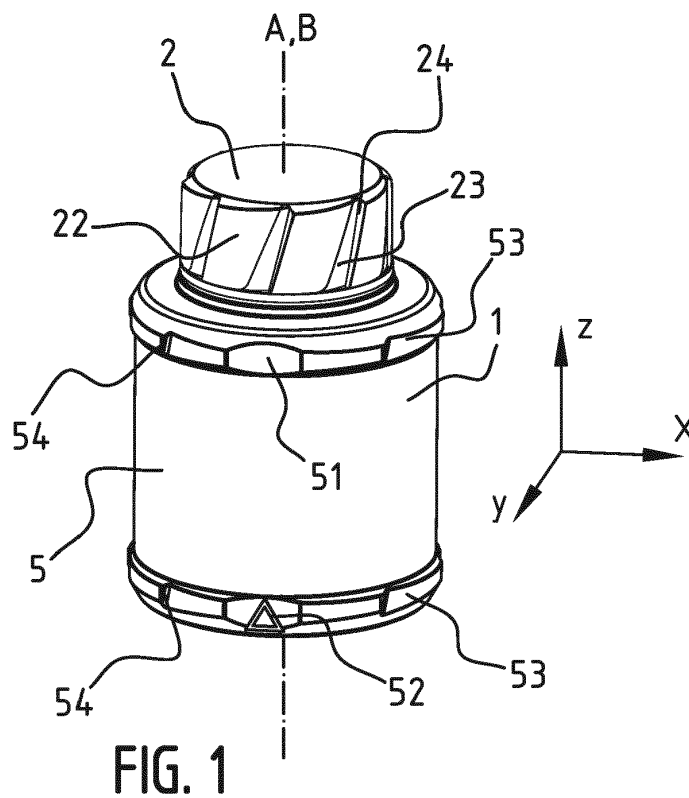


FIG. 1

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Description

[0001] The present invention relates to an adhesive bottle, a cap for such an adhesive bottle and a combination of an adhesive bottle with cap.

[0002] It is known in the art that adhesive may be packaged in a container such as a bottle. These bottles frequently comprise a neck with an opening through which the adhesive is accessed. These bottles may also be provided with a removable cap, removably arranged on the neck of the bottle. The cap may be removably retained on the bottle by means of threading or a snapping mechanism. In order to apply adhesive to an object, a tool such as a brush may be used.

[0003] A problem with these adhesive bottles is that when the brush is dipped in the adhesive substantially more adhesive may be applied to the brush than desired by the user. This may then result in adhesive spillage and/or the application of too much adhesive, and/or the application of adhesive not in the desired location. In order to combat this problem, users frequently swipe the brush across the rim of the adhesive bottle to remove excess adhesive. As a consequence of this act, however, adhesive may build up on the inside of the rim of the adhesive bottle, and adhesive may spill over the rim of the adhesive bottle, thereby fouling the outside of the neck, thereby fouling the mechanism by which the cap may be removably connected to the bottle, such as threading or a snapping mechanism. Furthermore, the presence of adhesive on the neck of the bottle may cause the cap to adhere to the bottle when the cap is put back on the bottle after use. In addition, swiping the brush across the rim of the bottle may simply push a portion of the adhesive to another part of the brush, rather than removing it from the brush. As a consequence, an inaccurate amount of adhesive is retained on the brush relative to the desired amount of adhesive.

[0004] At least one of the above problems, in addition to other problems, may be solved by an adhesive bottle according to claim 1. More specifically, an adhesive bottle is provided comprising a bottom wall and a sidewall defining holding volume for adhesive, wherein the sidewall, in particular an upper part thereof, defines an opening and is provided with a connection mechanism for connecting to a cap provided with an applicator for adhesive, wherein the adhesive bottle comprises at least one protruding member arranged on an internal surface of the sidewall defining a swiping edge for swiping adhesive from the applicator. The protruding member can be used to swipe off excess adhesive, thereby allowing dosing the amount of adhesive to be applied. This allows a user to efficiently and effectively achieve the desired amount of adhesive on the applicator.

[0005] The term "adhesive" in this context refers to substances that may also be referred to as "glue", "solvent cement", "epoxy", or other compounds for binding two components or parts. In particular, the adhesive in the context of the present invention may be "PVC glue" or

"PVC solvent cement" intended for binding PVC components.

[0006] In addition, in this application reference is made to a "bottle". The object referred to with the term bottle may also be described as for example a "pot", a "flacon" or a "tin".

[0007] As the protruding member is arranged on the internal surface of the bottle, spilling or fouling of the outside of the bottle is prevented. Preferably, the protruding member extends at a (non-zero) distance from the upper edge of the opening. This further prevents fouling of the outside of the neck of the bottle, and by extension the bottle.

[0008] The bottle with the protruding member works particularly well in combination with a cap provided with an applicator for adhesive, for instance in the form of a brush. When removing the cap with applicator from the bottle through the opening, excess adhesive can then efficiently be swiped off the applicator using the protruding member. In the alternative, the bottle can cooperate with a separate brush, i.e. not provided on the cap.

[0009] Preferably, the protruding member has a varying width, seen with respect to the internal surface. This allows dosing the amount of adhesive on the applicator. It is preferred if the protruding member has a varying width along a radial emanating from the centre axis of the bottle. This allows the user to swipe the brush in different locations on the protruding member, each location resulting in a different amount of adhesive being removed than another position.

[0010] Preferably, the protruding member comprises a recess, more preferably with a depth dimension. The applicator can then be received in the recess which improves the accuracy of the dosing. Preferably, the bottle comprises a centre axis extending at least through the opening, and wherein the bottle comprises at least two protruding members, wherein each protruding member comprises an apex extending furthest towards the centre axis of the bottle. The internal surface of the bottle between two neighbouring protruding members may comprise a nadir extending further away from the centre axis of the bottle than the apexes of the two neighbouring protruding members. The internal surface of the bottle forming the protruding member makes that the bottle can be constructed out of a single piece, for example by means of injection moulding or blow moulding. In a preferred embodiment the bottle is constructed out of a single piece with a substantially constant thickness. As a result, the arrangement of the protruding member on the interior surface of the bottle results in an accompanying recess in the outside surface of the bottle.

[0011] Preferably, the two apexes of two neighbouring protruding members and the nadir therebetween define the maximum depth and maximum width of the recess, wherein the surface connecting the apexes comprising the nadir comprises a concave section with a radius. The recess may comprise the nadir and the concave section. This ensures that the recess of the protruding member

substantially lays in a plane perpendicular to the length axis of the bottle. This positions the protruding member and the swiping edge in a location that is well accessible from multiple directions, increasing ease of use.

[0012] According to a preferred embodiment, seen in a top view into the opening, the protruding member protrudes into the opening. When taking out the applicator from the holding area, the applicator can be efficiently swept along the protruding member.

[0013] Preferably, in top view, the opening including the protruding member, which preferably protrudes into said opening as mentioned above, is rotationally asymmetric. Preferably, seen in top view, the protruding member extends on a first side only and thus not on the opposite side on the internal surface. The relative position, again seen in the same view, of the applicator with respect to the protruding member can then be selected, allowing dosing the amount of adhesive on the applicator. In addition, providing the protruding member on the first side of the opening only minimally obstructs the opening of the bottle. This allows for optimal access to the adhesive present in the bottle.

[0014] According to a further preferred embodiment, the bottle comprises a neck which forms the opening of the bottle, wherein an inner diameter of the neck is preferably smaller than a diameter of the holding area, wherein the at least one protruding member is arranged on the inside surface of the neck. As such, the protruding member protrudes into the opening of the bottle, thereby facilitating swiping off excess adhesive. Furthermore, the bottle is preferably filled with adhesive (the main volume of adhesive) up to a level extending no further than the bottom of the neck of the bottle. As the protruding member is arranged in the neck of the bottle, it is arranged above the level of the main volume of adhesive, and in a position which is not usually preferred to contain adhesive. Consequentially, the protruding member extends above the level of adhesive, in a location not preferably intended to contain adhesive, thereby making effective use of an otherwise void space on the inside of the neck of the bottle. It may be appreciated that because the protruding member extending above the surface of the adhesive, the brush may be swept across the protruding member to remove adhesive, without risking the subsequent reapplication of adhesive from the main volume of adhesive.

