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(54) **BOTTLE NECK OVERCAP**

(57) Overcap (10) for a bottle neck (50) having a centre line (15) and a mouth (55) closed by a cork (60), screw cap, bung or other form of closure to provide a tamper-evidence cover for the closure. The overcap (10) comprises a cap portion (4) having a top transverse surface (6) and an adjacent short cylindrical skirt (8), a cylindrical jacket portion (2) adjacent to said skirt (8) of the cap portion (4) and a weakening line (20) between said two portions (2, 4) of the overcap (10), wherein apart from the weakening line (20) the overcap (10) has a smooth or embossed surface. The weakening line (20) is a circumferential line of the overcap (10) having at least a compressed line part and a slit (30, 35), the weakening line (20) surrounds the bottle neck (50) and runs at least partly perpendicular to the centre line (15), wherein the slit (30, 35) has a length and a width that allows the introduction of a knife blade (63) or a fingernail (65).

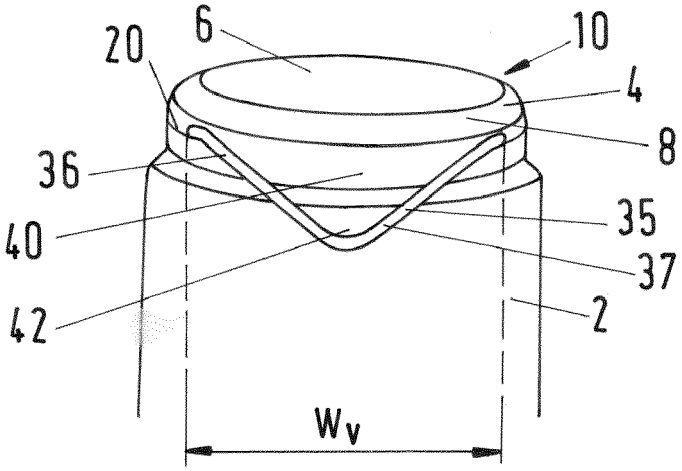

Fig.2

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Description

[0001] The invention relates to an overcap for a bottle neck having a centre line and a mouth closed by a cork, screw cap, bung or other form of closure to provide a tamper-evidence cover for the closure, wherein the overcap is a cup-shaped film comprising a cap portion having a top part arranged transversely to the centre line and an adjacent short cylindrical skirt, a cylindrical jacket portion adjacent to said skirt of the cap portion and a weakening line between said two portions of the overcap, wherein apart from the weakening line the overcap has a smooth or embossed surface.

[0002] Known overcaps for bottle necks having a mouth closed by a cork, screw cap or bung providing a tamper-evidence cover for those closures either have a tear strip or tear band for removing a head part of the overcap to open a bottle with e.g. a corkscrew, or a head part of the overcap has to be cutted away using a knife.

[0003] US 5,222,616 describes a metallic sealing or closure cap comprising a skirt having a thickness between 0.06 and 0.4 mm, and including two annular tearing lines defining therebetween a tearable tab, wherein each tearing line is defined by a cut having a bottom wall of thickness at most equal to 70% of the thickness of said skirt, and a series of alternating reliefs and recesses external to the cut, oriented oblique to the cut and directed toward the cut in the direction of tearing of the tab, said tab has no areas of recess and relief located therein.

[0004] GB-A-835 680 describes a bottle cap in which the edge part is provided with a circumferential tear-off strip which carries on its one side two rows of oblique punches.

[0005] FR-A-395 513 describes a capsule having a lid portion, a peripheral portion and a tear strip, the transition between the tear strip and the lid portion as well as the edge portion is defined by two parallel rows of perforations.

[0006] US 5,662,232 describes a capsule for a bottle neck, comprising a cap portion, a skirt portion and a tearable guarantee strip connecting said cap portion and said skirt portion. The tearable guarantee strip comprises weakening lines formed respectively at the boundary between the tearable guarantee strip and the cap portion and at the boundary between the tearable guarantee strip and the skirt portion. The tearable guarantee strip further comprises an under weakening line formed at the boundary between the tearable guarantee strip and the skirt portion having a linear compressed part extending along the boundary between the tearable guarantee strip and the skirt portion and saw-tooth-like compressed parts serrating from the linear compressed part into the tearable guarantee strip, wherein the saw-tooth-like compressed parts are compressed to a greater extent than the linear compressed part.

