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(57) Abstract: A reclosing mechanism for containers, particularly beverage containers, has the latch (3) slidingly fitted in the opening (5) and touching on the bottom surface around the opening (5), thus closing it tight, whereas on the top surface it has the pull tab (4) to unseal the container and slide the latch (3), where the pull tab (4) is on one side connected to the latch (3) via a hinge (6), and on the other it is connected via a connector (7) which serves as the seal before the first opening, where the original position of the latch (3) before the first opening is determined by the resistance surfaces (9, 10) on the side on the hinge (6) and on the side of the pull tab (4) front.
Reclosing mechanism for containers, particularly beverage containers

The invention concerns a reclosing mechanism for containers, particularly beverage containers. The mechanism is suitable for containers of any structure, including cans and carton containers.

Known from the international patent application PCT/DE97/02061 (WO 98/12118) is a container cover, particularly of a beverage can, tightly closing the container, composed of at least two elements, where the first element has a tightly closing flap at the base, removable at least partially or severable so as to open the container and uncover its opening, whereas the other element has an additional opening positioned at the same distance from the central axis of the cover as the tightly closing flap or the container opening. One of the two elements is fixed firm and tight to the container body, whereas the other may rotate along the central axis of the container body from position one, in which the additional opening matches tightly the closing flap or container opening, to position two, in which the tightly closing flap or container opening is closed tight by the respective second element or its base.

Also known from international patent application PCT/EP2003/014675 (WO 2004/056667) is a reclosing cover, particularly of a beverage can. According to this solution, the cover has a severable section encircled with a pre-defined severance line and a pull tab fixed so as to allow its rotation to the cover plate. The protrusion for fixing the pull tab has a freely twisted element, and at the bottom of the pulling section of the pull tab there is a flat closing attachment intended for
Known from international patent application PCT/EP2010/063097 (WO2011/026991) is a container cover, particularly for a pressurized beverage can, in which the outflow opening is closed with an elastic closing pipe element by moving the triggering element from the closed position to the open position, where the pipe element cooperates with the pressure balancing mechanism. The pipe element is closed tight by narrowing it crosswise when the triggering element is in its closed position.

Known from international patent application PCT/EP2010/052192 (US 2011/0315684 Al) is a cover for containers, particularly beverage cans, which includes a closing element made of elastic material, positioned entirely at the bottom side of the cover and partially integrated with it in such a manner as to protect it against twisting, fitted with a triggering mechanism fixed to the outer surface of the cover via an attachment. When the triggering mechanism is moved, the part of the closing mechanism which covers the opening turns perpendicular to the cover surface. The opening can be re-closed by moving the triggering mechanism. In this solution, the outflow opening is sealed before the first use. The seal takes the form of a pin or label which needs to be torn off to uncover the beverage outflow opening.

The structure of the known cover closings is complicated, and their production is costly.

The purpose of this invention is to develop a simple hermetic structure of a reclosing mechanism intended particularly for pressurized and non-pressurized beverage containers, which would enable repeated closing and opening of the outflow opening, characterised by its universal application, easy manipulation by the user, and simplicity of the
manufacturing process, which will contribute substantially to reducing the manufacturing cost compared to the known solutions.

The beverage container reclosing mechanism, sealed before the first opening, containing movable elements to enable opening and reclosing of the beverage outflow opening according to the invention is characterised in that it has a latch slidingly fitted in the opening and touching on the bottom surface around the opening, thus closing it tight, whereas on the top surface it has a pull tab to unseal the container and slide the latch, where the pull tab is on one side connected to the latch via a hinge and on the other it is connected via a connector which serves as the seal before the first opening, where the original position of the latch before the first opening is determined by the resistance surfaces on the side of the hinge and on the side of the pull tab front.

Preferably, at least one of the resistance surfaces on the side of the hinge and/or the pull tab face reaches no less than the height determined by the upper surface of the pull tab in its position preceding the first opening.

Preferably, the sliding latch is equipped with no fewer than two longitudinal catches slidingly fitted on/ in the guides formed on the opposite walls of the opening, parallel to the sliding direction of the latch. Preferably, the longitudinal catches are formed in the attachment integrated with the latch and connected with the pull tab.

Preferably, the pull tab is connected with the latch or the attachment via a membrane hinge.

Preferably, the resistance surface on the side of the hinge takes the form of a protrusion.

Preferably, the resistance surface on the side of the pull tab takes the form of two protrusions.
Preferably, there are additional shaped profiles formed on the surface around the opening or its appropriate part touching on the surface of the latch or its corresponding part, and/or on the surface of the latch or the part thereof touching on the surface around the opening or its corresponding part.

