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Amended claims in accordance with Rule 137(2) EPC.

(54) CLOSURE DEVICE

(57) The invention relates to closure devices with opening indication element for bottles with a threaded neck. The closure device for bottle having a neck, comrising a pour sleeve (1) made with the ability to be installed on the neck, a closed sleeve (2) with means of fixation on the pour sleeve (1), a sealing means (5), an open sleeve (6) and an indicator ring (8), wherein the closed sleeve (2) and the open sleeve (6) form a cavity (7), and the indicator ring (8) is provided with an annular belt (9) placed in said cavity (7) before the first opening. The annular belt is made with the ability to be released from said cavity during the first opening and preventing the return of the indicator ring to its initial position when closing the bottle again.

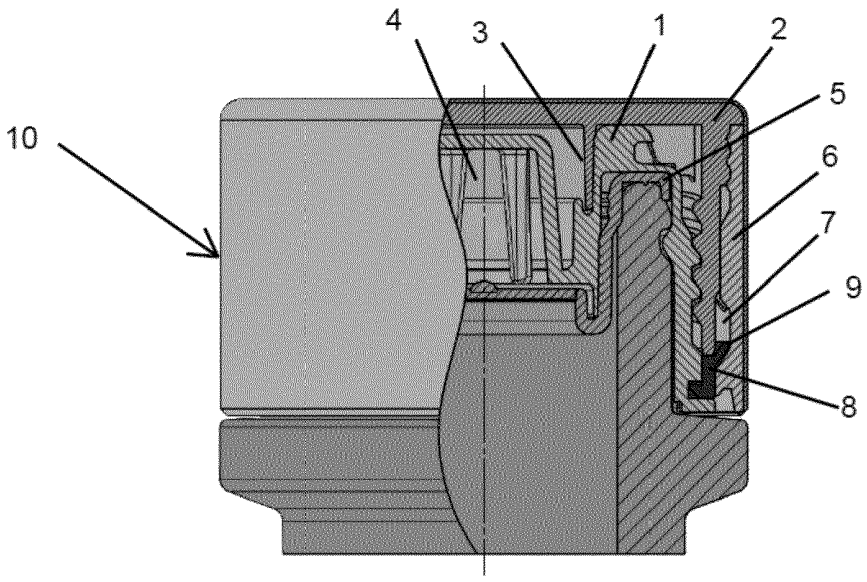

Fig. 1

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Description

[0001] The invention relates to closure devices with opening indication element for bottles with a threaded neck, intended primarily for liquid products, such as spirits.

[0002] In order to use opening indication in order to warn about tampering , various types of caps use a strip that remains on the bottle when the main part of the cap is unscrewed. Such a closure device is disclosed, for example, in French patent FR2217231 B1, and it is a cap for closing a bottle, equipped with a threaded element for installation on the neck of the bottle and containing an indication means, which is the lower part of the cap, separated from the main part by a perforation forming breakable bridges. When the cap has been unscrewed, the breakable bridges are destroyed and the strip separated from the cap falls down onto the neck of the bottle, preventing the cap from returning to its initial shape, thus signaling that the bottle has been opened.

[0003] The disadvantage of this known closure means is that with this design, the strip can be hidden under the main cap or removed from the neck by tearing the strip.

[0004] This disadvantage is partially eliminated in the technical solution according to the patent of the Russian Federation RU2223209 C2, in which the closing of a container with alcoholic beverage, usually a bottle with a neck having a thread and an annular flange, is done through a closure cap, equipped with closure means and tamper-evident means and containing two assembled together parts rigidly connected both in the direction of rotation and in the axial direction. As indicator means, an indicator belt is used, made in the form of a separate annular part, located in the lower part of the closure cap and connected to the screw cover by bridges. The indicator belt contains an inner rim provided with engaging means, which are tabs facing inside the closure cap, fixed under the annular flange of the bottle neck. In the process of opening the cap, the bridges are destroyed, the indicator belt becomes visible, and the ability of its snapping under the annular flange of the bottle prevents its reconnection with the cap and makes it difficult to easily remove it from the neck. The disadvantage of this known technical solution is the weak protection of the closure cap from accidental opening, because the connection of the indicator element with the cover of the cap by bridges is not reliable enough and can be destroyed before the first opening of the bottle both at the stage of capping and during transportation of products with such a cap to the consumer, which reduces the reliability of such an indication.