[0015] According to a preferred embodiment, the adhesive bottle has a substantially cylindrical shape. A cylindrical shape provides an optimal balance between holding volume and exterior surface, while ensuring that the bottle can be stably placed on the bottom surface of the bottle. Preferably, the bottle comprises at least one protrusion provided on the cylindrical outer surface. Such a protrusion may prevent the bottle rolling away when the bottle is laid down. It should be appreciated that a cylinder is prone to rolling when laying on the cylindrical side. Providing at least one protrusion ensures that the mainly cylindrical side surface of the cylinder comprises at least

one section that is not cylindrical, preventing the cylinder from rolling to a degree. The effect of this is that the bottle may be placed on its side on a surface by a user with less risk of the adhesive bottle rolling away. The bottle preferably comprises a plurality of protrusions to this end.

[0016] Preferably, the bottle comprises at least one first protrusion, or generally first structure, which defines a substantially flat or planar surface on the outside of the bottle, preferably oriented substantially parallel to the centre axis of the bottle. Preferably, the bottle comprises at least two structures arranged at a distance, for instance at an upper and lower end of the bottle, each defining a substantially flat surface. The bottle may further be provided with a plurality of protrusions or structures provided at different radial positions along the cylindrical surface.

[0017] Preferably, the bottle comprises at least one second protrusion on the outer surface of the bottle, wherein second protrusions, or generally second structure, comprises at least two surfaces under an angle, preferably with a segment oriented substantially parallel to the centre axis of the bottle, wherein more preferably at least one surface of the at least one protrusion is oriented preferably at an angle smaller than 45 degrees relative to a radial emanating from the centre axis of the jar. Preferably, at least one other surface of the second protrusion is oriented at an angle larger than 45 degrees relative to a radial emanating from the centre axis of the bottle. Generally, a second protrusion is preferably asymmetrical when viewing the bottle from above. It should be appreciated that this asymmetry provides more grip to the user when holding the bottle and turning the cap in one direction than when the user turns the cap in the other direction. In the preferred embodiment, surfaces with the normal pointing substantially in the counter clockwise direction when viewed from above are oriented at a smaller angle relative to the radian emanating from the centre axis of the bottle than surfaces with a normal pointing at least with a component in the clockwise direction. The effect of this is that the bottle provides more grip to the user when turning the cap in the counter clockwise direction than when turning the cap in the clockwise direction. It may be appreciated that the effect of this is that a user has more grip on the bottle when opening the cap than when closing the cap.

[0018] First or second protrusions may be combined in a single protrusion. For example, a second protrusion may comprise a gap wherein the cylindrical outer surface of the bottle remains continuous, thereby additionally forming two first protrusions. Additionally or alternatively, a second protrusion may comprise a flat or planar section, thereby additionally forming a first protrusion.

[0019] It will be appreciated that although the protrusions or structures on the outer surface of the bottle as describes above cooperates well with the protruding member for swiping excess adhesive, the at least one protrusion with any of the aforementioned features on the outer surface may also be incorporated into an adhesive

bottle without such protruding member.

[0020] A further preferred embodiment of the adhesive bottle comprises a cap comprising a second connection mechanism cooperating with the connection mechanism for removably connecting the cap to the bottle, wherein the cap is arranged to interact with the bottle to form an enclosed volume. Preferably, the connection mechanism arranged on the bottle comprises threading, with the second connection mechanism arranged on the cap comprising matching threading, allowing the cap to screw on the bottle. Preferably, the cap is tightened on the bottle when turning the cap in the clockwise direction when viewed from above, and loosened from the bottle when turning the cap in the counter clockwise direction. This arrangement synergizes with the orientation of the protrusions provided on the outside of the bottle.

[0021] Preferably, the applicator is arranged on the cap, wherein the applicator comprises a brush member, wherein the brush member comprises a centre axis and a plurality of brush hairs forming a brush, wherein the plurality of brush hairs extend substantially radially from the centre axis. The brush hairs may form a substantially cylindrical shape or a substantially spherical shape. However, embodiments wherein the brush comprises a plurality of hairs extending substantially parallel to the centre axis are also envisioned. The brush hairs may additionally comprise 1, 2, 3 or more different types of hairs with different characteristics such as material, thickness, stiffness, etc. Different types of hair may improve the adhesive retention of the brush, and/or the user experience of using the brush to apply adhesive. The brush may additionally be of a design commonly referred to as a "twisted wire brush", wherein the stalk of the brush at least partly comprises two or more twisted together wires, between which the brush hairs are retained and extending radially outwards.

[0022] In addition, the protruding member may be used to swipe of adhesive on other parts of the applicator, such as the stalk.

[0023] Preferably, the brush extends from the cap in a direction which ensures that the brush is oriented downwards into the main volume of adhesive when the cap is arranged on the bottle. This ensures that the brush is provided with adhesive as soon as the user removes the cap to initiate the application of adhesive to a desired location. In addition, this ensures that the brush is held enclosed in the interior of the adhesive bottle when the cap is arranged on the bottle. This prevents the adhesive on the brush from drying out or setting, and it prevents brush from accidentally applying adhesive to an undesired location when a user handles the bottle with the cap arranged thereon.

[0024] The brush is preferably substantially circular in a plane perpendicular to the centre axis of the centre axis of the brush, defining a maximum diameter and radius. In combination with a recess provided in or defined by the protruding member(s), wherein the radius of the brush is larger than a radius of a curvature of the recess. This

preferred shape of the brush allows the brush to synergize with the geometry of the recess for swiping the brush. As the radius of the recess is preferably smaller than the radius of the brush, the brush is squeezed as well as swiped when passed through the recess. This action of squeezing the brush as well as swiping the brush allows for an effective removal of a desired amount of adhesive from the brush. This squeezing effect is proportional to the degree to which the concave curvature of the recess encloses a circle. Even though it is preferred that the radius of a curvature of the recess is smaller than the maximum radius of the brush, this is not essential. The protruding member still allows more accurate and convenient dosing of the amount of adhesive on a brush when the radius of the brush is smaller than the radius of a curvature of the recess.

[0025] Preferably, the outside surface of the cap forms a substantially cylindrical surface parallel to the centre axis of the cap, wherein the centre axis of the cap is oriented substantially parallel to the centre axis of the bottle when the cap interacts with the bottle, wherein the outside surface of the cap is provided with a plurality of ribs extending substantially parallel to the cylindrical surface. The ribs provide grip to a user grasping the cap in order to open or close the bottle. Preferably, at least one of the ribs extends under a non-zero angle with respect to the centre axis of the cap. This results in that the ribs provide the most grip to the user when simultaneously turning the cap and pressing down on the cap. This increases the engagement of the hand of the user with the cap, and allows for a convenient and comfortable application of turning force on the cap by the user.

[0026] More preferably, at least one of the protrusions provided on the outside surface of the cap comprises at least two surfaces oriented substantially parallel to the centre axis of the cap, wherein at least one surface of the at least one protrusion is oriented at an angle smaller than 45 degrees relative to a radial emanating from the centre axis of the cap. Preferably, at least one other surface of the protrusion is oriented at an angle larger than 45 degrees relative to a radial emanating from the centre axis of the cap. This geometry has the effect that the protrusions are asymmetrical when viewing the cap from above. It should be appreciated that this asymmetry provides more grip to the user when turning the cap in one direction than when the user turns the cap in the other direction. In the preferred embodiment, surfaces with the normal pointing substantially in the clockwise direction when viewed from above are oriented at a smaller angle relative to the radial emanating from the centre axis of the cap than surfaces with a normal pointing at least with a component in the counter clockwise direction. The effect of this is that the cap provides more grip to the user when turning the cap in the counter clockwise direction than when turning the cap in the clockwise direction. It may be appreciated that the effect of this is that a user has more grip on the cap when opening the cap than when closing the cap.