[0007] The tear strips or tear bands usually lead to ridges or burrs on the remaining parts of the edge area of the overcap remaining on the bottle neck and hence involve a risk that the skin of a person may be injured.

[0008] The aim of present invention is to avoid the need of use of a knife for cutting away a top part of an overcap to access the cork, screw cap or bung closing the mouth of a bottle neck. A further object of present invention is to provide an overcap, especially one made of aluminium or tin or a polymer coated metallic film made aluminium or tin, in which burrs which would cause any finger to feel pain or to be injured, are not formed after removing a top part of the overcap.

[0009] Said objects of present invention are solved by providing an overcap for a bottle neck having the features described in claim 1. Preferred embodiments of the overcap are described in the claims depending on claim 1.

[0010] The inventive overcap is provided for a tamper-evidence cover of a bottle neck having a centre line and a mouth closed by a cork, screw cap, bung or other form of closure. Said overcap is preferably a cylindrical or conical cup-shaped capsule crimped onto a bottle neck in that the contour of the overcap corresponds to the outer contour of the bottle neck sealed with a cork, screw cap or bung. The overap basically comprises a cap portion at the top of the capsule and a jacket portion to be arranged around the bottle neck. The cylindrical or conical cup-shaped capsule means that the jacket of the overcap has either the form of a hollow cylinder or a hollow truncated cone.

[0011] The overcap comprises a cap portion having a top transverse surface running perpendicularly to the centre line and an adjacent short cylindrical skirt, a cylindrical jacket portion adjacent to said skirt of the cap portion and a weakening line between said two portions of the overcap. Apart from the weakening line the overcap has a smooth or embossed outer surface. An embossed surface of the overcap preferably is applied for decorative purposes.

[0012] The weakening line is a circumferential line of the overcap comprising at least a compressed line part and a slit. The compressed line part preferably has the form of a continuous partly circumferential thinning running around the bottle neck. When the capsule is applied to a bottle neck, the weakening line surrounds the bottle neck and runs at least partly perpendicular to the centre line, wherein the slit has a length and a width that allows the introduction of a knife blade or a fingernail.

[0013] A preferred overcap has a slit in the form of a ring segment that is arranged perpendicular to the centre line of the bottle neck and runs along a part of the weakening line. Said slit may have the shape of an oblong hole or window. The slit has a preferred length of between 2 to 30 mm and a preferred width of between 0.2 to 4 mm.

[0014] A further preferred overcap has a slit in a V-shaped form of two straight-line sections including an acute angle, wherein said slit is arranged to form preferably an equilateral triangle of the skirt of the cap portion as a grasping tab protruding from a weakening line part running perpendicularly to the centre line in a direction parallel to the centre line and having a free end directed

to the bottom of the overcap, wherein there is a smooth junction between the weakening line lying perpendicularly to the centre line and the straight-line sections of the slit, and the two straight-line sections of the slit have a round transition area between them. This slit has a preferred slitting width of between 0.2 and 4 mm. The width of the V-shaped slit measured in a plan view at the transition area between the slit and the circumferential weakening line part arranged perpendicularly to the centre line preferably measures between 10 mm and the dimension of the diameter of the cap portion.

[0015] In a further preferred embodiment, the weakening line is a continuous circumferential line around the capsule which disconnects the cap portion and the jacket portion of the overcap and comprises a predefined number of longitudinal incisions and/or a perforated line part. Consequently, the weakening line may comprise incisions in the sense of cuts, perforated lines and compressed lines in the sense of thinned lines as well as the broader slit. The weakening line of the overcap comprises preferably between two and six, in particular between one and six,in particular between one and four incisions or cuts having a predefined length. The optimal number of incisions depend on the thickness and the material composition of the film used for the overcap. Apart from said incisions and the slit, the weakening line is a perforated line or preferably a longitudinal compressed line.

[0016] The thickness of the overcap along the compressed line is preferably between 10% and 60% of the film thickness of the overcap lying adjacent to the weakening line.

[0017] When used as tamper-evidence cover of a closed mouth of a bottle, the overcap is crimped onto the bottle neck. When removing the cap portion of the overcap, the jacket portion remains crimped onto the bottle neck.

[0018] The design of the weakening line allows the cap portion of the overcap to be peeled off from the cylindrical jacket portion along the weakening line. The design of the weakening line is preferably such that the peeling can be done by applying a peeling strength of between 1 to 10 N, in particular between 1 and 4 N. Said peeling strength is comparable to the peeling strength used for opening a yoghurt cup.

