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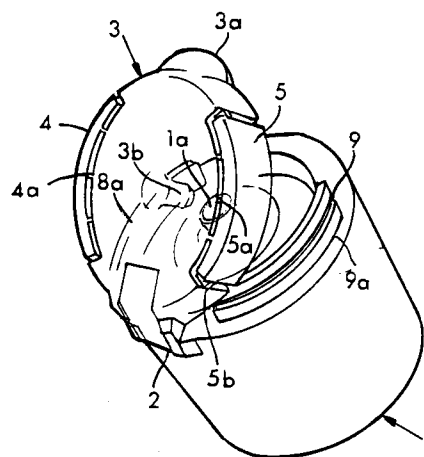
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I-20123 Milano (IT)(54) **Pilferproof closure.**

(57) The pilferproof closure comprises a body (1) which is suitable to be associated in a non-removable manner with a container and a cap (3) which is hinged (2) on the body and is provided with an occlusion element (3b); the cap comprises at least one portion (4,5) which is not efficient as regards tightness, which is connected to the cap (3) by means of a weak link (4a,5a) and which is provided with means, such as a tooth (6,7), for engaging the body, so as to separate from the cap when first opening occurs.

*Fig.1***EP 0 531 887 A2**

The present invention relates to a pilferproof closure.

It is known that the closures of many containers are meant to be opened and closed more than once, since the product contained in said containers is not used all at once: this is the case, for example, of bottles which contain liquid products for household use, such as detergents or soaps.

There is also the very common case of closures meant to be opened only once in order to completely empty the container to which they are applied.

In both cases, in order to assure the purchaser of the integrity of a container at the moment of purchase, it is important that said purchaser be able to notice that he is the first to open the closure of said container, and so-called pilferproof closures have thus been proposed.

In said closures, during initial opening the user causes a change in configuration which cannot be restored and thus indisputably indicates that opening has occurred: in some pilferproof screw closures, for example, the rotation which causes opening occurs only if said closure is separated from an underlying ring which is connected to the closure in a weak region.

The aim of the present invention is to provide an improved pilferproof closure which is producible in a simple manner, for example by means of plastic molding in a single part, and which clearly indicates that an initial opening has occurred.

This aim and others which will become apparent hereinafter, are achieved by a pilferproof closure according to the invention, which comprises a body which is suitable to be associated in a non-removable manner with a container and a cap which is hinged on said body and is provided with an occlusion element, characterized in that said cap comprises at least one portion which is not efficient as regards tightness, which is connected to the cap by means of a weak link, and which is provided with means for engaging said body, so that it separates from the cap when first opening occurs.

If the closure is produced by molding plastic material, it is advantageously characterized by the presence of two opposite peripheral portions which are connected to the central portion of the cap, which comprises the occlusion element, by means of bridges, and which are provided with a tooth for engaging a complementarily shaped recess provided on ridges which extend from the body.

Further characteristics and advantages of the present invention will become apparent from the following detailed description thereof which is illustrated only by way of non-limitative example in the accompanying drawings, wherein:

figure 1 is a perspective view of the device according to the invention during first closure; figure 2 is a sectional view of the device at the end of first closure;

figure 3 is an enlarged-scale view of the detail III of figure 2.

With reference to the above figures, the reference numeral 1 designates a body which is suitable to be associated, in a non-removable manner, by virtue of known means, with a container such as for example a plastic bottle for containing any liquid product for household use.

A cap 3 is hinged at 2 to said body 1 and is provided with a grip tab 3a and with an occlusion element 3b which is suitable to be associated, in order to ensure tightness of the closure in closed position, with a hole 1a provided in the central region 1b of the body 1.

It should be specified that the embodiment of the closure illustrated in the figures is produced with a single piece of molded plastic material.

An important characteristic of the closure according to the invention consists in that the cap 3 comprises two opposite peripheral portions 4 and 5 which are connected to the central portion, which comprises the occlusion element 3b, by means of a weak link defined by bridges such as 4a for the portion 4 and such as 5a or 5b for the portion 5; said portions 4 and 5 are provided with means for engaging the body 1 which are constituted by a tooth 6 for the portion 4 and by a tooth 7 for the portion 5 and are respectively shaped complementarily with respect to a recess 8 provided on the ridge 8a of the body 1 and with respect to a recess 9 defined on the ridge 9a. The cross-sectional shape of the teeth 6 and 7 is triangular, in order to allow the spontaneous fall of the portions 4 and 5 under their own weight when the coupling bridges are broken, as will become apparent in the description of operation, and also to facilitate the first closure operation.

The operation of the closure is now described.

When the closure is closed for the first time after its non-removable association with a container, the cap is guided into the position shown in figure 2, with the occlusion element 3b in sealing position, and in this position the connecting bridges of the portions 4 and 5 are unbroken and said portions are coupled to the body 1 by virtue of the association of the teeth 6 and 7 with the complementary recesses 8 and 9.

The co-planar arrangement of the upper surfaces of the portions 4 and 5 and of the central portion 16 of the cap 3 has a hardly negligible role in the satisfactory outcome of the operation, which is naturally performed on a filling and closure-fitting line by means of an automatic device.

