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(54) **SYSTEM AND ITS USE FOR OPENING A CORK CLOSURE**

(57) The invention provides a system that comprises a bottle, a cork, and an opening element, and a use of the system for opening a cork closure. The cork comprises a first portion that, when the system is in a closed

state, protrudes from the bottle, and the opening element comprises a hollow portion that is configured to receive the first portion of the cork and that has an inner thread configured to engage with the first portion of the cork.

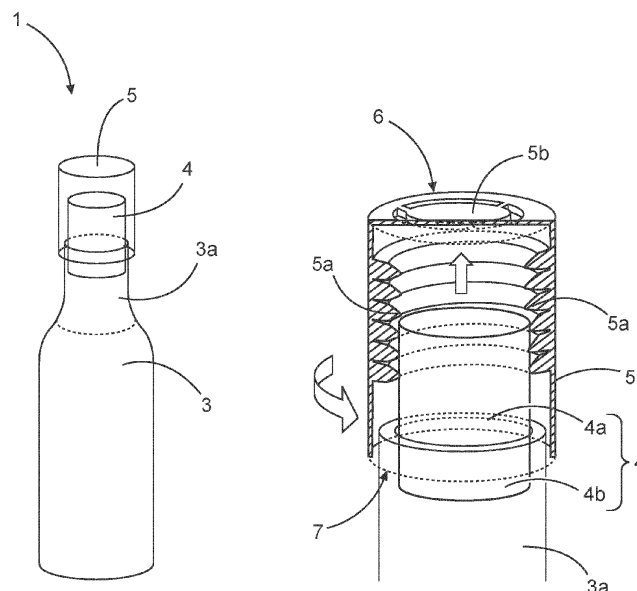


Fig. 1

Description

FIELD OF THE INVENTION

[0001] The invention pertains to a system, a use of the system for opening a cork closure, and an opening element.

BACKGROUND

[0002] Currently, cork closures are generally opened using corkscrews being drilled into the cork and pulling the cork from the bottle. Such corkscrews are generally rather bulky. They may not be readily available when needed, particularly in view of their bulkiness. They may also entail costly and/or complex fabrication.

[0003] It is an object of the present invention to provide a system and use thereof for opening a cork closure, and an opening element that address at least some of the above challenges.

SUMMARY

[0004] The object is achieved by the present invention. The invention provides a system and use thereof for opening a cork closure, and an opening element according to the independent claims. Preferred embodiments are laid down in the dependent claims.

[0005] The invention provides a system that comprises a bottle, a cork, and an opening element, wherein the cork comprises a first portion that, when the system is in a closed state, including in particular in an initial state, protrudes from the bottle, and wherein the opening element comprises a hollow portion that is configured to receive the first portion of the cork and that has an inner thread configured to engage with the first portion of the cork.

[0006] The system of the present disclosure, thus, may allow for providing an opening element that receives the upper part of the bottle and, accordingly, that hardly takes up any space. It may be made cheaply and may optionally be provided together with the bottle even on a large scale. It may also be made in such a manner as to be compatible with different cork-sizes. Moreover it may be fabricated at low cost, e.g., as a - particularly single-piece - plastic, metal, or glass element shaped by injection molding or 3D printing for example. The metal may, for example, comprise aluminum. Other materials suitable to obtain the required shape are conceivable.

[0007] The term "cork closure", according to the present disclosure is to be understood broadly and may refer to a closure of a bottle where a cork is inserted into the bottle neck so as to seal the bottle.

[0008] The term "cork", according to the present disclosure is to be understood broadly and may refer to a cork made from plastic materials and/or from natural materials.

[0009] The term "closed state", according to the

present disclosure may be understood as the state prior to the cork being fully pulled out of the bottle, i.e., a state in which at least part of the cork is still inserted in the bottle. For example, the closed state may be a state wherein the cork closure is closed.

[0010] In the present disclosure, the term "initial state" is also used, which may be seen as a specific example of a closed state. It may refer to a closed state prior to initiating the opening of the bottle, i.e., prior to initiating the pulling of the cork from the bottle. For example, this may be the state after complete assembly of the system and prior to initiating the opening, e.g. by rotating the opening element with respect to the cork. The initial state may be the state in which a user receives the system.

[0011] The opening element comprising a hollow portion that is configured to receive the first portion of the cork may, for example, entail that the opening element has an opening or a recess configured to receive the first portion of the cork. Optionally, the hollow portion may be configured to additionally receive part of the neck of the bottle.

[0012] The term "inner thread" is to be understood broadly. It may be understood as a female thread or internal thread. For example, it may be understood as being a thread arranged to extend in a helix shape along the inner face of the sidewall of the hollow portion, which may be in the shape of a hollow cylinder.

