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(54) **An anti-intrusion device and a closure device comprising the anti-intrusion device**

(57) An anti-intrusion device, **characterised in that** it comprises: a shaped plug (2) provided with a stalk (3) which exhibits at least a cuttable portion (3a); a seating (4) which exhibits two portions (4a, 4b) which are reciprocally slidable between at least a first position, in which

the two portions (4a, 4b) are aligned to one another and can house the stalk (3), and at least a second position, in which the two portions (4a, 4b) are not aligned, the stalk (3) being cuttable during displacement of the tow portions (4a, 4b) from the first position to the second position.

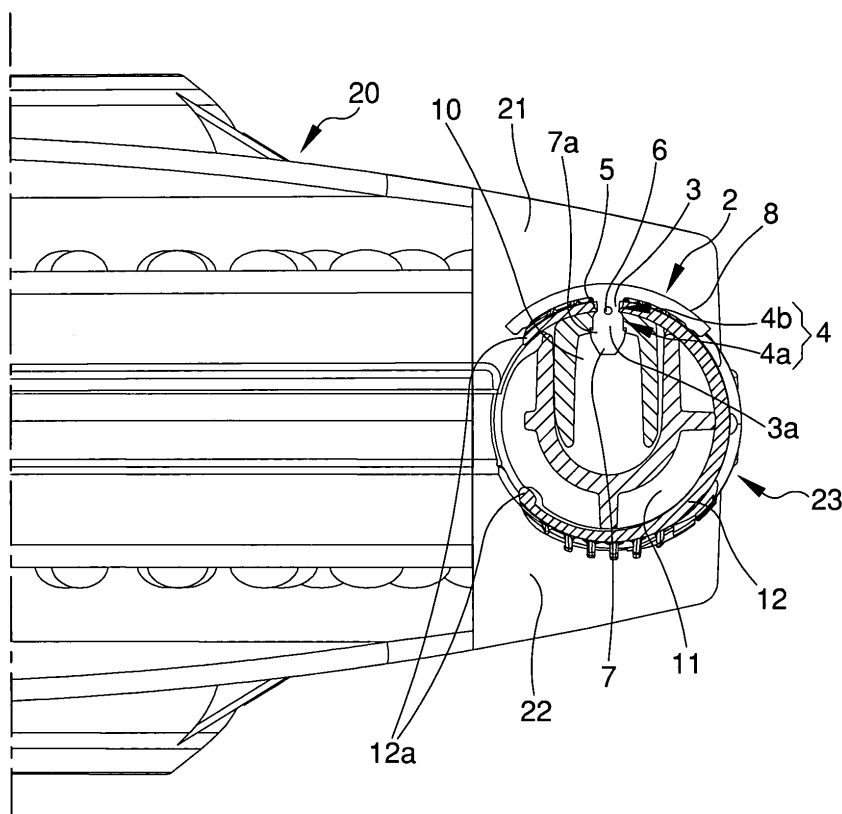


Fig. 1

Description

[0001] The invention relates to an anti-intrusion device and a closure device comprising the anti-intrusion device.

[0002] As is known, an anti-intrusion device has the function of signalling that a container has been opened for a first time. Various types of anti-intrusion devices are known, predisposed to be used in containers of various nature. The great majority of the anti-intrusion devices of known type comprise a component which on first opening of the container to which it is combined, must necessarily be broken or detached by a further component in a way which is irreversible.

[0003] The aim of the present invention is to provide a new type of anti-intrusion device which is extremely simple and effective.

[0004] A further aim of the present invention is to provide a new type of closure device which is extremely simple and effective and which comprises the above-mentioned anti-intrusion device.

[0005] Further characteristics and advantages of the invention will better emerge from the detailed description that follows, made with reference to the accompanying figures of the drawings, given by way of non-limiting example, in which:

figure 1 is a section view of a transversal plane of the device of the present invention, in a closed configuration;

figure 2 is the device of figure 1 in an open configuration;

figure 3 is the device of figure 1 combined with a container;

figure 4 is the device of figure 2 combined with the container of figure 3.