[0027] It will be appreciated that the features of the cap can also be incorporated into an adhesive bottle without a protruding member for swiping of excess adhesive. Further, according to a further aspect, a cap is provided, preferably arranged to cooperate with a bottle as described above, wherein the cap comprises a second connecting mechanism cooperating with a connection mechanism for removably connect the cap to a bottle, wherein the cap is arranged to interact with the bottle to form an enclosed volume, wherein the cap comprises an applicator for adhesive, wherein the applicator comprises a brush member.

[0028] Preferably, the outside surface of the cap forms a substantially cylindrical surface parallel to the centre axis of the cap, wherein the centre axis of the cap is oriented substantially parallel to the centre axis of the bottle when the cap interacts with the bottle, wherein the outside surface of the cap is provided with a plurality of ribs extending substantially parallel to the cylindrical surface, wherein at least one of the ribs extends under a non-zero angle with respect to the centre axis of the cap.

[0029] The present invention is further elucidated with reference to the attached drawings, which show a preferred embodiment of the adhesive bottle, and are not intended to limit the scope of the invention in any way, wherein:

- Figure 1 shows an overview of the adhesive bottle;
- Figure 2 shows the adhesive bottle in addition to the cap with associated brush;
- Figures 3A, B show top views of the adhesive bottle;
- Figure 4 shows a cross sectional view of the adhesive bottle as seen from the side;
- Figure 5 shows a top view of the cap;
- Figure 6 shows the adhesive bottle laying on its side;
- Figures 7A, B show another cross section of the adhesive bottle and interaction with the brush;
- Figures 8A-D show an example of a use case of the adhesive bottle and brush; and
- Figure 9 shows a range of adhesive bottles of different sizes.

[0030] Figure 1 shows the adhesive bottle 1 with the cap 2 screwed thereon. The adhesive bottle 1 is substantially symmetrical around the centre axis of the adhesive bottle A, consequentially axis A is substantially the axis of symmetry of the adhesive bottle 1. The cap 2 is additionally substantially symmetrical around the centre axis B of the bottle 2, consequentially axis B is substantially the axis of symmetry of the bottle 2. When the cap 2 is screwed on the adhesive bottle 1 axes of symmetry A and B substantially coincide with each other. The adhesive bottle 1 additionally comprises flat sections 51, 52 which extend substantially parallel to each other and preferably to the centre axis A.

[0031] Figure 2 shows an overview of the adhesive bottle 1 with the cap 2 shown separately. The adhesive bottle 1 comprises an outer surface 5, a neck 14 forming

the bottle opening 15. The neck 14 additionally comprises threading 13 arranged to interact with compatible threading arranged in the cap 2 (not shown). The cap 2 comprises a brush 21 arranged on brush stalk 25 which is arranged on the inside of the cap 2. The brush 21 is substantially cylindrical and has a diameter b.

[0032] Figures 3A-B show top views of the adhesive bottle 1, wherein the adhesive bottle 2 is arranged such that the centre axis A intersects the point of view. The protruding member or swiping edge 3 is shown. In this embodiment the swiping edge is defined by the inner surface 35 of a recess 33. In the present embodiment the recess is formed by two protruding members 31, 32, which extend from the inner surface of the adhesive bottle neck 14 towards the centre axis A of the adhesive bottle. The protruding members 31, 32 respectively comprise apexes 311, 321 which extend furthest towards the centre axis A. Between the protruding members 31, 32 extends a surface which defines the inner surface 35 of a recess 33, thereby defining the swiping edge 3. The inner surface 35 comprises a substantially concave section with radius R. The depth d of the recess 33 is defined as the distance between a virtual line extending between apexes 31, 32, and the point 34 on the inner surface 35 the recess 33 furthest away from centre axis A, i.e. the nadir 34. Preferably, radius R is smaller than half the diameter b (i.e. the radius of the brush 21) of the brush 21. In this way, when the brush is drawn through the recess 33 while being pushed into the recess 33 in a direction at least partly parallel to a radius emanating from the centre axis A which passes through point 34, the brush 21 is squeezed by the inner surface 35 of the recess 33 across a substantial section of its circumference, thereby effectively squeezing the brush 21 and removing excess adhesive from the brush 21. The top and bottom edges of the adhesive bottle 1 further comprise a plurality of segments 53 which are oriented in a scale-like or roof tiling-like manner. The segments 53 connect at segments 54. This arrangement provides a plurality of ribs which provide grip for the user holding the adhesive bottle and unscrewing the cap 2. The geometry of the ribs can be described by two angles, α and β , wherein α is the angle at which a line parallel to the surface of a segment 54 intersects a radial emanating from centre axis A of the adhesive bottle 1. Similarly, β is the angle at which a line parallel to the surface of segment 53 at the point where it connects to segment 54 intersects a radial emanating from the centre axis A of the adhesive bottle 1. In this embodiment, angles $\alpha < 45^\circ$ and $\beta > 45^\circ$.

[0033] In figure 3A an embodiment of the bottle 1 is shown with a flat section 51, which prevents the bottle from rolling away. The section 51 may be formed by two first protrusions, which extend outwards from the cylindrical outer surface 5 of the bottle to define a planar section. In figure 3B an embodiment is shown with the additional section 51a. This section 51a has the same purpose and effect as the flat section 51, and may be formed by a different embodiment of the two first protrusions.

sions, here extending from the cylindrical outer surface 5 not to define a planar section, but to define a section that is not cylindrical. The section 51a may also be described as a section forming a discontinuity in the protruding rim formed by the sections 53, 54. It should be noted that features defining sections 51/51a and sections 53, 54 may be comprised by a single protrusion with a plurality of features.

[0034] Figure 4 shows a cross section of the adhesive bottle 1 in a plane parallel to the centre axis A of the adhesive bottle 1. A holding volume 4 is formed by the bottom 11 and the cylindrical sidewall 12 of the adhesive bottle. The opening 15 of the adhesive bottle 1 is formed by the neck 14. The inner surface of the adhesive bottle comprises the sections 111, 16, 17, 18. Herein section 111 is the inner surface formed by the bottom 11, section 16 is a substantially cylindrical surface formed by the substantially cylindrical inner surface formed by the sidewall 12 extending parallel to the centre axis A, section 18 is a "donut" (a circle with a circular hole) shaped section which extends in a direction with at least a component perpendicular to the centre axis A and which connects section 16 with section 17 which is the inner surface of the neck 14. In this embodiment, the segments forming the swiping edge 3 (parts 31, 32, 33) are arranged on the inner surface 17 of the neck 14. In this embodiment the lower edge 33' of the inner surface 35 of the recess 33 ideally extends at a minimal vertical distance to the inner surface segment 18. This is because ideally there is an offset between the nadir 34 on the lower edge of inner surface 35 of the recess 33 and the surface from which it extends. If there is no offset, i.e. for a theoretical embodiment wherein the surface 17 extends further below the swiping edge 3 and the nadir 34 lays substantially on the surface 17, when the brush 21 is passed through the recess 33 the brush 21 is also pressed against the surface 17, which reduces the effectiveness of the swiping edge to remove excess adhesive, and reducing ease of use. In this embodiment, the offset is substantially formed by the width S of section 18. This provides offset between the nadir 34 on the inner surface 35 of the recess 33 and the inner surface section 16 of the adhesive bottle. In another theoretical embodiment wherein sections 16 and 17 were to be aligned, and therefore where section 18 and width dimension S would not exist, it would therefore be preferred that the nadir 34 extends further from the hypothetical surface 16/17 than in the present embodiment.