[0013] The inner thread being configured to engage with the first portion of the cork is to be understood broadly and may entail that the inner thread protrudes towards the cork and optionally is configured to be able to cut into the cork, e.g. is at least in part configured as a blade. The thread engaging with, particularly cutting into, the cork may allow for exerting force on the cork via the opening element. The thread may be configured to engage, particularly cut into, the cork in such a manner that the cork is driven into the inner thread upon relative rotation between the cork and the inner thread.

[0014] According to the present disclosure, the system, particularly the inner thread, may be configured such that a relative rotation between the cork and the opening element drives the cork into the inner thread of the opening element, thereby pulling the cork out of the bottle.

[0015] For example, the inner thread may be configured such that rotating the bottle, rotating the opening element, or rotating the cork and the bottle in opposite directions drives the cork into the inner thread of the opening element, thereby pulling the cork out of the bottle.

[0016] Providing such an inner thread provides a reliable mechanism for exerting the required force on corks of different sizes. Moreover, it can be fabricated easily and at low costs and is easy to use.

[0017] In the present disclosure, relative rotation between the bottle and the opening element may be used interchangeably with relative rotation between the cork and the opening element. This is because the cork will generally not significantly rotate relative to the bottle or

will only rotate towards the very end of the opening process.

[0018] According to the present disclosure, the inner thread may be configured such that it engages with corks of different diameters, in particular, engages in such a way that a relative rotation between the cork and the opening element drives the cork into the inner thread of the opening element, thereby pulling the cork out of the bottle.

[0019] In particular, the thread may be configured such that it is able to engage with first portions (of corks) having different diameters.

[0020] The above allows for using the same opening element with different types of corks and, accordingly, possibly different types of bottles.

[0021] According to the present disclosure, the inner thread may be configured to extend at least along part of an inner face of the sidewall of the hollow portion of the opening element.

[0022] The term "inner face of the sidewall" is to be understood broadly and may refer to the surface of the side wall facing towards the inside of the hollow portion, particularly towards the cork.

[0023] The inner thread may be configured to extend from an end of the opening element facing away from the bottle towards the bottle. The inner thread, particularly an initial state of the system, may extend from an end of the opening element facing away from the bottle at least far enough for the inner thread to engage with the cork, i.e., may extend at least to the end of the cork facing away from the bottle.

[0024] According to the present disclosure, the inner thread may extend over a length that corresponds to the length of the first portion of the cork. Alternatively, the inner thread may extend over a length that is smaller than or that exceeds the length of the first portion of the cork. This may allow for particularly reliable removal of longer corks.

[0025] According to the present disclosure, the hollow portion of the opening element may be in the shape of a hollow cylinder, the inner thread extending at least along part of the inner face of the sidewall of the hollow cylinder, or at least in part in a conical shape.

[0026] Being in the shape of a hollow cylinder, according to the present disclosure, is to be understood broadly. It may, in particular, entail a shape that comprises a base that is approximately circular, although other base shapes are also conceivable, and a sidewall that approximately describes the shape of a cylinder sidewall, particularly the sidewall of a right cylinder. In particular, the hollow portion may be in the shape of a hollow right circular cylinder.

[0027] The term "the inner face of the side wall" of the hollow cylinder is to be understood broadly and may refer to the surface of the sidewall facing towards the inside of the hollow portion, particularly towards the cork.

[0028] Such a shape may allow for a particularly compact and robust system. It may be advantageous in terms

of fabrication and handling by machines, e.g., for automatically placing and optionally fixing the opening element on top of the bottle.

[0029] According to the present disclosure, the hollow portion may be open at one end of the hollow portion to receive the cork and optionally part of the neck of the bottle, and the opening element may comprise a tamper-evidence portion that at least partially closes the hollow portion at the opposite end of the hollow portion, the tamper-evidence portion configured to be broken when the cork is driven into the inner thread.

[0030] As an example, the tamper-evidence portion may comprise one or more connection portions and a plate connected to the remaining part of the opening element by the connection portions. The connection portions may be or comprise predetermined breaking points. Connection portion(s) may comprise perforated portions and/or tabs, e.g., the tabs being predetermined breaking points.

[0031] This allows for being able to visually determine whether the cork has, at any previous time, been removed by means of the opening element, as this would have broken the tamper prevention portion. In other words, it can be determined whether the closure was opened.

[0032] The hollow portion may be in the shape of a hollow cylinder and the tamper-evidence portion may be part of the wall forming the base of the hollow cylinder, particularly the wall at the end of the hollow portion facing away from the bottle.

[0033] According to the present disclosure, the tamper-evidence portion may be configured to be broken when the cork is driven into the inner thread by more than a predetermined distance.