[0005] From the publication of the application for the Eurasian patent EA200501334 A1, a closure cap for a bottle with neck having a thread and an annular flange, containing a screw cover, a shell covering the cover, which is made with the ability of its lower part to go behind the annular flange, as well as an indicator belt made along the lower contour of the cover with the ability of release from under the breaks of the shell, is known. When the cap is unscrewed, the belt is destroyed, and its visible parts appear, signaling the first opening, and when the cap is screwed again on the neck, the indicator belt released from under the shell remains outside between the joined edges of the cap shell. The disadvantage of this known technical solution is that when the bottle is closed again, the cap moves up by the amount of the released indicator belt, which does not ensure the tightness of the bottle upon reclosure, and also that the destruction of the belt by the rolled edges of the shell does not always occur, because it is part of the cover, and the radial force action does not lead to its rupture, but the belt remains firmly attached to the cover.

[0006] The closest analogue of the present invention is the closure cap for a bottle with a threaded neck disclosed in Russian Federation patent RU191981, which comprises a screw cover, a shell, an indicator belt made along the lower contour of the cover with the ability of release from under the shell. According to the mentioned patent, the indicator belt is installed between the inner part of the shell and the outer surface of the annular element located in the lower inner part of the shell, wherein on the outer surface of the shell at the location of the indicator belt, a line of weakened strength is made. The disadvantage of such a closure cap is that the release of the belt from under the lower part of the shell indicates the opening of the bottle, but does not guarantee protection against reuse, because it is possible, by removing the cap from the bottle, to replace its contents and to hide again the indicator belt under the lower edge of the shell.

[0007] The object of the present invention is to improve the means of visual indication of the opening of a closure device od a bottle by adding an additional element to the design of the device, which can be released upon first opening, and which prevents the indicator ring from returning to its initial position when the bottle is closed again.

[0008] The technical result, which is achieved in this case, is to increase the reliability and security of the closure device, indicating any opening by improving the visual indication of opening of the bottle and strengthening the protection against its bad-faith reuse.

[0009] The object and specified technical result are achieved by closure device for bottle, having a neck, comprising a pour sleeve, made with the ability to be installed on the neck, a closed sleeve with means of fixation on the pour sleeve, a sealing means, an open sleeve and an indicator ring, wherein the closed sleeve and the open sleeve form a cavity, and the indicator ring is provided with an annular belt, placed in said cavity before the first opening, and the annular belt is made with the ability to be released from said cavity during the first opening and preventing the return of the indicator ring to its initial position when the bottle is closed again.

[0010] Implementing the indicator ring with an annular belt as a separate element, as well as its placement in the cavity between the closed sleeve and the open sleeve, contributes to the reliable release of the indicator

belt during the first opening and prevents the indicator ring from returning to its initial position when the bottle is closed again. This eliminates unintentional or intentional movement of the indicator ring after the first opening of the closure device to a position corresponding to the position of the indicator ring before the first opening of the closure device, providing increased reliability and security of the closure device in comparison with known analogues, including the closest analogue. At the same time, the presence of a sealing means ensures the tightness of the bottle when it is reclosed, which is a prerequisite for the use of the claimed closure device and its similar devices.

[0011] The object and specified technical result are also achieved in specific embodiments of the closure device according to the present invention.

[0012] Preferably, the sealing means is in the form of a base placed in the neck of the bottle.

[0013] Preferably, the closure device comprises an outer casing at least partially enclosing the closed sleeve.

[0014] In a particular embodiment of the invention, the closure device comprises an outer casing made of polymeric material. In another particular embodiment of the invention, the outer casing is made of metal.

[0015] Further, with reference to the attached figures, possible embodiments of the claimed closure device are described in detail, which, however, do not limit the invention.

[0016] The figures show:

fig. 1 shows a general view with a partial section of an embodiment of the closure device in closed state before the first opening;

fig. 2 shows a general view with a partial section of an embodiment of the closure device according to fig. 1 in closed state after the first opening;

[0017] Reference numbers in the figures indicate the following elements:

1 - pour sleeve;
2 - closed sleeve;
3 - annular protrusion
4 - pour spout
5 - base
6 - open sleeve;
7 - cavity;
8 - indicator ring;
9 - annular belt;
10 - outer casing.

[0018] The closure device comprises a pour sleeve 1, installed on neck of a bottle by means of axial and radial fixation, a closed sleeve 2, made with a means of fixation on the pour sleeve 1, for example, in the form of a thread, and interacting with the outer surface and/or thread of said pour sleeve 1. Additionally, the device comprises a means of sealing the bottle neck, made in the form of a base 5. The base 5 comprises an annular cavity for placing the inner wall of the pour sleeve 1 thus forming a labyrinth seal. Additionally, the device may comprise a sealing means in the form of an annular protrusion 3 on the inner end surface of the pour sleeve 1, placed in the pour spout 4 of the pour sleeve 1 to form a labyrinth seal. Embodiments of the sealing means in the form of a gasket, the diameter of which is sufficient to overlap the bottle finish, and preferably made of foamed polymer material as a separate part or in the form of an elastic polymer material gasket with an annular collar placed in the pour spout 4 of the pour sleeve 1, are possible.