[0019] The overcap is preferably made of aluminium or tin, or is made of a polymer coated metallic film made of aluminium or tin.

[0020] Apart from the weakening line, the overcap preferably has a film thickness of between 10 μm and 200 μm.

[0021] A further preferred embodiment of the overcap comprises a cap portion whose film thickness is thicker than that of the cylindrical jacket portion. This allows an easier and more efficienct removing of the cap portion of the overcap due to the difference of tearing resistance between the cap and cylindrical jacket portions. Hence, said difference of thickness provides a better efficiency of tearing or breaking the weakening line when the consumer pulls on the cap portion. In this case the film thickness of the cap portion is 30% or more thicker than the cylindrical jacket portion and preferably has a film thickness of between 100 μm and 300μm.

[0022] The overcap is a conical or cylindrical cup-shaped capsule crimped onto a bottle neck in that the contour of the overcap corresponds to the outer contour of the bottle neck with its closure. The overcap is preferably crimped onto the bottle neck using a plastic roller which runs around the overcap placed on the bottle neck and flattens the capsule against the bottle neck.

[0023] The invention will now be described by way of examples and with reference to the accompanying drawings in which:

Figure 1 shows a perspective view of an overcap having a weakening line comprising a slit in the form of a ring segment along a part of the weakening line;

Figure 2 shows a perspective view of an overcap having a weakening line comprising a V-shaped slit;

Figure 3 shows a perspective side view of the overcap presented in fig. 2;

Figure 4 shows the peeling process of a cap portion of an overcap comprising a V-shaped slit;

Figure 5 shows the peeling process of a cap portion of an overcap comprising a slit in the form of a ring segment along a part of the weakening line; Figures 1 to 3 show a bottle neck 50 having a mouth 55 closed by a cork 60 and having an overcap 10 as a tamper-evidence cover. The overcap 10 is crimped over the bottle neck 50 in a way that its contour corresponds to that of the bottle neck 50, i.e. the inner surface of the overcap 10 is flush with the outer surface of the bottle neck 50. The outer surface of the overcap 10 is smooth except at the weakening line 20. The overcap 10 comprises a cap portion 4 and a cylindrical jacket portion 2. Between said two portions 2, 4 of the overcap 10 there is a weakening line 20. The cap portion 4 is the portion of the overcap 10 at the top of the bottle neck 50 and lies adjacent to the mouth 55 of the bottle neck 50 that is closed by a cork 60. The cap portion 4 comprises a top transverse part 6 and an adjacent short cylindrical skirt 8 covering a rim of the bottle neck 50. The cylindrical jacket portion 2 covers an upper part of the bottle neck 50 and is much longer than the cylindrical skirt 8 of the cap portion 4.

[0024] Figure 1 shows an overcap 10 having a circum-

ferential weakening line 20 surrounding the bottle neck 50 perpendicularly to the centre line 15 of the bottle neck 50. The weakening line 20 shown in fig. 1 comprises a slit 30 in the form of a ring segment running along a part of the weakening line 20. The slit 30 has a width that allows the introduction of a knife blade 63. The slit 30 pierces the whole thickness of the overcap film 10.

[0025] The weakening line 20 shown in fig. 1 further has a number of longitudinal incisions segments 25 running along the weakening line 20, wherein in the view of fig. 1 two incisions 25 can be identified. Said incisions 25 encompass the whole thickness of the overcap film, i.e. they run from the outer surface of the overcap 10 through the overcap film until the outer surface of the bottle neck 50. The incisions 25 have a width that is much smaller than that of the slit 30, wherein the width of the incisions 25 amounts typically to about 0.05 mm to 0.8 mm.

[0026] Apart from the slit 30 and the incisions 25, the weakening line 20 consists of a longitudinal compressed line having about the same width as have the incisions 25, or is thinner.