[0035] Figure 5 shows a top view of the cap 2. The edge of the cap 2 comprises a plurality of segments 22, 23, 24 which are oriented in a scale-like or roof tiling-like manner. The segments 23 connect at segments 24. This arrangement provides a plurality of ribs which provide grip for the user holding the adhesive bottle 1 and unscrewing the cap 2. The geometry of the ribs can be described by two angles, γ and δ , wherein γ is the angle at which a line parallel to the surface of a segment 24 intersects a radial emanating from centre axis B of the

cap 2. Similarly, δ is the angle at which a line parallel to the surface of segment 23 at the point where it connects to segment 24 intersects a radial emanating from the centre axis B of the cap 2. In this embodiment, angles $\gamma < 45^\circ$ and $\delta > 45^\circ$.

[0036] Figure 6 shows a side view of the adhesive bottle 1. In this embodiment, an axis C extends parallel to the flat surfaces 51, 52, and parallel to the centre axis A. The flat surfaces 51, 52 then allow the adhesive bottle to lay on its side more stably, and with less chance of rolling away.

[0037] Figure 7A and 7B show another cross section of the adhesive bottle 1, in addition to the cap 2 with brush 21. In figure 7A the width dimension S of inner surface section 18 of the adhesive bottle 1 is shown in more detail, and it is shown how the section 18 effectively forms an offset of the bottom of the swiping edge 33 with inner surface section 16 of the adhesive bottle. Figure 7B shows how the cap 2 and brush 21 may interact with the swiping edge 3 of the adhesive bottle 1. The brush 21 may be passed through the recess 33, thereby squeezing the brush 21.

[0038] Figures 8A-D show an example how the adhesive bottle 21 may be used. The adhesive bottle 21 contains adhesive 6. In figure 8A the brush 21 is dipped in the adhesive to apply adhesive 6 to the brush 21. In figure 8B the brush 21 is pulled out of the adhesive 6, and the brush 21 retains an amount of adhesive 61 which is more adhesive than the user would prefer. In figure 8C the brush 21 is passed through the recess 33 over the swiping edge 3 to squeeze excess adhesive 61 from the brush 21. In figure 8D the brush 21 is taken out of the adhesive bottle 1 with a lower amount of adhesive 62, with the removed, excess adhesive 63 remaining on the swiping edge 3, gradually dripping back into the main volume of adhesive 6. Steps 8C and 8D may be repeated as desired by the user to arrive at the desired amount of adhesive on the brush 21.

[0039] Figure 9 shows a range of differently sized adhesive bottles 1a-1d. The holding volume of the adhesive bottles gradually increases from 1a through to 1d. In this intended embodiment, the necks 14a-14d of the respective adhesive bottles 1a-1d possess the same dimensions. Consequentially, the same cap 2 may be used for varying sizes of adhesive bottle 1. Similarly the dimensions of the swiping edge 3 are identical for all sizes, allowing the use of the same size of brush 21. As the height of the adhesive bottle 1 increases as the overall size of the bottle 1 increases, it is preferred that larger sizes of bottle 1 are combined with caps 2 comprising a longer brush stalk 25, so that the brush may reach the bottom of the bottle 1 for each size of bottle 1a-1d, allowing the brush 21 to access substantially all adhesive in the bottle 1. The leftmost cap assembly 2 comprises a short variation of stalk 25, making it compatible with the smallest size of bottle 1a. The rightmost cap assembly 2 comprises a longer stalk 25 to make it compatible with the largest size of bottle 1d.

[0040] The present invention is not limited to the embodiments shown, but extends also to other embodiments falling within the scope of the appended claims. Other embodiments, for example wherein the bottle comprises an outer bottle, for example a metal bottle, and an insert comprising the protruding member according to the present invention.

Claims

1. Adhesive bottle comprising a bottom wall and a sidewall defining holding volume for adhesive, wherein the upper part of the sidewall defines an opening and is provided with a connection mechanism for connecting to a cap provided with an applicator for adhesive, wherein the adhesive bottle comprises at least one protruding member arranged on an internal surface of the sidewall defining a swiping edge for swiping adhesive from the applicator.
2. Adhesive bottle according to claim 1, wherein the protruding member has a varying width, seen with respect to the internal surface of the sidewall.
3. Adhesive bottle according to claim 1 or 2, wherein, seen in a top view into the opening, the protruding member protrudes into the opening.
4. Adhesive bottle according to claim 3, wherein in top view, the opening including the protruding member is rotationally asymmetric.
5. Adhesive bottle according to any of the preceding claims, wherein the protruding member comprises a recess for receiving the applicator of the cap.
6. Adhesive bottle according any of the previous claims, wherein the bottle comprises a neck which forms the opening of the bottle, wherein an inner diameter of the neck is smaller than a diameter of the holding area, wherein the at least one protruding member is arranged on the inside surface of the neck.
7. Adhesive bottle according to any of the preceding claims, wherein the adhesive bottle has a substantially cylindrical shape, wherein the bottle comprises at least one protrusion provided on the cylindrical outer surface.
8. Adhesive bottle according to claim 7, wherein the at least one protrusion defines a substantially flat surface on the outside of the bottle oriented substantially parallel to the centre axis of the bottle.
9. Adhesive bottle according to claim 7 or 8, wherein the at least one protrusion comprises at least two sur-

faces with a segment oriented substantially parallel to the centre axis of the jar, wherein at least one surface of the at least one protrusion is oriented at an angle smaller than 45 degrees relative to a radial emanating from the centre axis of the jar.

10. Adhesive bottle according to any of the preceding claims, additionally comprising a cap comprising a second connecting mechanism cooperating with the connection mechanism for removably connect the cap to the bottle, wherein the cap is arranged to interact with the bottle to form an enclosed volume.
11. Adhesive bottle according to claim 10 wherein the applicator is arranged on the cap, wherein the applicator comprises a brush member, wherein the brush member comprises a centre axis and a plurality of brush hairs forming a brush, wherein the plurality of brush hairs extend substantially radially from the centre axis.
12. Adhesive bottle according to at least claims 5 and 11, wherein the brush is substantially circular in a plane perpendicular to the centre axis of the centre axis of the brush, defining a maximum diameter and radius, wherein the radius of the brush is larger than a radius of a curvature of the recess.
13. Adhesive bottle according to at least claim 10, wherein the outside surface of the cap forms a substantially cylindrical surface parallel to the centre axis of the cap, wherein the centre axis of the cap is oriented substantially parallel to the centre axis of the bottle when the cap interacts with the bottle, wherein the outside surface of the cap is provided with a plurality of ribs extending substantially parallel to the cylindrical surface, wherein at least one of the ribs extends under a non-zero angle with respect to the centre axis of the cap.
14. Cap arranged to cooperate with a bottle according to any of the preceding claims, wherein the cap comprises a second connecting mechanism cooperating with a connection mechanism for removably connect the cap to a bottle, wherein the cap is arranged to interact with the bottle to form an enclosed volume, wherein the cap comprises an applicator for adhesive, wherein the applicator comprises a brush member.
15. Cap according to claim 14, wherein the outside surface of the cap forms a substantially cylindrical surface parallel to the centre axis of the cap, wherein the centre axis of the cap is oriented substantially parallel to the centre axis of the bottle when the cap interacts with the bottle, wherein the outside surface of the cap is provided with a plurality of ribs extending substantially parallel to the cylindrical surface,

wherein at least one of the ribs extends under a non-zero angle with respect to the centre axis of the cap.