Preferably, the reclosing mechanism is additionally sealed at the contact point between the latch and the surface around the opening with a sealing coat.

Preferably, the reclosing mechanism is made of plastic.

Preferably, the sliding latch is made as a single piece formed in the process of single plastic injection.

The invention is presented on the drawing which shows its exemplary application in a beverage can cover, where:

Fig.1 shows the beverage can cover with the reclosing mechanism, in vertical longitudinal section along plane A-A, marked on Fig. 2,

Fig.2 shows a bird's eye view of the cover with the reclosing mechanism,

Fig. 3 shows the cover with the opening, without the sliding latch fitted, in vertical longitudinal section along the A-A plane marked on Fig. 4,

Fig. 4 shows the cover with the opening, without the sliding latch fitted, in bird's eye view,

Fig. 5 shows the sliding latch in vertical longitudinal section along the A-A plane marked on Fig. 6,

Fig. 6 shows the sliding latch in bird's eye view,

Fig. 7 shows the sliding latch in vertical cross-section along the B-B plane marked on Fig. 6,

Fig. 8 shows the contact point between the latch and the surface around the opening with the shaped profile in the form of an offset along the rim and with the sealing, in bird's eye view,
Fig. 9 shows the cover with the reclosing mechanism and the shaped profile in the form of an offset along the opening rim and the sealing, in vertical longitudinal section along the A-A plane marked on Fig. 8, and detail B enlarged,

Fig. 10 shows the cover with the opening without the latch fitted, with the profile shaped in the form of an offset around the opening, its bottom side in bird's eye view,

Fig. 11 shows the cover with the fitted shaped profile in the form of an offset around the opening, in vertical longitudinal section along the A-A plane marked on Fig. 10, and a detail B enlarged,

Fig. 12 shows the contact point between the surface of the latch and the surface around the opening with the shaped profile in the form of a groove, and with the sealing, seen in bird's eye view,

Fig. 13 shows the cover with the reclosing mechanism, with the shaped profile in the form of a groove around the opening, and with the sealing, seen in vertical longitudinal section along the A-A plane marked on Fig. 12, and detail B enlarged,

Fig. 14 shows the cover with the opening without the latch fitted, with the shaped profile in the form of a groove around the opening, its bottom side seen in bird's eye view,

Fig. 15 shows the cover with the opening without the latch fitted, with the shaped profile in the form of a groove around the opening, in vertical longitudinal section along plane A-A marked on Fig. 14, and detail B enlarged.

In one embodiment of the invention, the reclosing mechanism is made of plastic in the cover 2 of a can 1 (Figures 1 to 7). The reclosing mechanism is equipped with a latch 3, which is fitted slidingly in the opening 5 and touches on the bottom flat surface 12 on the bottom side of
the cover 2, thus closing it tight, where the surfaces touching on each other around the opening 5 are flat. The latch 3 has an integrated attachment 14, in which two longitudinal catches 8 are formed, fitted slidingly on the guides 13 formed on the opposite walls of the opening 5, parallel to the sliding direction of the latch 3. From the top, the attachment 14 has a pull tab 4 to unseal the container and slide the latch 3, which on one end is connected to the latch via a membrane hinge 6, and on the other end it is connected via a connector 7 serving as the seal before the first opening. The original position of the latch 3 before the first opening is determined by the resistance surfaces on the side of the hinge 6 and on the side of the pull tab 4 front. On the side of the hinge 6 the resistance surface takes the form of a protrusion 9 formed as a snout leveled with the wall of the opening 5, and on the side of the connector 7 the resistance surface takes the form of two protrusions 10 leveled with the wall of the opening 5, located at a short distance from each other, which allows for inserting a finger and breaking the connector 7 - i.e. the seal. The protrusions 9 and 10 reach slightly above the height determined by the upper surface of the pull tab 4 in its original position before the first opening. On the front surfaces of the protrusions 9 and 10 subsequent containers may rest stacked one on top of another, eliminating the risk of damaging the pull tab 4 and the connector 7 (seal).

In another embodiment of the invention the reclosing mechanism described in example one is additionally sealed with a sealing coat covering the bottom of the surface around the opening 5 in the latch 3 contact area.

In other embodiments of the invention the reclosing mechanism described in example one has an additional shaped profile on the surface around the opening 5 touching on the latch 3 in the form of an offset 16
(Fig. 10, 11) around the rim of the opening 5, or in the form of a groove 17 (Fig. 14, 15), which as the result of covering them with the sealing coat become filled with a susceptible (elastic, resilient) sealant 15 (Fig. 8, 9, 12, 13).