[0027] Figure 2 shows an overcap 10 having a circumferential weakening line 20 partly surrounding the bottle neck 50 perpendicularly to the centre line 15 of the bottle neck 50 and having a V-shaped slit 35 in the form of two connected straight-line sections 36, 37 including an acute angle. The weakening line 20 is formed by a partially circumferential line running perpendicularly to the centre line 15 consisting of a thinned/ compressed line part and a slit 35 having a length and width for introducing a knife blade 63 or a finger nail 65. Said slit 35 forms an equilateral triangle of the skirt 8 of the cap portion 4 as a grasping tab 40 protruding from said weakening line part 20 running perpendicularly to the centre line 15 in a direction parallel to the centre line 15 of the bottle neck 50 and having a free end 42 directed to the bottom 11 of the overcap 10. The junction between the partially circumferential weakening line 20 consisting of a compressed line running perpendicularly to the centre line 15 and the straight-line sections 36, 37 of the slit 35 as well as the junction between the two straight-line sections 36, 37 at the free end 42 of the grasping tab 40 are smooth and show a round transition area. The grasping tab 40 lies free, i.e. is not bonded to the bottle neck 50, but is close-fitted to the bottle neck 50 due to the stiffness of the overcap material. The slit 35 has a width that allows the introduction of a fingernail 65 to detach the grasping tab 40 from the bottle neck 50. The slit 35 encompasses the whole thickness of the overcap film.

[0028] Figure 3 shows a perspective side view of the overcap 10 presented in fig. 2. One straigth-line section 37 of the slit 35 can be seen as well as the adjacent weakening line part 20 consisting of a thinned compressed line running perpendicular to the centre line 15 of the bottle neck 50.

[0029] Figure 4 shows the peeling process of a cap portion 4 of an overcap 10 comprising a V-shaped slit 35 in the form of two connected straight-line sections 36, 37 including an acute angle. The closed overcap 10 presented on the left side of fig. 4 corresponds to the overcap 10 shown in figs. 2 and 3. The opening or peeling process starts from the left figure shown in fig. 4 and ends up on the figure shown on the right side of fig. 4. In a first step, the triangle 40 of the skirt portion 8 or the grasping tab 40 is detached from the bottle neck 50 as shown in the second figure from the left side. The direction of detachment is shown by the arrow 70. In a second step, the cap portion 4 is peeled off from the cylindrical jacket 2 by raising the grasping tab 40 as shown in the third figure from the left side. The peeling process is continued until the whole cap portion 4 is detached from the jacket portion 2 as shown in the figure on the right side of fig. 4. The moving direction of the hand used for peeling off the cap portion 4 of the overcap 10 is shown by arrows 70.

[0030] Figure 5 shows the peeling process of a cap portion 4 of an overcap 10 comprising a slit 30 in the form of a ring segment along a part of the weakening line 20. The closed overcap 10 presented on the left side of fig. 5 mainly corresponds to the overcap 10 shown in fig. 1. For peeling off the cap portion 4 from the jacket portion 2 a knife blade 63 is introduced into the slit 30 in the form of a ring segment along the weakening line 20 and the knife blade 63 is then raised in the direction of the arrow 70 in order to peel off the cap portion 4 from the jacket portion 2 until the cap portion 4 is fully detached from the jacket portion 2 as shown on the right drawing of fig. 5.

Claims

1. Overcap (10) for a bottle neck (50) having a centre line (15) and a mouth (55) closed by a cork (60), screw cap, bung or other form of closure to provide a tamper-evidence cover for the closure, the overcap (10) is a cup-shaped film comprising a cap portion (4) having a top part (6) arranged transversely to the centre line (15) and an adjacent short cylindrical skirt (8), a cylindrical jacket portion (2) adjacent to said skirt (8) of the cap portion (4) and a weakening line (20) between said two portions (2, 4) of the overcap (10), wherein apart from the weakening line (20) the overcap (10) has a smooth or embossed surface,
characterised in that
the weakening line (20) is a circumferential line of the overcap (10) comprising at least a compressed line part and a slit, the weakening line (20) surrounds the bottle neck (50) and runs at least partly perpendicular to the centre line (15), wherein the slit (30, 35) has a length and a width that allows the introduction of a knife blade (63) or a fingernail (65).

2. Overcap (10) according to claim 1, **characterised in that** the slit (30) is part of the weakening line (20) running perpendicular to the centre line (15) and has the form of a ring segment that is arranged perpendicular to the centre line (15) of the bottle neck (50).

3. Overcap (10) according to claim 2, **characterised in that** the slit (30) has a length of between 2 to 30 mm and a width of between 0.2 to 4 mm.