During first opening of the closure, the user grips the tab 3a of the cap 3 in order to rotate it about the hinge 2; in this step, the effect of engaging the portions 4 and 5 with the body 1, produced by the teeth 6 and 7 inserted in the recesses 8 and 9, prevails over the strength of the bridges which connect said portions to the central region of the cap, and this causes the breakage of said bridges.

Consequently, the portions 4 and 5, which are no longer retained, leave their position and fall under their own weight.

When the user, after pouring the required amount of liquid from the container, closes the closure again, the portions 4 and 5 are no longer present, and upon subsequent opening it will be possible to notice that said opening can occur freely, thus indicating that pilfering has occurred.

The fact should in any case be stressed that even prior to this step of subsequent opening the occurrence of pilfering can be perceived visually as well, since the fall of the portions 4 and 5, which as seen in the figures have an extended arc extension, produces a considerable change in the configuration of the closure with respect to the non-pilfered situation.

Finally, it is stressed that in the closure according to the invention the change in configuration which follows pilfering occurs between elements which are all internal to said closure, without thus affecting at all any contiguous parts of a container, and this fact allows a considerable constructive advantage.

Naturally, in the closure according to the invention the two portions 4 and 5 may have the most appropriate extension and may also be replaced by a single portion; the teeth 6 and 7 may furthermore have a shape which differs from the illustrated triangular one, for example a trapezoidal one, provided that, preferably, it is such as to allow the fall of the portions 4 and 5 after the breakage of the connecting bridges.

In the practical execution of the invention, all the details may be replaced with other technically equivalent elements; the materials employed, as well as the shapes and dimensions, may furthermore be any.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. Pilferproof closure, comprising a body (1) which is suitable to be associated in a non-removable manner with a container and a cap (3) which is hinged (2) on said body and is provided with an occlusion element (3b), characterized in that said cap comprises at least one portion (4,5) which is not efficient as regards tightness, which is connected to the cap (3) by means of a weak link (4a,5a) and which is provided with means (6,7) for engaging said body, so as to separate from the cap when the first opening occurs.
2. Closure according to claim 1, obtained by molding plastic material, characterized by the presence of two opposite peripheral portions (4,5) which are connected to the central portion (16) of the cap (3), which comprises the occlusion element (3b), by means of bridges (4a,5a), and which are provided with a tooth (6,7) for engaging a complementarily shaped recess (8,9) provided on ridges (8a,9a) which extend from the body.
3. Closure according to claim 2, characterized in that the coupling tooth (6,7) is shaped so as to allow the fall of the peripheral portions (4,5) of the cap under their own weight when the connecting bridges (4a,5a) break.
4. Closure according to claim 3, characterized in that the tooth (6,7) has a triangular shape.
5. Closure according to claim 3, characterized in that the tooth has a trapezoidal shape.
6. Closure according to one or more of the preceding claims, characterized in that the upper surfaces of the portions (4,5) connected by means of a weak link to the central portion of the closure are co-planar with respect to the upper surface of said central portion (16).

Fig.1

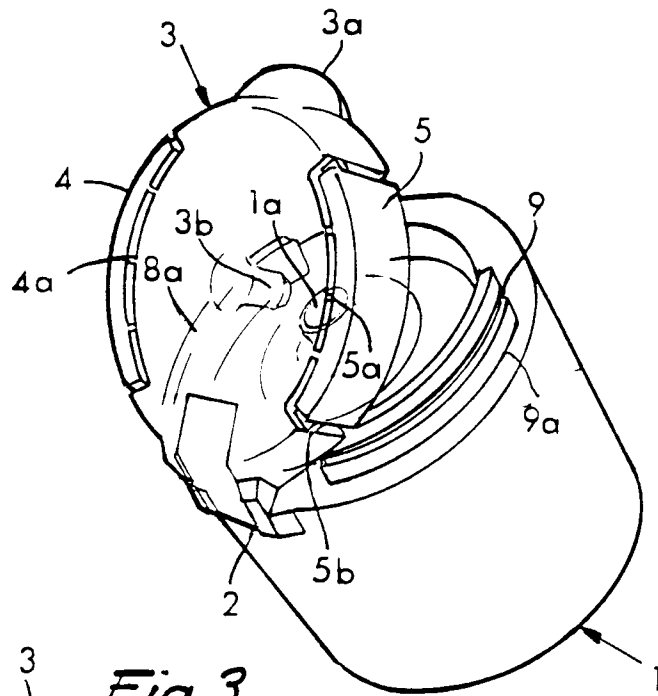


Fig.3

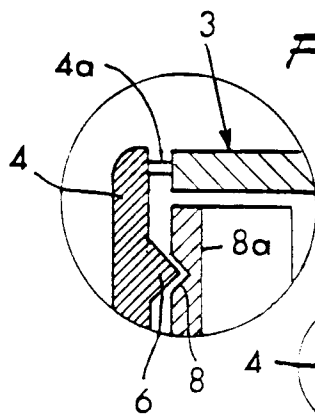


Fig.2