[0006] The anti-intrusion device of the present invention comprises a shaped plug 2, provided with a stalk 3 which exhibits at least a cuttable portion 3a. The device further comprises a seating 4 predisposed for housing the stalk 3 of the shaped plug 2. The seating 4 exhibits two portions 4a, 4b which are slidable with respect to one another between at least a first position, in which the two portions 4a, 4b are aligned to one another and can house the stalk 3, and at least a second position, in which the two portions 4a, 4b are not aligned with one another. The relative sliding between the two portions 4a, 4b of the seating 4 from the first to the second position subjects the stalk 3 to a shear stress which when it goes above a certain intensity cuts the stalk 3 inserted in the seating 4.

[0007] To facilitate the cutting of the stalk 3, the cuttable portion 3a of the stalk 3 comprises a gully 5, shaped in such a way as to weaken the stalk 3. Preferably the gully 5 completely surrounds the stalk 3 at an intermediate transversal section of the stalk 3 itself. The gully 5 can be shaped for example with a sharp bottom which concentrates the shear stress on a small section of the stalk 3. In order further to facilitate the cutting of the stalk

3, a through-hole 6 can be afforded through the stalk 3 on the same plane as the gully 5, such that the transversal section of the stalk 3 at that point is further reduced.

[0008] The stalk 3 is preferably provided with a joint portion 7 which is engageable in a first portion 4a of the seating 4 such that the force required to cause the disengagement of the joint portion 7 is always greater than the force required to cut the cuttable portion 3a of the stalk 3. In particular the joint portion 7 exhibits a wedge shape which tapers in the direction of the end of the stalk 3 and exhibits at least a section of head 7a, a size of which is greater than the transversal section of the stalk 3. The head section 7a is conformed such as to abut against an internal surface of the first portion 4a of the seating 4 such as to prevent extraction of the stalk 3 from the seating 4.

[0009] The anti-intrusion device of the present invention gives rise to a useful and effective closure device for a container.

[0010] The closure device comprises a first body 10, associable to a first portion 21 of a container 20, and a second body 11, associable to a second portion 22 of the container 20. The first body 10 and the second body 11 are couplable to one another, preferably such as to define a cylindrical handle 23 for the support of the container 20. As can be seen in the figures, the first and the second body 10, 11 are coupled in a closed configuration of the container 20 which, in the embodiment illustrated, is subdivided into two portions 21, 22 hinged to one another.

[0011] A cursor 12 is mobile with respect to the first body 10 and the second body 11 between at least a closure position in which it constrains the first and second bodies to one another, and at least an open position, in which the first and the second bodies 10, 11 are not constrained to one another. In the closure position of the cursor 12, the first and the second bodies 10, 11 can distance from one another such that the first portion 21 and the second portion 22 of the container 20 cannot rotate with respect to one another and the container 20 cannot be opened. The cursor 12 is preferably in the form of a cylindrical sleeve, shaped such as to be able to be arranged about the first and the second body 10, 11. The cursor 12 exhibits a longitudinal opening 12a the size of which is such as to enable passage of the first body 10. In the closure position of the cursor 12, the longitudinal opening 12a faces the plane of contact between the first and the second bodies 10, 11. In the open position of the cursor 12a, the longitudinal opening 12a faces the first body 10 which can pass through the opening 12a itself. The displacement of the cursor 12 between the closure position and the open position consists in a rotation of about 90° of the cursor 12 about the longitudinal axis thereof.

[0012] A first portion 4a of the seating 4 is afforded in the first body 10. A second portion 4b of the seating 4 is afforded through the cursor 12 such that in the closure position of the cursor 12 the two portions 4a, 4b of the

seating 4 are aligned to one another, while in the open position of the cursor 12 the two portions 4a, 4b of the seating 4 are not aligned to one another. In this way, by moving the cursor 12 from the closure position to the open position, the second portion 4b of the seating 4 slides with respect to the first portion 4a, causing the cutting of the stalk 3 of the shaped plug.