[0034] According to the present disclosure, the opening element may be attached to the bottle, in particular in a tamper-proof manner.

[0035] This allows for easy transport of the bottle and the opening element together and, in case of tamper-proof attachment, further allows for visually determining that the bottle has also not been opened in any other way (other than using the opening element) after attaching the opening element.

[0036] In particular, the opening element may be attached to the bottle in a manner that allows for manual removal of the opening element from the bottle, for example by means of predetermined breaking points or by attaching the opening element loosely to the bottle.

[0037] According to the present disclosure, the opening element may be configured to support holding the opening element at a steady position relative to the bottle, e.g., by being fixed to the bottle, in particular during rotation of the opening element relative to the bottle.

[0038] According to the present disclosure, the opening element may be a, e.g. single-piece, plastic element, in particular an injection-molded element or a 3D-printed element, or a, e.g. single-piece, metal element, or a, e.g. single-piece, glass element.

[0039] According to the present disclosure, the system, particularly the opening element is configured to allow for mass production of the opening element and/or mass assembly. Mass assembly may refer, for example, to assembly of at least 100 bottles and respective opening elements per hour.

[0040] This may provide a reliable and sturdy opening element, suitable for machine-handling and transport. It may also be cheap and easy to fabricate. Accordingly, an opening element suitable for mass production may be provided. Thus, for example, each bottle of wine may be delivered with an opening element attached to it previously, e.g. by a machine.

[0041] According to the present disclosure, the opening element, in an initial state of the system, may be mounted on the bottle in such a manner that a part of the inner thread is engaged with, e.g., driven into, the cork, particularly in such a manner as to fix the opening element to the cork.

[0042] Thus, the bottle may be transported together with the opening element with the opening element being secured in its position. Moreover, handling by a user may be improved by providing the system in an engaged state.

[0043] According to the present disclosure, the hollow portion may be configured to receive a part of a neck of the bottle and/or the opening element may be fixed to the neck of the bottle, particularly in a tamper-proof manner. This may allow for improved handling during transport and/or during opening of the bottle, as the opening element is steadied, from the inside, by the part of the neck. It may also allow for, e.g., tamper-proof, fixing of the opening element to the bottle.

[0044] The invention also provides use of a system according to the present disclosure for opening a cork closure.

[0045] The use comprises, by a user, carrying out a relative rotation between the bottle (and accordingly the cork) and the opening element so as to drive the cork into the inner thread of the opening element, thereby pulling the cork out of the bottle.

[0046] The relative rotation may entail that the bottle remains in a fixed position and the opening element is rotated or the opening element remains in a fixed position and the bottle is rotated. It may also entail that both the bottle and the opening element are rotated, particularly, that the bottle and the opening element are rotated in opposite directions.

[0047] The cork may be driven into the inner thread by the relative rotation between the opening element and the bottle. Such a rotation, as outlined above, is considered to entail relative rotation between the cork and the opening element for the purpose of the present disclosure.

[0048] The rotation may refer to a rotation around an axis parallel to the axis of the inner thread of the opening element, which may coincide with the longitudinal axis, e.g. cylinder axis, of the opening element.

[0049] The axis of the inner thread and/or the longitu-

dinal axis, e.g. cylinder axis, of the opening element may coincide with the longitudinal axis of the cork and/or the neck of the bottle.

[0050] The use may further comprise the user, when carrying out the relative rotation, holding the opening element at a steady position relative to the bottle. The steady position, particularly, may refer to a position in a direction along an axis parallel to the axis of the inner thread of the opening element, which may coincide with the longitudinal axis, e.g. cylinder axis, of the opening element and/or the longitudinal axis of the bottle and/or cork. Thus, the cork will move relative to the opening element and the bottle, e.g., move through the opening element, optionally breaking the tamper-evidence portion thereof by the movement. The opening element may be configured to support holding the opening element at a steady position relative to the bottle, e.g., by being fixed to the bottle.

[0051] The invention also provides an opening element comprising a hollow portion that is configured to receive a first portion of a cork protruding from a bottle and that has an inner thread configured to engage with the first portion of the cork, in particular, wherein the inner thread is configured such that a relative rotation between the cork and the opening element drives the cork into the inner thread of the opening element, thereby pulling the cork out of the bottle.

[0052] The inner thread may be configured such that it engages with corks of different diameters, in particular, engages in such a way that a relative rotation between the cork and the opening element drives the cork into the inner thread of the opening element, thereby pulling the cork out of the bottle. The opening element may be an opening element as described above in the context of the system. Accordingly, reference is made to the above-described features/configurations of the opening element.