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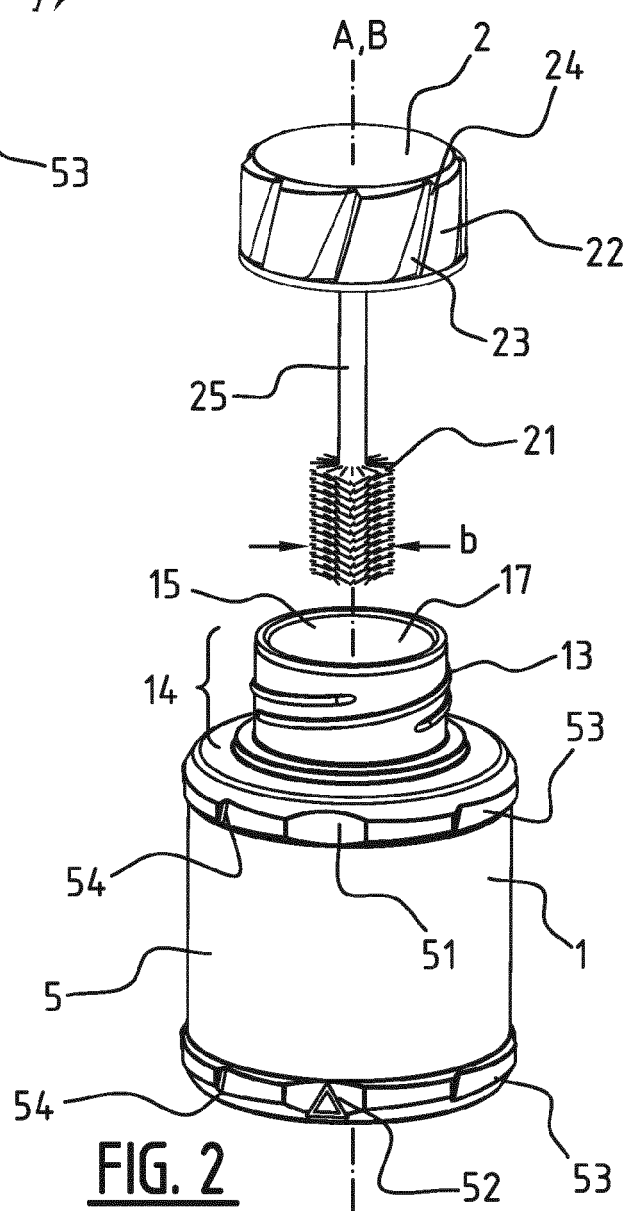
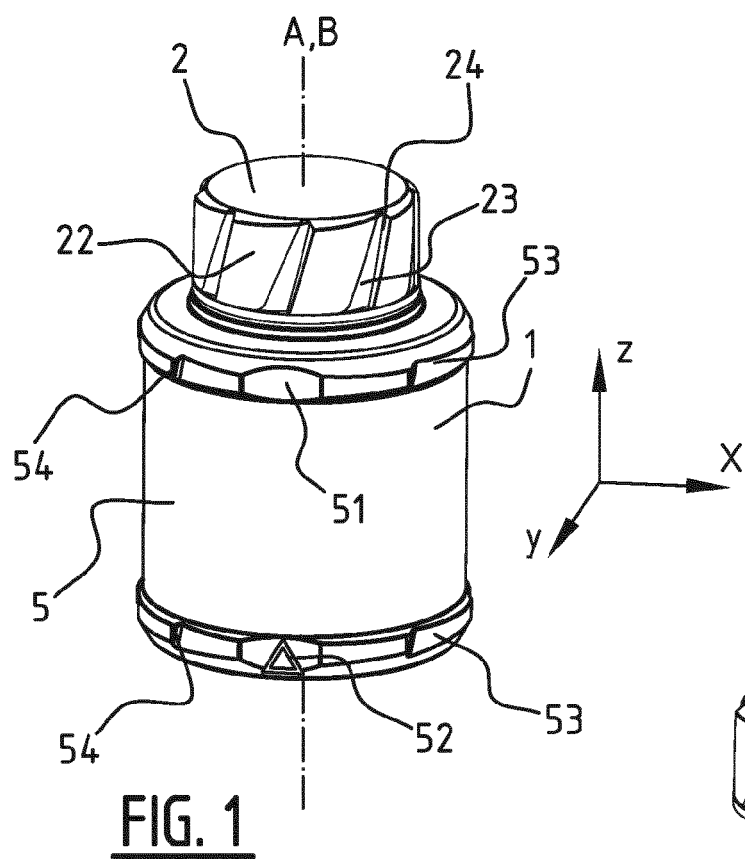
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