[0013] At the opposite end to the joint portion 7, the shaped plug 2 can be provided with a flattened portion 8, preferably curved, predisposed to be positioned in contact with the cursor 12 when the stalk 3 is completely inserted in the seating 4. The flattened portion 8 performs both a function as a reference for the shaped plug 2 with respect to the seating 4 and a function as a support for indicative writing or symbols.

[0014] The functioning of the opening device is very simple and effective. Starting from an initial configuration in which the container 20 is closed, the cursor 12 is in the closed position and the shaped plug 2 is inserted in the seating 4; at the first opening of the container it is necessary to rotate the cursor 12 from the closed position to the open position. The rotation of the cursor 12 leads to the sliding between the first portion 4a and the second portion 4b of the seating 4. The sliding of the two portions 4a, 4b of the seating 4 subjects the stalk 3 to a shear force located at the cuttable portion 3a. When the cutting force overcomes the resistance of the material, the stalk 3 is cut, enabling the cursor 12 to rotate towards the open position. It is clear, on considering the opening device, that the presence of a shaped plug 2 in intact position and correctly inserted in the seating 4 indicates that the container 20, following the positioning of the shaped plug 2, has not been opened.

Claims

1. An anti-intrusion device, **characterised in that** it comprises: a shaped plug (2) provided with a stalk (3) which exhibits at least a cuttable portion (3a); a seating (4) which exhibits two portions (4a, 4b) which are reciprocally slidable between at least a first position, in which the two portions (4a, 4b) are aligned to one another and can house the stalk (3), and at least a second position, in which the two portions (4a, 4b) are not aligned, the stalk (3) being cuttable during displacement of the two portions (4a, 4b) from the first position to the second position thereof.
2. The device of claim 1, wherein the cuttable portion (3a) of the stalk (3) comprises a gully (5) which is shaped such as to weaken the stalk (3).
3. The device of claim 2, wherein the cuttable portion (3a) of the stalk (3) comprises a through-hole (6) arranged on a same plane as the gully (5).
4. The device of one of the preceding claims, wherein

the stalk (3) is provided with a joint portion (7) which is engageable in a first portion (4a) of the seating (4) such that a force required to cause disengagement of the joint portion (7) is greater than a force required to shear the cuttable portion (3a) of the stalk (3).

5. A closure device for a container, **characterised in that** it comprises: a first body (10) associable to a first portion of a container; a second body (11), associable to a second portion of the container and couplable to the first body (10); a cursor (12), mobile with respect to the first body (10) and the second body (11) between at least a closure position, in which it constrains the first body (10) to the second body (11), and at least an open position, in which the first body (10) and the second body (11) are not constrained to one another; an anti-intrusion device of one of the preceding claims, wherein a first portion (4a) of the seating (4) is afforded in the first body (10) and a second portion (4b) of the seating (4) is afforded through the cursor (12), such that in the closure position of the cursor (12), the two portions (4a, 4b) of the seating (4) are aligned to one another, while in the open position of the cursor (12) the two portions (4a, 4b) of the seating (4) are not aligned to one another.
6. The device of claim 5, wherein the first body (10) and the second body (11), coupled to one another, define a handle (23) for supporting the container (20).