4. Overcap (10) according to claim 1, **characterised in that** the slit (35) has a V-shaped form of two straight-line sections (36, 37) including an acute angle, wherein said slit (35) is arranged to form an equilateral triangle (40) of the skirt (8) of the cap portion (4) as a grasping tab (40) protruding from a weakening line part (20) running perpendicularly to the centre line (15) in a direction parallel to the centre line (15) and having a free end (42) directed to the bottom (11) of the overcap (10), wherein there is a smooth junction between the weakening line part (20) lying perpendicular to the centre line (15) and the straight-line sections (36, 37) of the slit, and the two straight-line sections (36, 37) of the slit (35) have a round transition area between.

5. Overcap (10) according to claim 4, **characterised in that** the slit (35) has a width of between 0.2 and 4 mm.

6. Overcap (10) according to claim 4 or 5, **characterised in that** the width Wv of the V-shaped slit (35) measured in a plan view at the transition area between the slit (35) and the circumferential weakening line part (20) arranged perpendicularly to the centre line (15) measures between 10 mm and the dimension of the diameter of the cap portion (4).

7. Overcap (10) according to one of claims 1 to 6, **characterised in that** the weakening line part (20) running perpendicularly to the centre line (15) comprises a predefined number of longitudinal incisions (25) and/or a perforated line part.

8. Overcap (10) according to claim 7, **characterised in that** the weakening line part (20) running perpendicularly to the centre line (15) comprises between one and six, in particular between one and four incisions (25) or cuts.

9. Overcap (10) according to one of claims 1 or 8, **characterised in that** the cap portion (4) is peelable from the cylindrical jacket portion (2) along the weakening line (20) having a peeling strength between 1 to 10 N, in particular between 1 and 4 N.

10. Overcap (10) according to one of claims 1 or 9, **characterised in that** the overcap (10) is made of a film consisting of aluminium or tin, or is made of a polymer coated metallic film made of aluminium or tin.

11. Overcap (10) according to one of claims 1 to 10, **characterised in that** apart from the weakening line (20) the overcap (10) has a film thickness of between 10 μm and 100 μm.

12. Overcap (10) according to one of claims 1 to 11, **characterised in that** the film thickness of the cap portion is 30% or more thicker than that of the cylindrical jacket portion.

13. Overcap (10) according to claim 12, **characterised in that** the film thickness of the cap portion (4) is between 100 μm and 300μm.

14. Bottle neck with overcap (10) according to one of claims 1 to 13, **characterised in that** the overcap (10) is a cylindrical or conical cup-shaped capsule crimped onto a bottle neck (50) **in that** the contour of the overcap (10) corresponds to the outer contour of the bottle neck (50) with its closure (60).