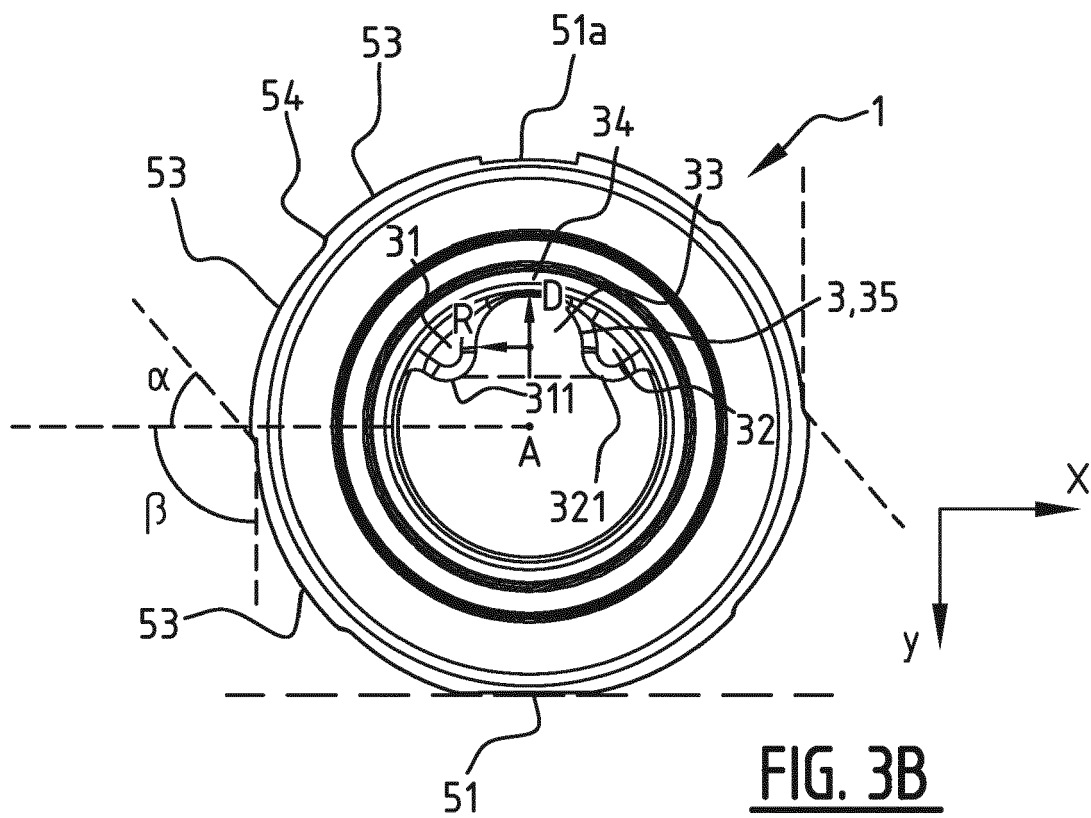
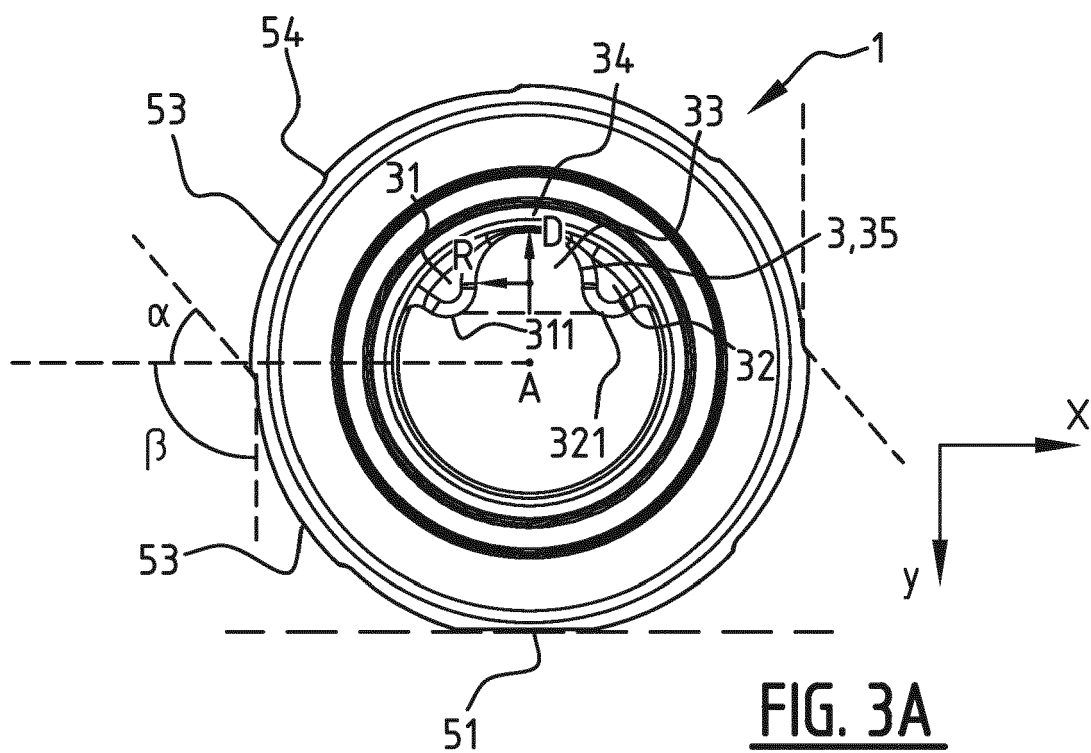
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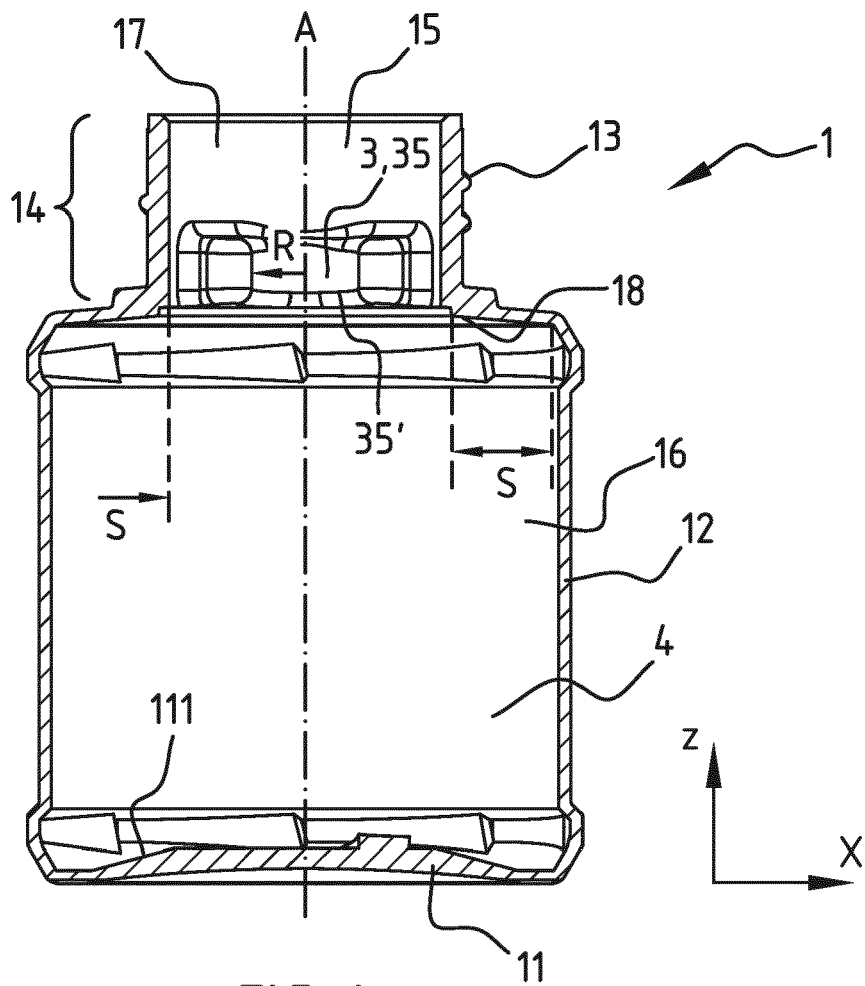
