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[19]

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Grussen

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[54] **TAMPER-PROOF AND LOSS-PROOF SCREW-TYPE BOTTLE CAP**

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[51] **Int. Cl. B65d 49/12**

[58] **Field of Search** 215/250, 252, 253, 254, 215/256, 258

[56] **References Cited**

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[57] **ABSTRACT**

Bottle cap has an internally threaded upper part, a lower retaining ring cooperating with a shoulder formed by the base of the bulge in the neck of a bottle to be capped, and a cylindrical strip forming a collar connecting these two members and comprising two rows of pins along its edges connecting it to said members so that it may be partially separated therefrom.

3 Claims, 3 Drawing Figures

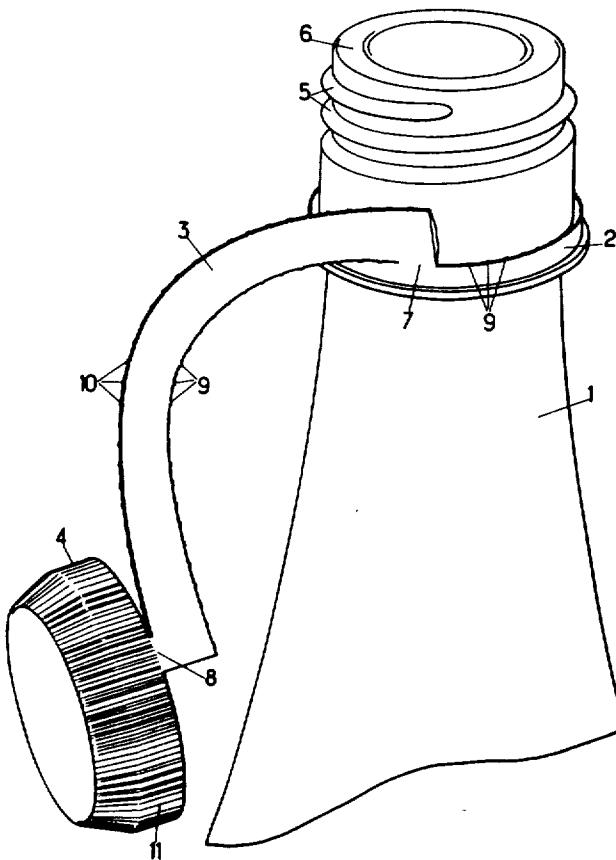


FIG.1

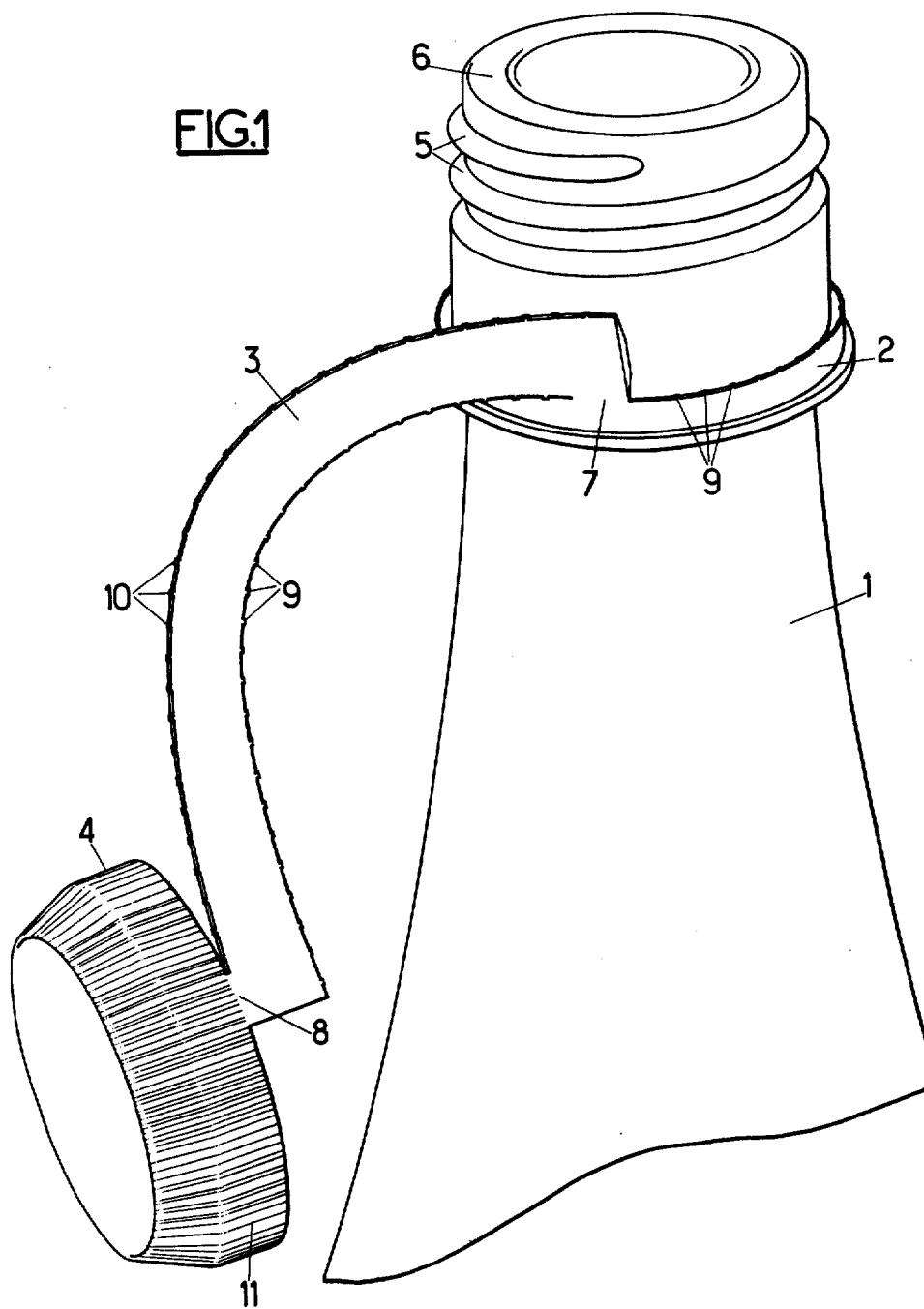
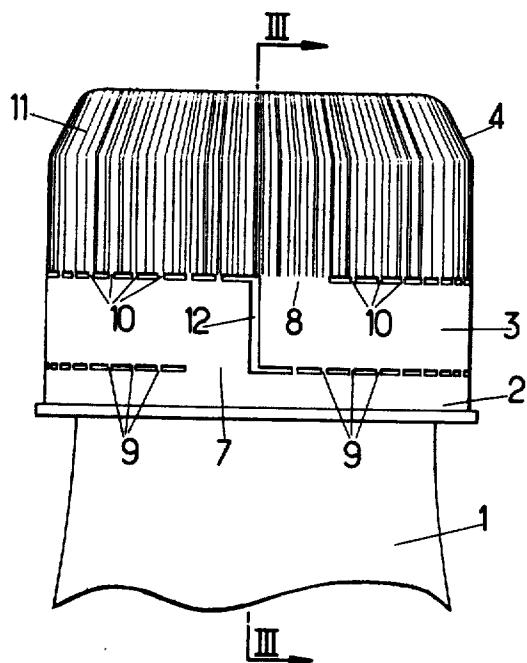
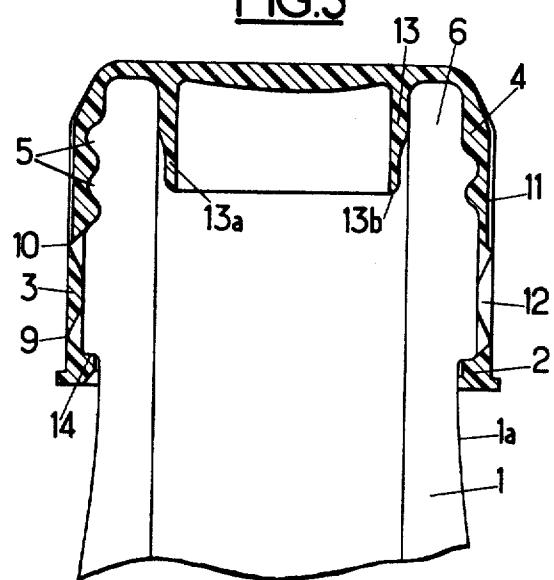