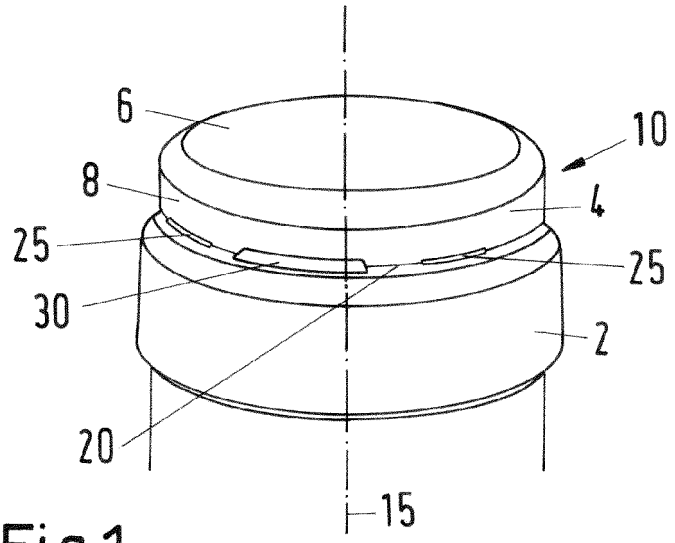

Fig.1

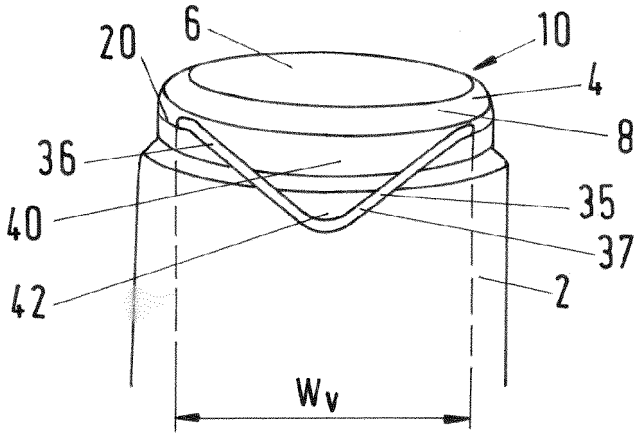

Fig.2

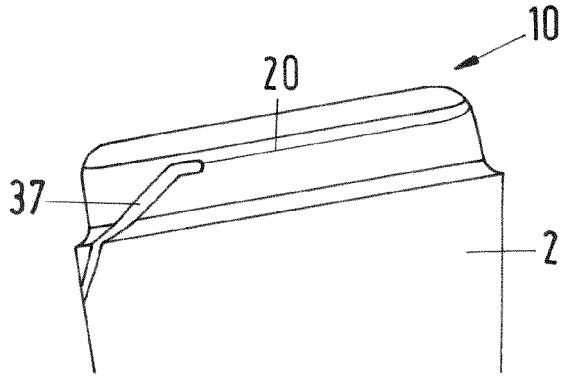

Fig.3

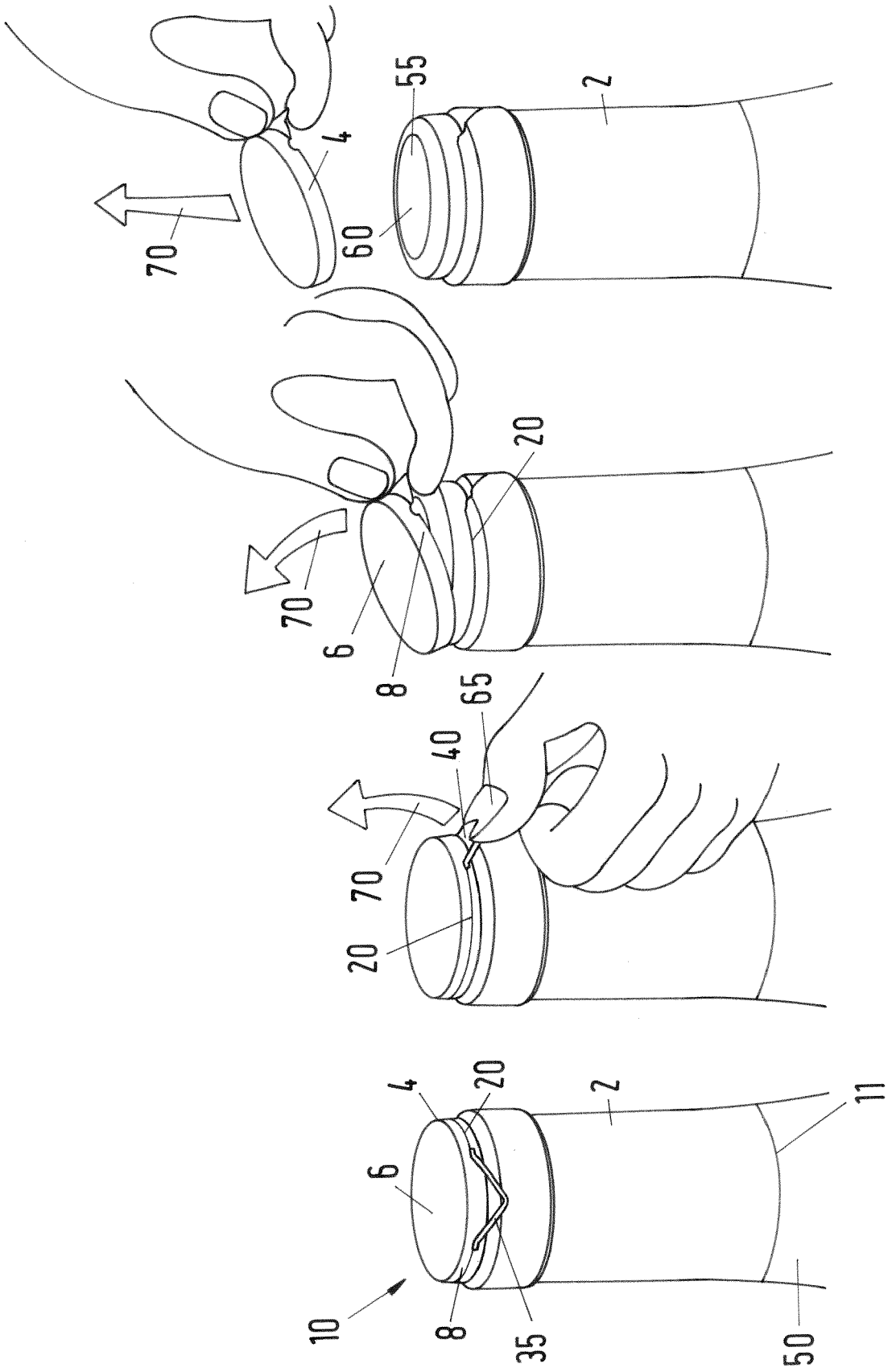

Fig.4

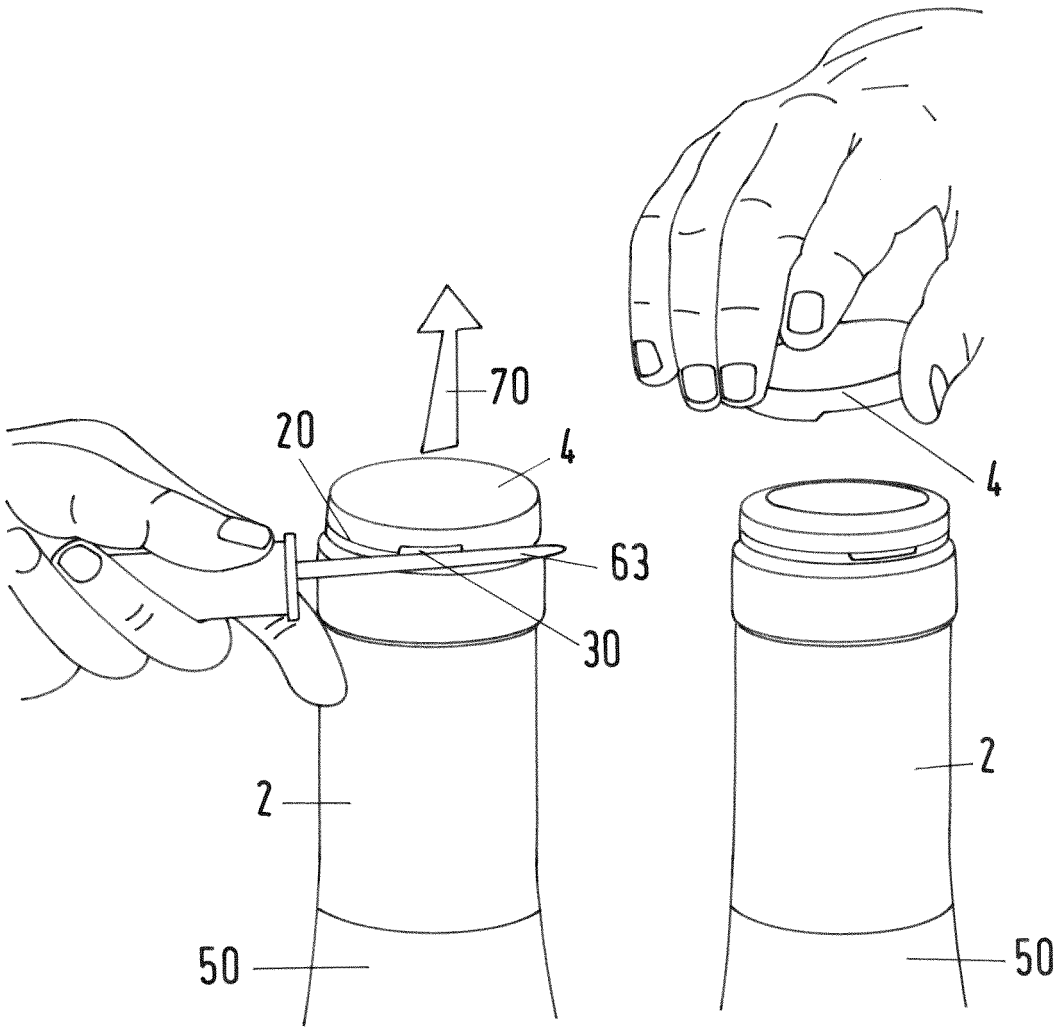

Fig.5

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EUROPEAN SEARCH REPORT

Application Number
EP 18 21 4468

DOCUMENTS CONSIDERED TO BE RELEVANT

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TECHNICAL FIELDS SEARCHED (IPC)

B65D
B21D
B31D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 July 2019	Fournier, Jacques

CATEGORY OF CITED DOCUMENTS

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

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