[0019] The device also comprises an open sleeve 6 forming a cavity 7 with the closed sleeve, and indicator ring 8 with elastic annular belt 9 bent outward along the upper contour.

[0020] The annular belt 9 can be made continuous or discontinuous and, before the first opening of the closure device, is placed in the cavity 7 between the closed sleeve 2 and the open sleeve 6 in such a way as to be kept from falling out during closing.

[0021] The indicator ring 8 can be made with the ability of resting against the annular flange of the pour sleeve 1, for this reason, stops are made on its inner surface, for example, in the form of a continuous protrusion or abutting tabs.

[0022] The device may also comprise an outer casing 10 at least partially enclosing the closed sleeve 2. This provides an increase in the rigidity of the closed sleeve 2, which affects the reliability and security of the closure device. The ends of the outer casing 10, when made of metal, can be bent under the lower end surface of the open sleeve 6.

[0023] The outer casing 10 can be made of metal, such as aluminum, steel foil, etc., in particular by punching, or of polymeric material, in particular by injection molding. During the manufacturing process, coatings and means of identification can be applied to the side and end surfaces of the outer casing 10 by methods, for example, of hot stamping, offset, screen or pad printing, with white, colored, transparent or metallized varnishes. The coating can also be applied by spray deposition or vacuum deposition.

[0024] The pour sleeve 1, the closed sleeve 2, the open sleeve 6 and the indicator ring 8 are injection molded from polymer materials such as polypropylene or polyethylene.

[0025] The assembly of the finished closure device is carried out by mutual fixation of the indicator ring 8 and the pour sleeve 1, after which the closed sleeve 2 is installed, fixing it relative to the pour sleeve 1, then the open sleeve 6 is installed on the closed sleeve 2, wherein a cavity 7 is formed for placing the annular belt 9 of the indicator ring 8 in it. At the next stage, the base 5 is installed inside the pour sleeve 1. The proposed closure device with all its details is made as one unit, can be transported separately, and is designed to be installed on the neck of a bottle. The closure of the bottle is per-

formed by pressing downwards by means of a closure machine.

[0026] The claimed closure device operates as follows.

[0027] During the first unscrewing of the closure device, the outer casing 10 together with the closed sleeve 2 and the open sleeve 6 is separated along the threaded connection from the pour sleeve 1. In this case, the indicator ring 8 with the annular belt 9 is released and remains on the pour sleeve 1, signaling the first opening. When the bottle is closed again, the annular belt 9 prevents the indicator ring 8 from returning to its initial position due to its abutment against the lower end surface of the open sleeve 6.

[0028] The proposed technical solution opens up wide opportunities for providing different options for the appearance of closure device, and also allows to increase the degree of protection of finished products from counterfeiting and improve the sealing of the closure while maintaining high manufacturability of closure device in large-scale factory production.

Claims

1. Closure device for bottle having a neck, comrising a pour sleeve (1) made with the ability to be installed on the neck, a closed sleeve (2) with means of fixation on the pour sleeve, a sealing means (5), an open sleeve (6) and an indicator ring (8), **characterized in that** the closed sleeve (2) and the open sleeve (6) form a cavity (7), and the indicator ring (8) is provided with an annular belt (9) placed in said cavity (7) before the first opening, said annular belt (9) being made with the ability to be released from said cavity (7) during the first opening and preventing the return of the indicator ring (8) to its initial position when closing the bottle again.

2. The closure device according to claim 1, **characterized in that** the sealing means is made in the form of a base (5) placed in the neck of the bottle.

3. The closure device according to claim 1, **characterized in that** it comprises an outer casing (10) at least partially enclosing the closed sleeve (2).

4. The closure device according to claim 3, **characterized in that** the outer casing (10) is made of polymeric material.

5. The closure device according to claim 3, **characterized in that** the outer casing (10) is made of metal.

Amended claims in accordance with Rule 137(2) EPC.

1. Closure device for bottle having a neck, comprising a pour sleeve (1) made with the ability to be installed on the neck, a closed sleeve (2) with means of fixation on the pour sleeve, a sealing means (5), an open sleeve (6) and an indicator ring (8), **characterized in that** the closed sleeve (2) and the open sleeve (6) form a cavity (7), and the indicator ring (8) is provided with an annular belt (9) placed in said cavity (7) before the first opening, said annular belt (9) being made with the ability to be released from said cavity (7) during the first opening and preventing the return of the indicator ring (8) to its initial position when closing the bottle again by abutment of said annular belt (9) against a lower end surface of the open sleeve (6).