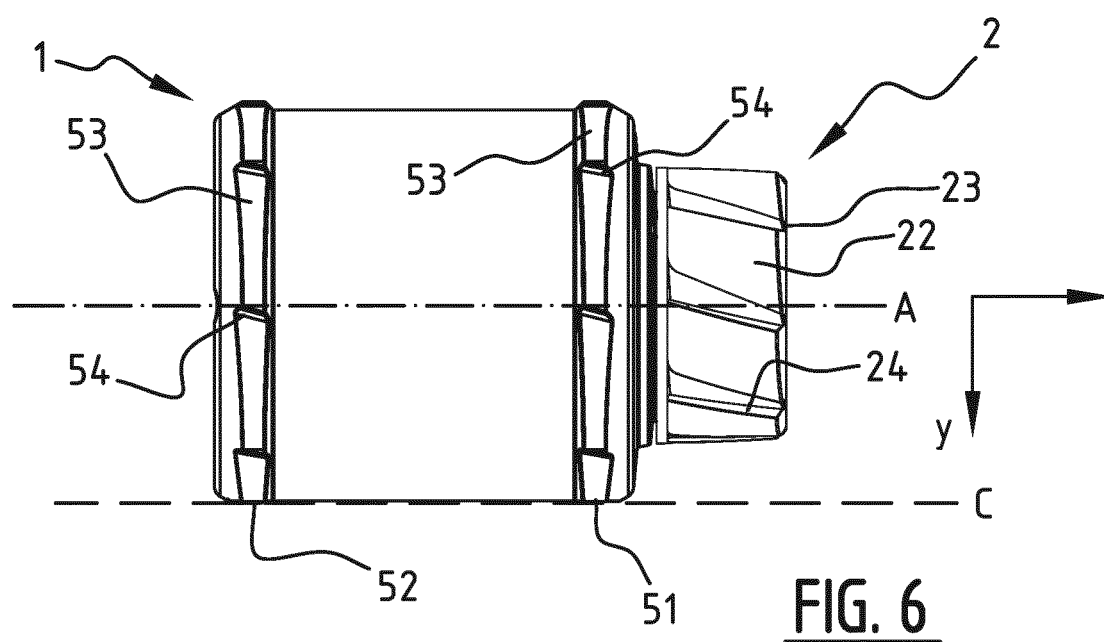
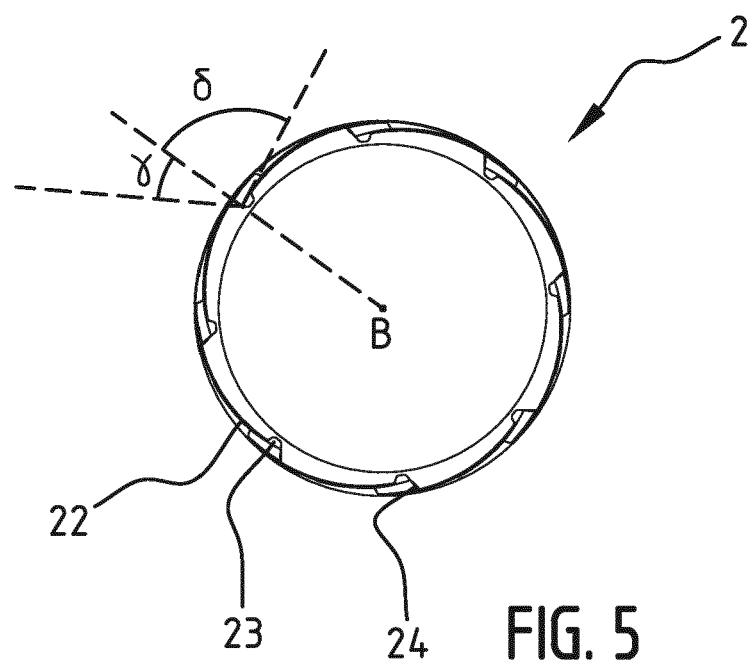
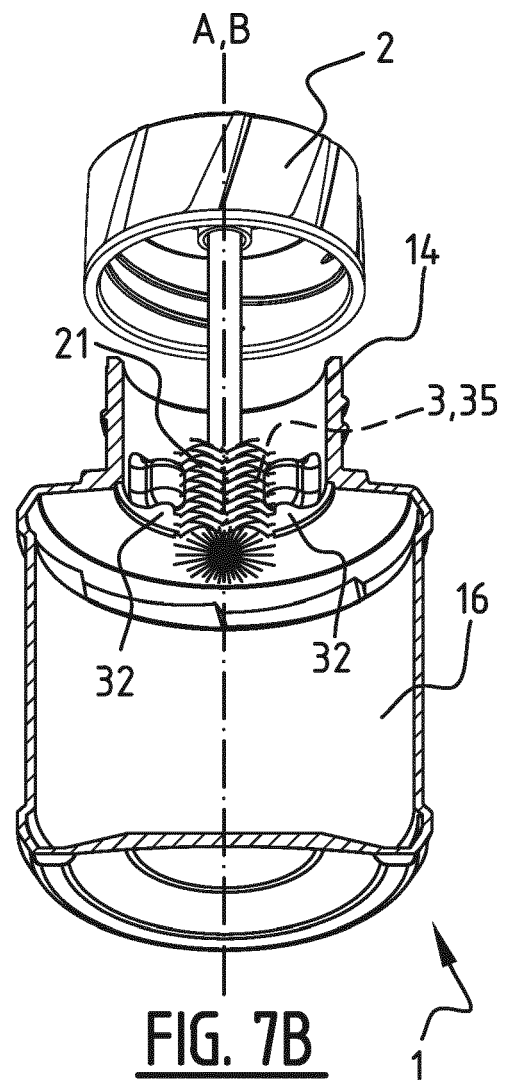
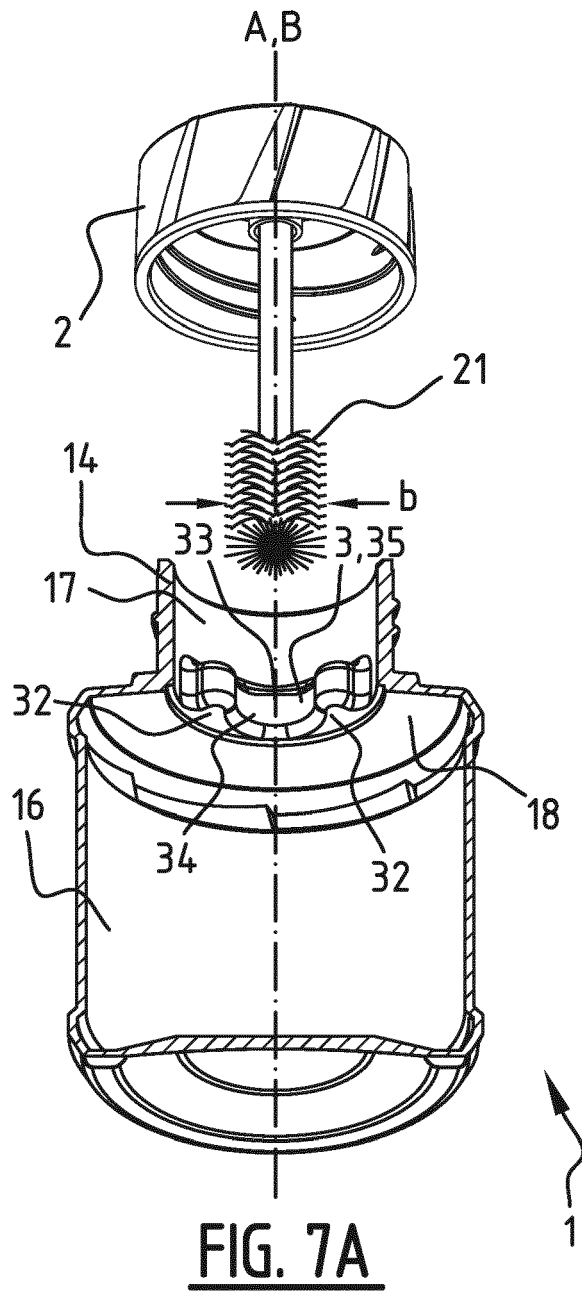