[0053] The features and advantages outlined above in the context of the system similarly apply to the use and to the opening element described herein.

[0054] Further features, examples, and advantages will become apparent from the detailed description making reference to the accompanying drawings.

45 BRIEF DESCRIPTION OF THE DRAWINGS

[0055] In the accompanying drawings,

Figure 1 illustrates schematically and not-to-scale an oblique view of a system according to the present disclosure;

Figures 2a and 2b illustrate schematically and not-to-scale a bottom view and a top-oblique view of an opening element according to the present disclosure;

Figures 3a and 3b illustrate schematically and not-

to-scale cross-sections of part of a system according to the present disclosure;

Figures 4a to 4f illustrate schematically and not-to-scale different views of an opening element according to the present disclosure.

DETAILED DESCRIPTION

[0056] Figures 1 to 4 illustrate schematically different views of a system 1 and/or its components, particularly an opening element 5, according to the present disclosure.

[0057] Figure 1 shows an oblique view and an enlarged portion thereof of a system according to the present disclosure. Figures 3a and 3b show cross-sections of the system according to the present disclosure in an initial state and a closed state after initiating opening of the cork closure by a relative rotation between the cork and the opening element.

[0058] The views of Figures 1, 3a, and 3b illustrate possible configurations and arrangements of the bottle, cork, and opening element, particularly, the inner thread of the opening element and the first portion of the cork. Moreover, arrows indicate the rotational movement of the opening element of the cork and the resulting movement of the cork being pulled from the bottle and driven into the inner thread.

[0059] Figures 2a and 2b show different views of a possible opening element according to the present disclosure, which may be employed in a system according to the present disclosure, e.g. the above-described systems.

[0060] Figures 4a to 4f also show different views of a possible opening element according to the present disclosure, which may be employed in a system according to the present disclosure, e.g. the above-described systems.

[0061] Herein, same reference signs will be used for the same or corresponding features.

[0062] The system 1 comprises a bottle 3, a cork 4, and an opening element 5. The cork 4 comprises a first portion 4a that, when the system is in a closed state, protrudes from the bottle 3. The second portion of the cork that is arranged inside the neck of the bottle is denoted by reference sign 4b.

[0063] The opening element 5 comprises a hollow portion that is configured to receive the first portion 4a of the cork and that has an inner thread 5a configured to engage with the first portion 4a of the cork. The opening element may, for example, be a single-piece plastic element, in particular an injection-molded element. In the embodiment shown here, merely as an example, the hollow portion is configured to also receive a part of a neck 3a of the bottle 3. A metal or glass opening element or other materials are also conceivable.

[0064] The inner thread 5a, in the illustrated configurations, is configured such that a relative rotation be-

tween the cork 3 and the opening element 5 drives the cork 4 into the inner thread 5a of the opening element 5, thereby pulling the cork 4 out of the bottle 3.

[0065] The inner thread 5a, in the illustrated configurations, is configured such that it is able to engage with corks of different diameters, in particular, engages in such a way that a relative rotation between the cork 3 and the opening element 5 drives the cork 4 into the inner thread 5a of the opening element 5, thereby pulling the cork 4 out of the bottle 3. It can be seen that the inner thread 5a protrudes significantly inwards, i.e., towards the cork. Thus, it may engage with corks of smaller or bigger diameters, for example by cutting into the corks to different depth.

[0066] In the Figures the hollow portion of the opening element 5 is, merely as an example, in the shape of a hollow cylinder, the inner thread 5a extending at least along part of the inner face of the side wall of the hollow cylinder. The hollow portion may have a shape that is not completely hollow cylinder-shaped. In particular, the inner and/or outer wall of the hollow portion may, at least in part, have a conical shape. This is implied in Fig. 4a, for example.

[0067] Also shown in the Figures is an exemplary optional tamper-evidence portion 5b. The views of Figures 1, 2a, 3a, 4e, and 4f particularly illustrate possible configurations and arrangements of the tamper-evidence portion in an unbroken state and a broken state. Other configurations of the tamper-evidence portion are conceivable.

[0068] As can be seen in the Figures, the hollow portion is open at one end 7 of the hollow portion to receive the cork 4. The tamper-evidence portion 5b at least partially closes the hollow portion at the opposite end 6 of the hollow portion. The tamper-evidence portion 5b is configured to be broken when the cork 4 is driven into the inner thread 5a, e.g., by more than a predetermined distance.

[0069] The tamper-evidence portion, in this example, comprises a plate, which is merely exemplarily circular, and tabs connecting the plate to the remaining portions of the opening element. The tabs may be broken when the cork is pulled out of the bottle and pushes against the plate, thereby showing that the bottle has been opened.