2. The closure device according to claim 1, **characterized in that** the sealing means is made in the form of a base (5) placed in the neck of the bottle.

3. The closure device according to claim 1, **characterized in that** it comprises an outer casing (10) at least partially enclosing the closed sleeve (2).

4. The closure device according to claim 3, **characterized in that** the outer casing (10) is made of polymeric material.

5. The closure device according to claim 3, **characterized in that** the outer casing (10) is made of metal.

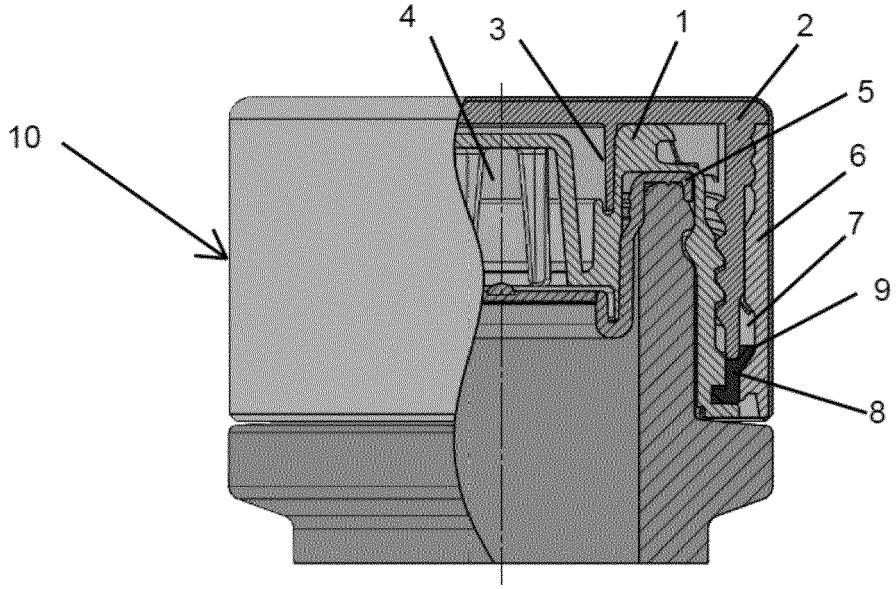

Fig. 1

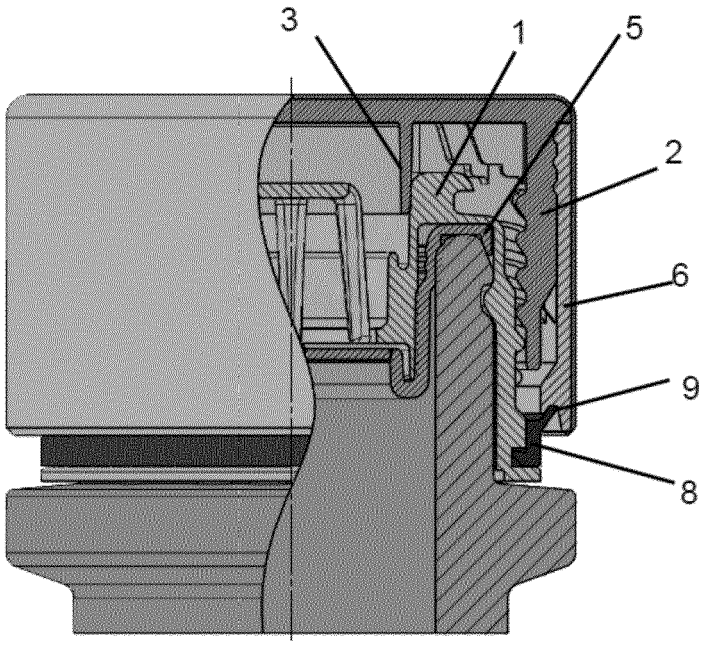

Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 23 15 3273

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 01/23265 A1 (GUALA CLOSURES SPA [IT]; BATTEGAZZORE PIERO [IT]) 5 April 2001 (2001-04-05) * abstract; figures 1-3 *	1-5	INV. B65D41/04
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			TECHNICAL FIELDS SEARCHED (IPC)
			B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	25 June 2023	Tempels, Marco

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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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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- RU 2223209 C2 **[0004]**
- EA 200501334 A1 **[0005]**
- RU 191981 **[0006]**