FIG. 4





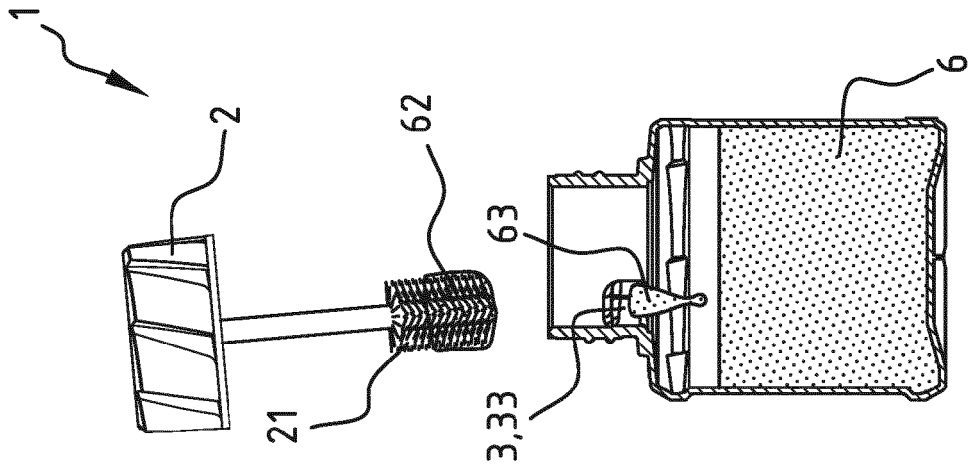


FIG. 8D

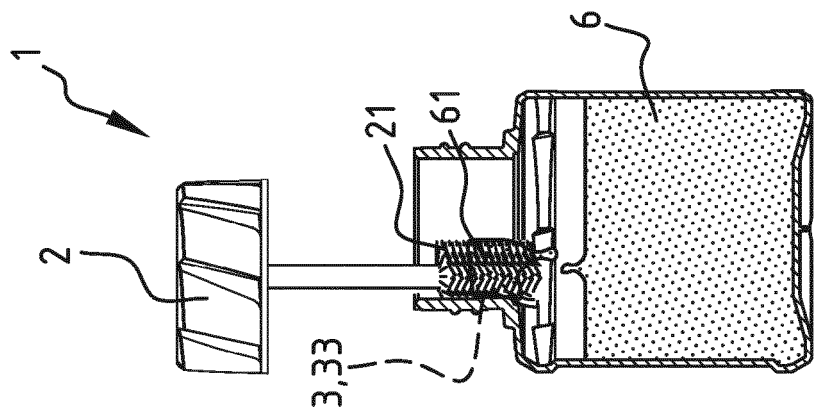


FIG. 8C

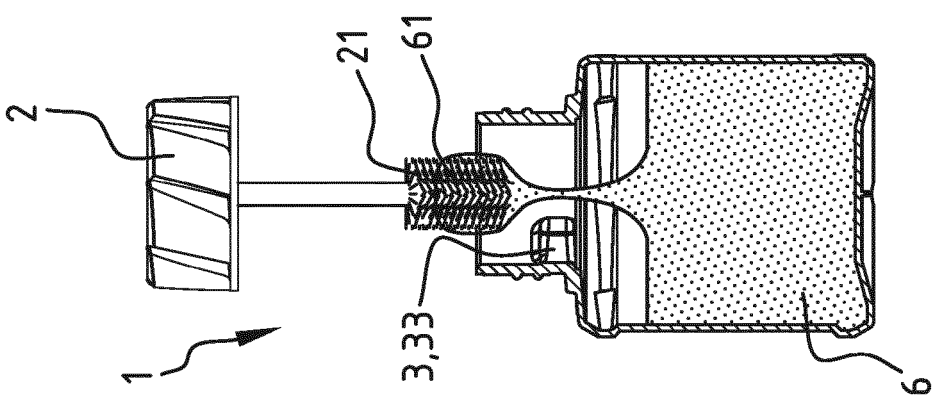


FIG. 8B

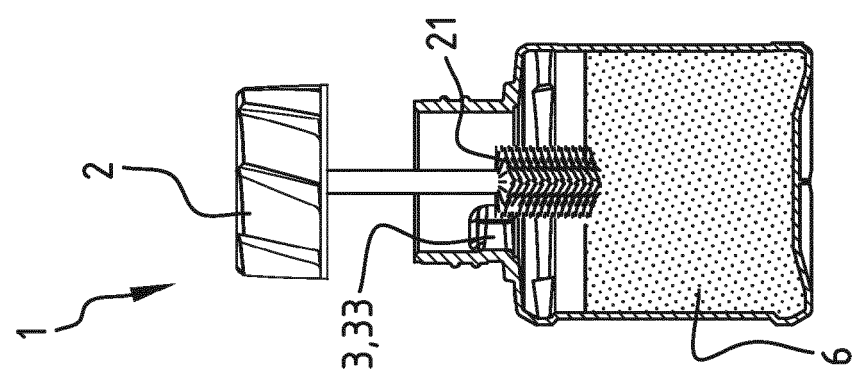


FIG. 8A

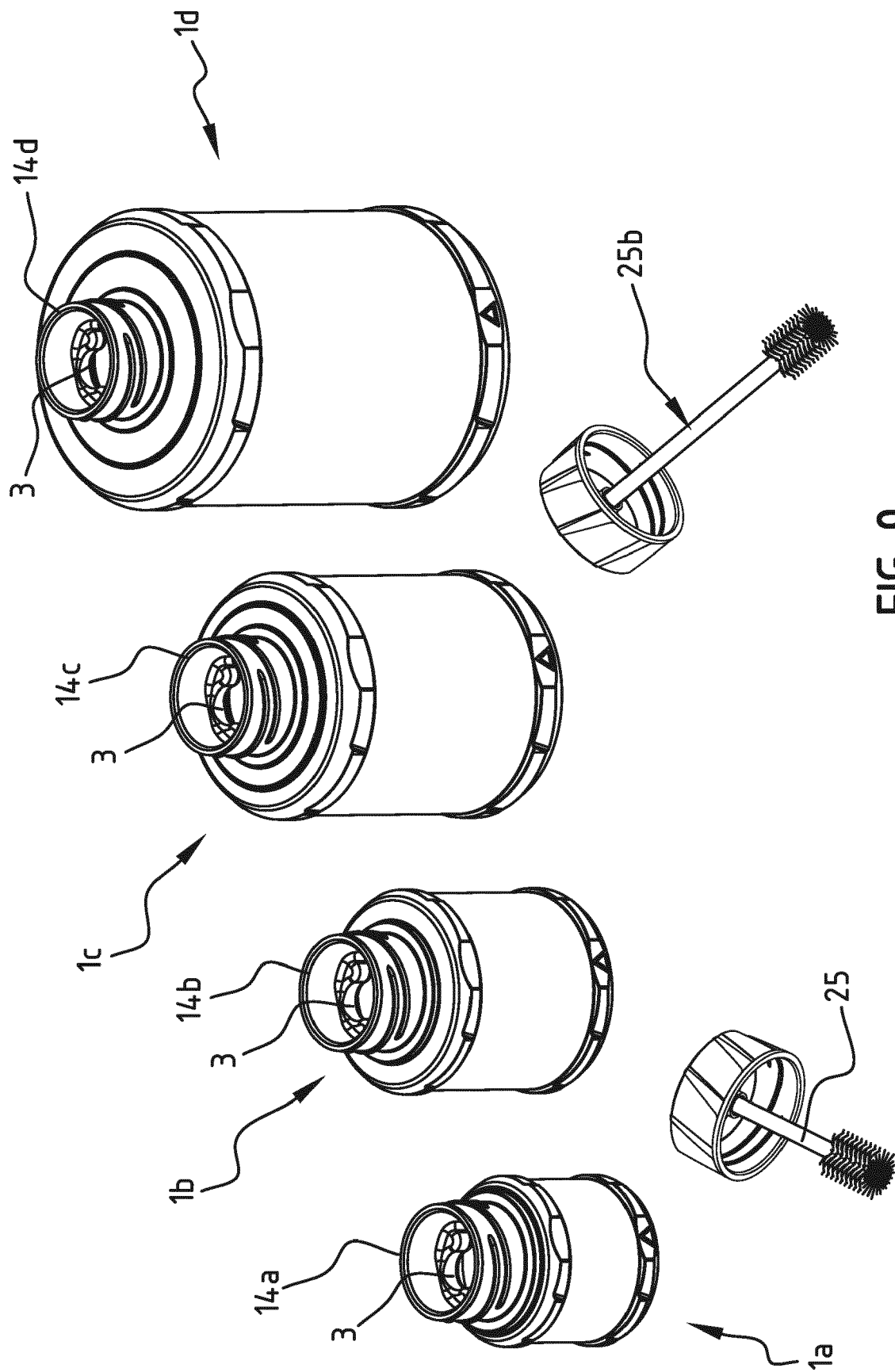


FIG. 9



EUROPEAN SEARCH REPORT

Application Number

EP 23 18 7262

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	CN 205 633 549 U (ZHANG ZHIJIA) 12 October 2016 (2016-10-12)	1-6, 10, 14	INV. B65D51/32
Y	* page 2, paragraph 19-24 * * figures 1-4 *	7-9, 11-13, 15	
X	US 7 854 561 B1 (AMMONS JAMES [US] ET AL) 21 December 2010 (2010-12-21)	1-6, 10, 14	
Y	* column 3, line 17 - column 6, line 42 * * figures 1-9B *	7-9, 11-13, 15	
X	FR 2 739 080 A1 (OREAL [FR]) 28 March 1997 (1997-03-28)	1-6, 10, 14	
Y	* page 1, lines 1-3 * * page 4, line 26 - page 6, line 18 * * figures 1-5 *	11-13, 15	
X	DE 426 460 C (FRITZ MUNDORF) 12 March 1926 (1926-03-12)	1-6	
	* page 1, column 2, line 26 - page 2, column 2, line 39 * * figures 1-5 *		TECHNICAL FIELDS SEARCHED (IPC)
Y	FR 3 111 123 A1 (SIDEL PARTICIPATIONS [FR]) 10 December 2021 (2021-12-10)	7-9	B65D
	* page 7, paragraph 90 - page 10, paragraph 131 * * figures 1-4 *		
Y	US 6 305 385 B1 (SZEKELY ALEX [US]) 23 October 2001 (2001-10-23)	11, 12	
	* column 2, line 19 - column 3, line 2 * * figures 1, 2 *		
Y	JP 2005 082153 A (FUJIKI JUNKO) 31 March 2005 (2005-03-31)	13, 15	
	* figures 1-3 *		
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		8 April 2024	Piolat, Olivier
CATEGORY OF CITED DOCUMENTS		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	
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			

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Application Number

EP 23 18 7262

CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

EP 23 18 7262

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-6**Adhesive bottle with an internal swiping edge**
---**2. claims: 7-9****Adhesive bottle with an outer protrusion**
---**3. claims: 10-15****Adhesive bottle with a cap**

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

EP 23 18 7262

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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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

08-04-2024

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