[0070] Reference sign 8 denotes the longitudinal axis, in this example cylinder axis, of the opening element, which may coincide with the rotation axis for opening the cork closure.

[0071] Optionally, the opening element 5, in an initial state of the system 1 is mounted on the bottle 3 in such a manner that a part of the inner thread 5a is engaged with, e.g., driven into, the cork 4, particularly in such a manner as to fix the opening element 5 to the cork 4, as illustrated in Figure 1 and Figure 3a.

[0072] The views of Figures 1, 2a, 3a, 3b, and 4c illustrate the opening element, viewed from the open end that receives the cork, illustrates schematically possible con-

figurations and arrangements of the inner thread.

[0073] While the invention has been illustrated and described in detail in the drawings and foregoing description, such illustration and description are to be considered exemplary and not restrictive. The invention is not limited to the disclosed embodiments. In view of the foregoing description and drawings it will be evident to a person skilled in the art that various modifications may be made within the scope of the invention, as defined by the claims.

Claims

1. A system (1) comprising a bottle (3), a cork (4), and an opening element (5),

wherein the cork (4) comprises a first portion (4a) that, when system is in a closed state, protrudes from the bottle (3), and

wherein the opening element (5) comprises a hollow portion that is configured to receive the first portion (4a) of the cork and that has an inner thread (5a) configured to engage with the first portion (4a) of the cork.

2. The system of claim 1, wherein the inner thread (5a) is configured such that a relative rotation between the cork (3) and the opening element (5) drives the cork (4) into the inner thread (5a) of the opening element (5), thereby pulling the cork (4) out of the bottle (3).

3. The system of claim 1 or 2, wherein the inner thread (5a) is configured such that it is able to engage with corks of different diameters, in particular, engage in such a way that a relative rotation between the cork (3) and the opening element (5) drives the cork (4) into the inner thread (5a) of the opening element (5), thereby pulling the cork (4) out of the bottle (3).

4. The system according to any of the preceding claims, wherein the inner thread (5a) is configured to extend at least along part of the inner face of the sidewall of the hollow portion of the opening element (5).

5. The system according to any of the preceding claims, wherein the inner thread (5a) extends over a length that corresponds to the length of the first portion (4a) of the cork (4).

6. The system according to any of the preceding claims, wherein the hollow portion of the opening element (5) is in the shape of a hollow cylinder, the inner thread (5a) extending at least along part of the inner face of the sidewall of the hollow cylinder, or at least in part in a conical shape.

7. The system according to any of the preceding claims,

wherein the hollow portion is open at one end (7) of the hollow portion to receive the cork (4) and optionally part of a neck (3a) of the bottle (3), and the opening element (5) comprises a tamper-evidence portion (5b) that at least partially closes the hollow portion at the opposite end (6) of the hollow portion, the tamper-evidence portion (5b) configured to be broken when the cork (4) is driven into the inner thread (5a).

8. The system according to claim 7, wherein the tamper-evidence portion (5b) is configured to be broken when the cork is driven into the inner thread (5a) by more than a predetermined distance.

9. The system according to any of the preceding claims, wherein the opening element (5) is a single-piece plastic element, in particular an injection-molded element or a 3D-printed element, or a single-piece metal element or a single-piece glass element.

10. The system according to any of the preceding claims, wherein the opening element (5), in an initial state of the system (1), is mounted on the bottle (3) in such a manner that a part of the inner thread (5a) is engaged with, e.g., driven into, the cork (4), particularly in such a manner as to fix the opening element (5) to the cork (4).

11. The system according to any of the preceding claims, wherein the hollow portion is configured to receive a part of a neck (3a) of the bottle (3) and/or wherein the opening element is fixed to the neck of the bottle (3), particularly in a tamper-proof manner.

12. A use of the system (1) of any of the preceding claims for opening a cork closure, the use comprising, by a user, carrying out a relative rotation between the bottle (3) and the opening element (5) so as to drive the cork (4) into the inner thread of the opening element (5), thereby pulling the cork (4) out of the bottle (3).

13. The use according to claim 12, further comprising the user, when carrying out the relative rotation, holding the opening element (5) at a steady position relative to the bottle (3).

14. An opening element (5) comprising a hollow portion that is configured to receive a first portion (4a) of a cork (4) protruding from a bottle (3) and that has an inner thread (5a) configured to engage with the first portion (4a) of the cork (4), in particular, wherein the inner thread (5a) is configured such that a relative rotation between the cork (3) and the opening element (5) drives the cork (4) into the inner thread (5a) of the opening element (5), thereby pulling the cork (4) out of the bottle (3).