In all possible embodiments of the invention the latch 3 may be made of plastic, preferably as a single integrated element formed in the process of a single injection.

In all possible embodiments of the invention, the opening 5 may be formed directly in the cover, as shown in the above exemplary embodiments, or in a separate element fitted for instance to the container cover or at an appropriate place of e.g. a carton box.

The latch 3 is fitted in the opening 5 by pressing it in from the bottom side of the opening 5, so that the catches 8 are introduced into the guides 13, and the latch 4 is placed between the protrusions 9 and 10. The reclosing mechanism may be additionally sealed before assembling with a sealing coat 15 covering the bottom of the surface around the opening 5 in the latch 3 contact area.

In order to open the reclosing mechanism one lifts the pull tab 4 up thus breaking the connector 7 and turning the pull tab up on the hinge 6. In effect of turning the pull tab 4 edge presses on the resistance surface, the protrusion 9 in particular, thus sliding the latch 3 and unsealing the container.

Pulling the pull tab 4 towards the opposite resistance surface, the protrusions 10 in particular, results in sliding the latch 3 and uncovering the opening 5. The opening 5 can be reclosed by pulling the pull tab 4 towards the protrusion 9 and sliding the latch 3.
Claims

1. A reclosing mechanism for containers, particularly beverage containers, sealed before the first opening, containing elements to enable opening and reclosing of the beverage outflow opening, characterised in that it has a latch (3) slidingly fitted in the opening (5) and touching on the bottom surface around the opening (5), thus closing it tight, whereas on the top surface it has a pull tab (4) to unseal the container and slide the latch (3), where the pull tab (4) is on one side connected to the latch via a hinge (6), and on the other it is connected via a connector (7) which serves as the seal before the first opening, where the original position of the latch (3) before the first opening is determined by the resistance surfaces (9, 10) on the side of the hinge (6) and on the side of the pull tab (4) front.

2. The reclosing mechanism according to Claim 1, characterised in that at least one of the resistance surfaces (9, 10) on the side of the hinge (6) and/or on the pull tab (4) face reaches no less than the height determined by the top surface of the pull tab (4) in its position preceding the first opening.

3. The reclosing mechanism according to Claim 1, characterised in that the sliding latch (3) is equipped with no fewer than two longitudinal catches (8) slidingly fitted on/in the guides (13) formed on the opposite walls of the opening (5), parallel to the sliding direction of the latch (3).

4. The reclosing mechanism according to Claim 3, characterised in that the longitudinal catches (8) are formed in the attachment (14) integrated with the latch (3) and connected with the pull tab (4).

5. The reclosing mechanism according to Claims 1 or 4, characterised in that the pull tab (4) is connected with the latch (3) or the attachment (14) via a membrane hinge (6).
6. The reclosing mechanism according to Claims 1 or 2, characterised in that the resistance surface (9) on the side of the hinge takes the form of a protrusion.

7. The reclosing mechanism according to Claims 1 or 2, characterised in that the resistance surface (10) on the side of the pull tab (4) front takes the form of two protrusions.

8. The reclosing mechanism according to Claim 1, characterised in that the additional shaped profiles (16, 17) are formed on the surface around the opening (5) or its appropriate part touching on the surface of the latch (3) or its corresponding part, and /or on the surface of the latch (3) or the part thereof touching on the surface around the opening (5) or its corresponding part.

9. The reclosing mechanism according to Claim 1 or 8, characterized in that it is additionally sealed at the contact point between the latch (3) and the surface around the opening (5) with a sealing coat (15).

10. The reclosing mechanism according to Claims 1 to 9, characterised in that it is made of plastic.

11. The reclosing mechanism according to Claim 10, characterised in that the sliding latch (3) is made as a single integrated element formed in the process of a single injection.
INTERNATIONAL SEARCH REPORT

International application No
PCT/PL2012/000054

A. CLASSIFICATION OF SUBJECT MATTER

Invention: B65D 17/50

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
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<td>EP 0 023 525 AI (VOGT KUNO J) 11 February 1981 (1981-02-11) page 3, paragraph 3-5</td>
<td>1,2,5,6,9,10,11</td>
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<td>US 4 170 724 A (WATERBURY NELSON J [DE]) 9 October 1979 (1979-10-09) the whole document</td>
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<td>Further documents are listed in the continuation of Box C.</td>
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Date of the actual completion of the international search: 9 October 2012

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Name and mailing address of the ISA:
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Authorized officer: Gino, Christophe
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