Fig. 1

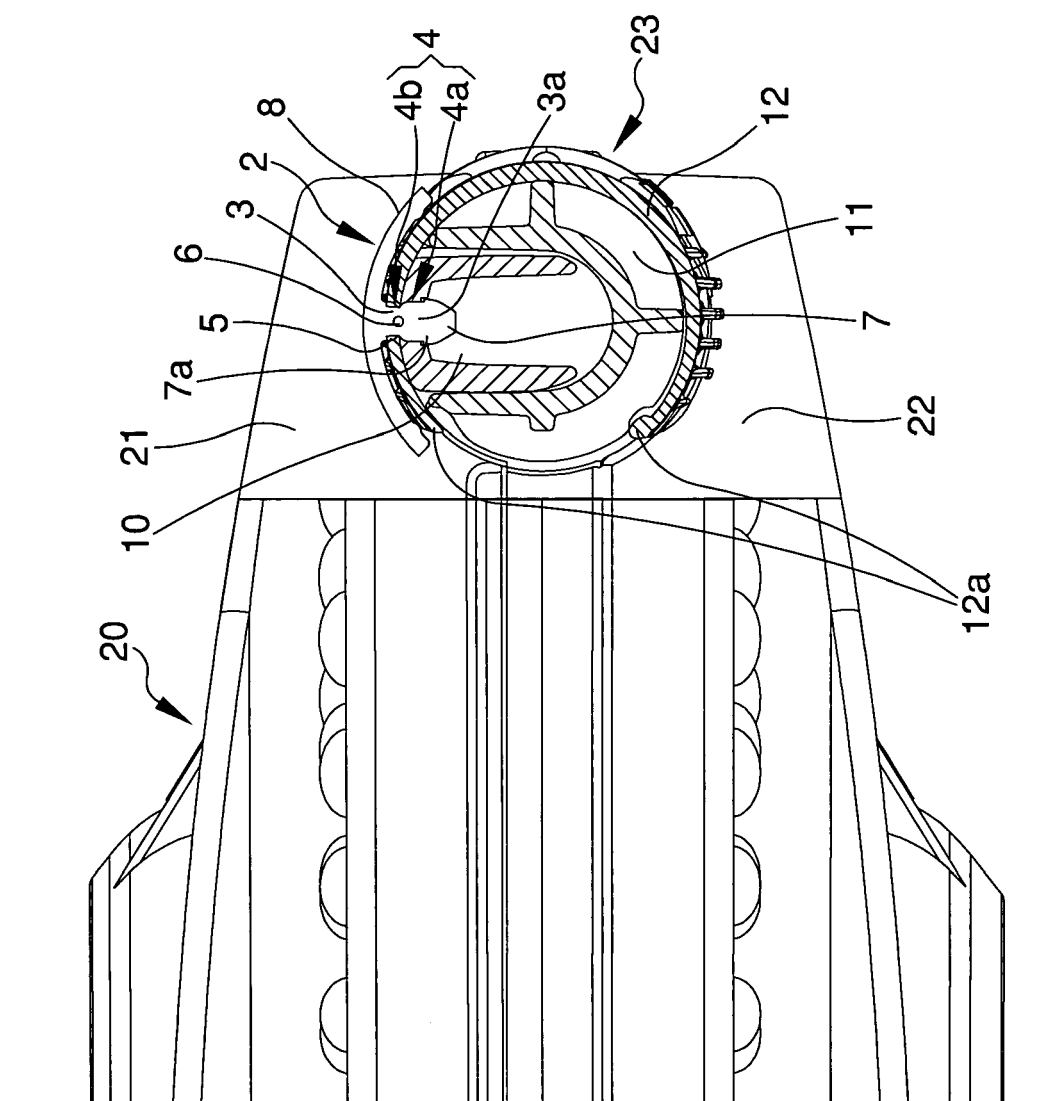


Fig. 2

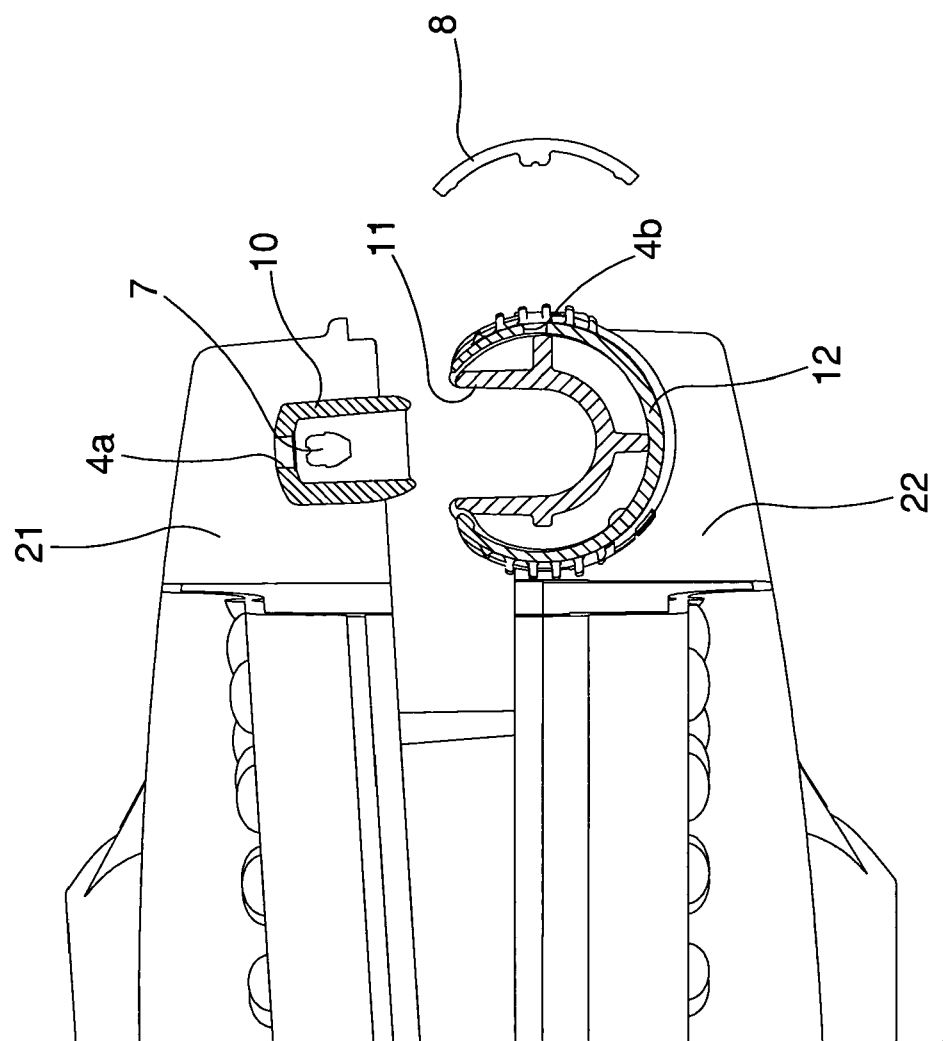


Fig. 3

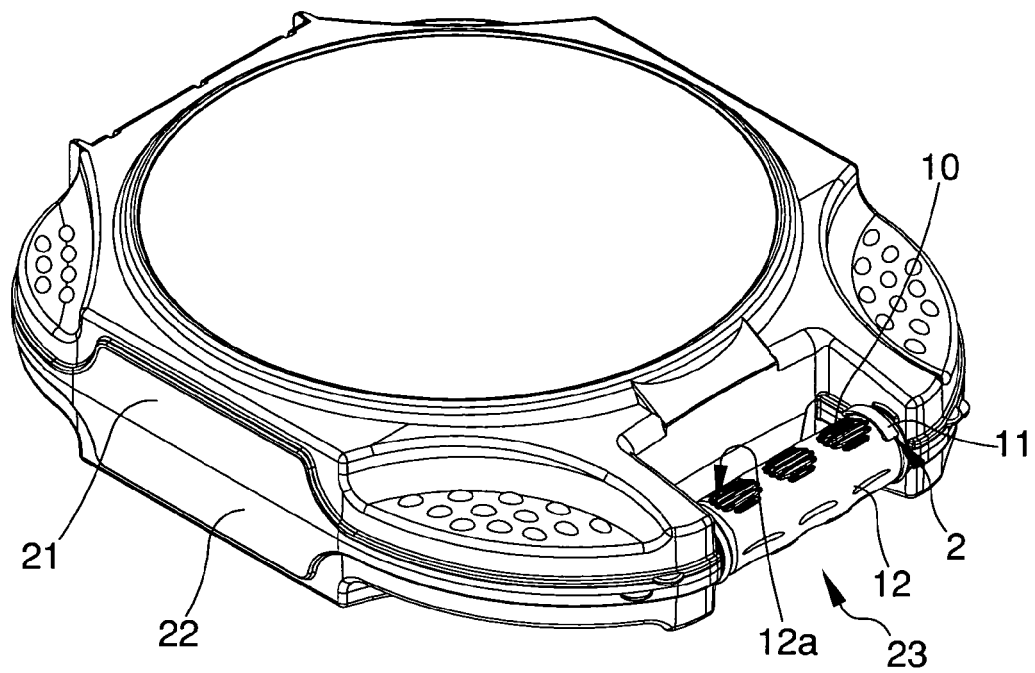
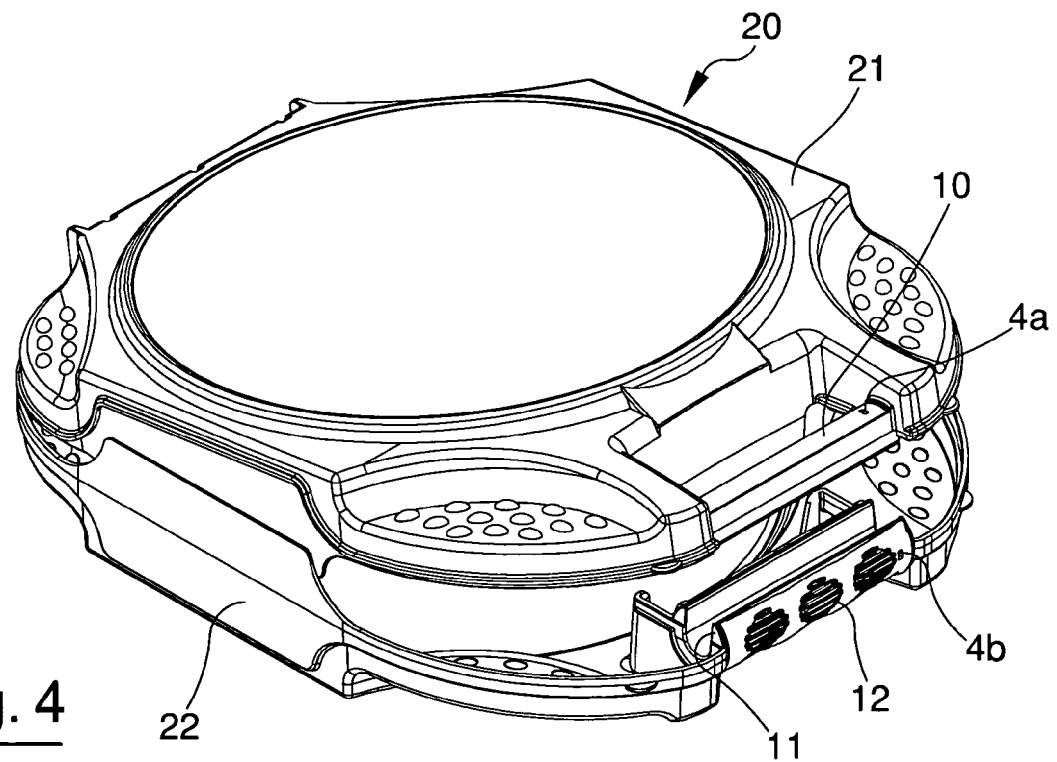


Fig. 4





EUROPEAN SEARCH REPORT

Application Number
EP 08 02 1908

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			B65D A45D B25H B25F
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 12 February 2009	Examiner Vigilante, Marco
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			

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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 08 02 1908

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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