15. The opening element of claim 14, wherein the inner thread (5a) is configured such that it is able to engage with corks of different diameters, in particular, engage in such a way that a relative rotation between the cork (3) and the opening element (5) drives the cork (4) into the inner thread (5a) of the opening element (5), thereby pulling the cork (4) out of the bottle (3).

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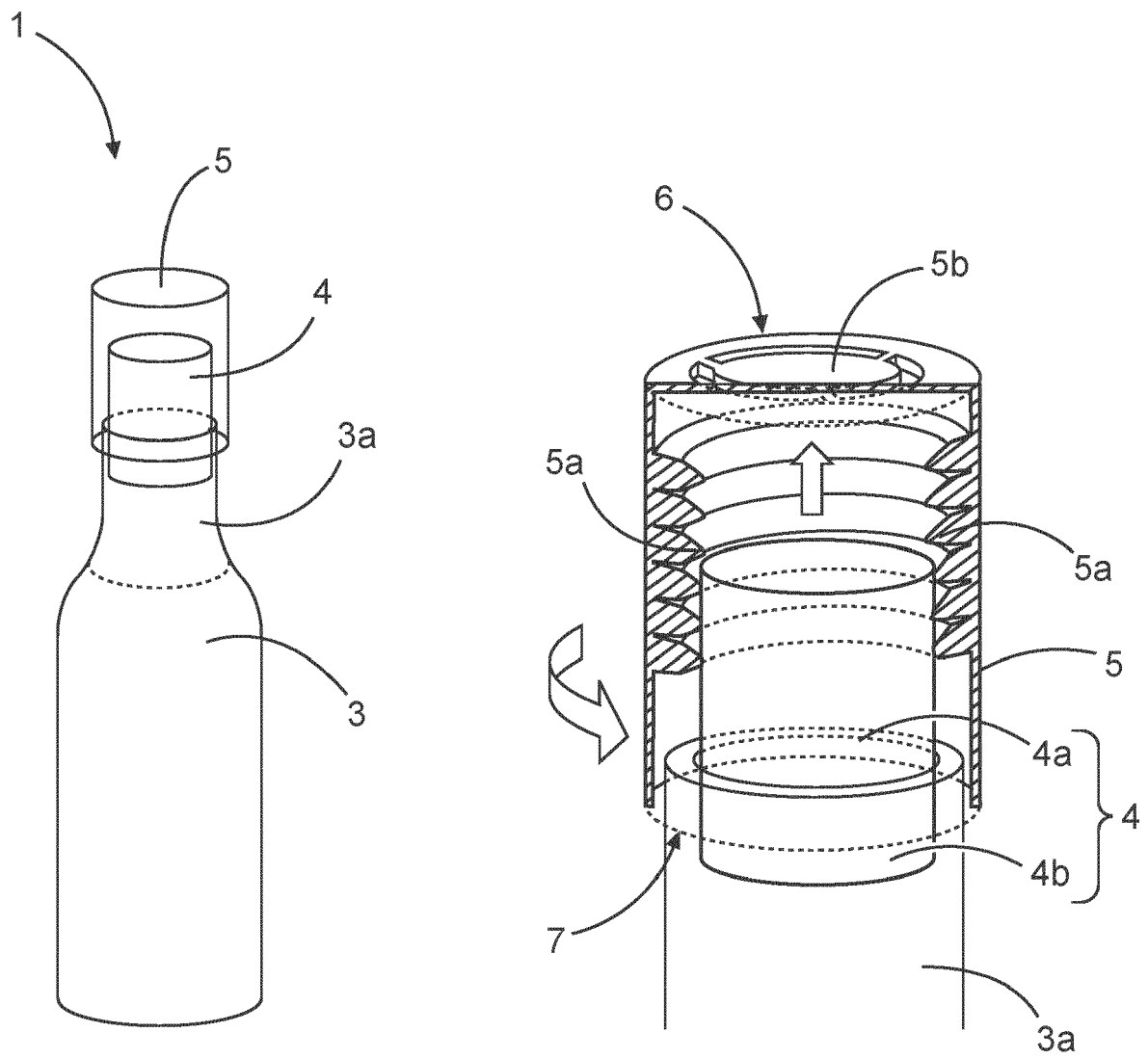


Fig. 1

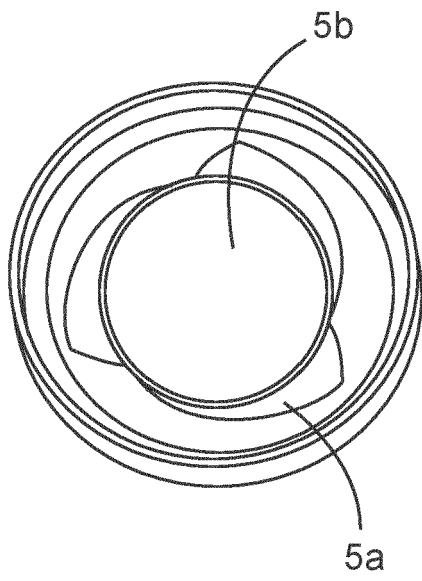


Fig. 2a

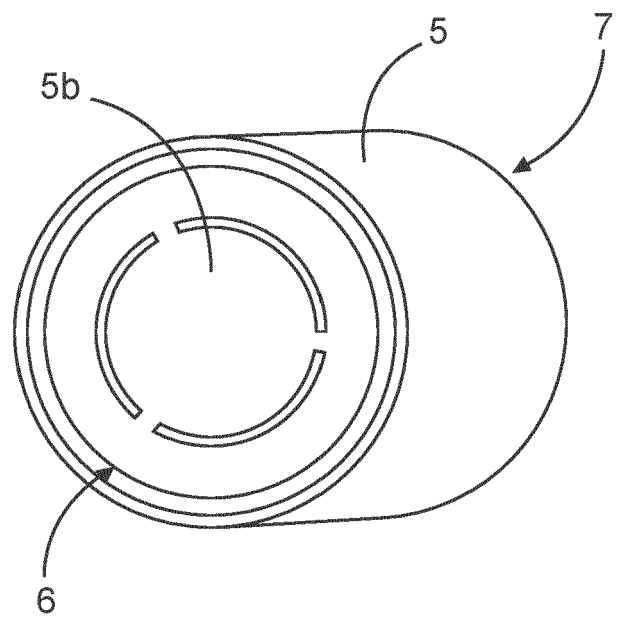


Fig. 2b

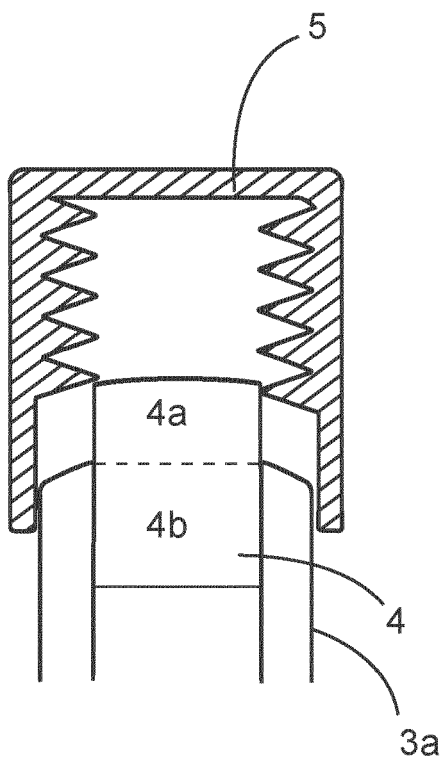


Fig. 3a

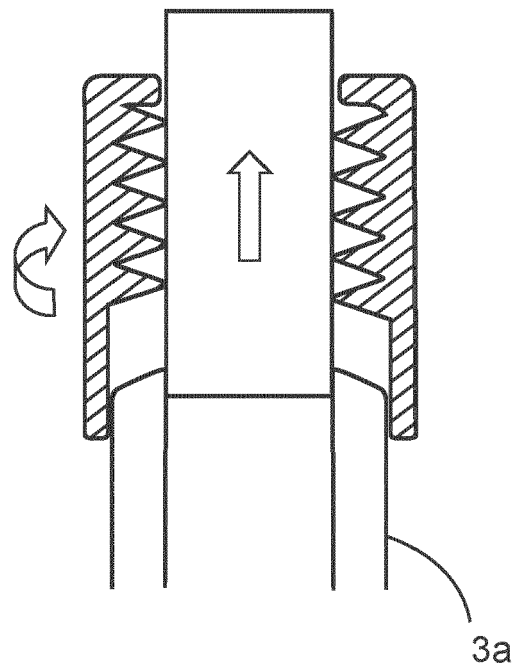


Fig. 3b

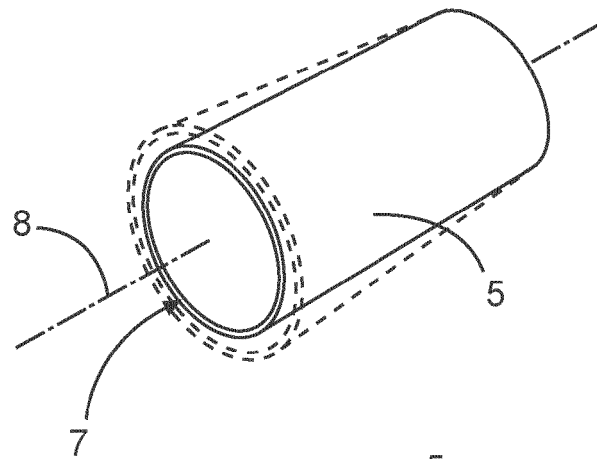


Fig. 4a

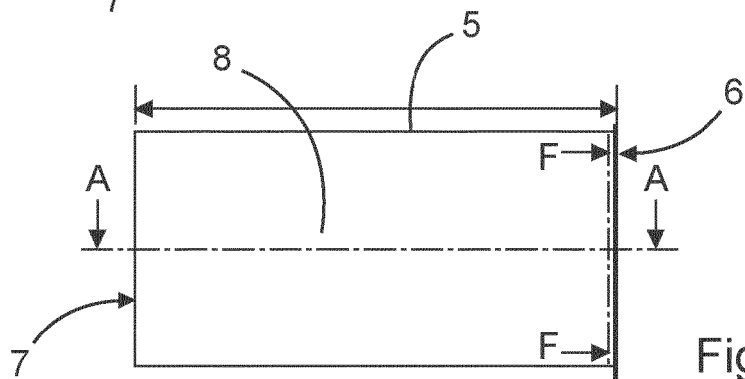


Fig. 4b

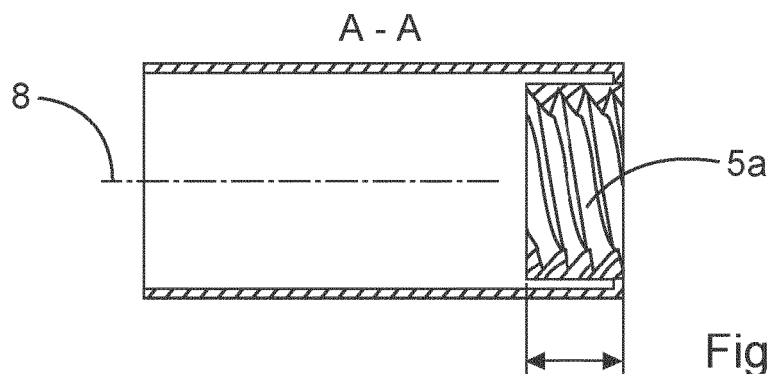


Fig. 4c

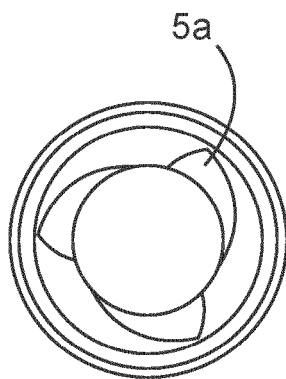


Fig. 4d

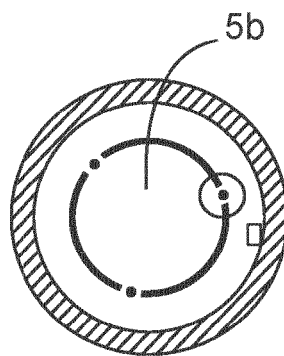


Fig. 4e

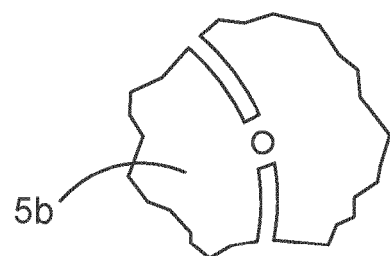


Fig. 4f



EUROPEAN SEARCH REPORT

Application Number

EP 23 15 6196

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EPO FORM 1503 03.82 (P04C01)

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	WO 2006/115467 A1 (TITARENKO MYKOLA ARTYOMOVICH [UA]; TITARENKO OLEKSII MYKOLAYOVICH [UA]) 2 November 2006 (2006-11-02) * page 3, line 5 - line 28; figures 1, 2 * -----	1-15	INV. B67B7/06 B65D39/16
X	GB 726 521 A (BALDOMERO CURIA CORTAT) 16 March 1955 (1955-03-16) * page 1, line 54 - line 84; figures 1-3 * -----	1-6, 9, 10, 12-15	
			TECHNICAL FIELDS SEARCHED (IPC)
			B67B B65D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 20 July 2023	Examiner Luepke, Erik
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	

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

EP 23 15 6196

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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20-07-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006115467 A1	02-11-2006	EA 200601915 A1	27-02-2007
		EP 1874643 A1	09-01-2008
		UA 9924 U	17-10-2005
		WO 2006115467 A1	02-11-2006
GB 726521 A	16-03-1955	NONE	