FIG.2**FIG.3**

TAMPER-PROOF AND LOSS-PROOF SCREW-TYPE BOTTLE CAP

This invention relates to a new tamper-proof screw-type cap characterized by the fact that it comprises at its bottom a retaining ring adapted to cooperate with a shoulder on the lower part of an external bulge on the neck of the bottle to be capped. The upper part of this neck is provided with a molded thread adapted to cooperate with an internal thread inside said cap. The lower retaining ring is connected to the threaded part of the cap by a cylindrical strip which is attached to the lower part and to the upper part principally by two rows of frangible connecting pins regularly spaced along almost all of the upper and lower edges of the strip, and also by two continuous elongated parts in alignment with these series of pins and permanently connecting the strip to the threaded upper part of the capsule and to its lower part.

The separable strip thus makes it impossible to lose part of the cap because the lower part of the cap cannot pass over the bulge on the neck of the bottle, but may on the contrary descend along the neck of the bottle and rotate when the upper part of the cap is to be screwed back on, by reason of its connection to said strip.

It should be noted that one of the essential characteristics of the new cap according to the invention resides in the direction of this strip which is so chosen that the screwing on of the cap results in rotation of the strip as well as the lower part of the cap without tearing the connecting pins, while the unscrewing of the upper part automatically breaks these pins, the rigidity of the strip between the two rows of pins being insufficient to insure, in this case, that the lower part of the cap will be rotated.

The characteristics of the present invention will be better understood from a reading of the following description of one embodiment of the tamper-proof and loss-proof cap according to the invention, which embodiment is given purely by way of illustration and example, and described with respect to the accompanying drawings, on which:

FIG. 1 is a perspective view of a bottle equipped with said cap after the connecting pins have been torn, showing the loss-proof property of the cap;

FIG. 2 is an elevational view showing the same bottle before tearing; and

FIG. 3 is a diametral section taken along the line III-III of FIG. 2.

FIG. 1 shows a bottle 1 equipped with a cap having three distinct superposed parts, to wit: a lower collar 2, a partially separable strip 3 provided with two rows of pins, and an upper part 4 having an internal thread (not shown on FIG. 1) and adapted to cooperate with the threads 5 on the outer part of the neck 6 of the bottle 1.

FIG. 1 also shows that the strip 3 is attached permanently to the lower collar 2 by a continuous portion 7 and to the upper part 4 by a continuous portion 8 of substantially equal length.

FIG. 2 shows the bottle 1, the upper part 4, and the lower collar 2 as well as the separable strip 3.

It is easy to understand that unscrewing of the externally knurled part 4 causes, through the connection 8, a rupture of the lower and upper pins shown at 9 and 10 on FIG. 2. The knurled periphery 11 which facili-

tates the screwing and unscrewing of the part 4 is visible on FIG. 3 which shows a section taken through this cap at the level of the space 12 (also visible in FIG. 2), which space separates the two ends of the partially separable tongue.

It will finally be noted that the new cap preferably has an internal sealing skirt 13 of a conventional type cooperating with the internal part of the neck 6 of the bottle 1 and, which comprises a lower portion 13a having a reduced thickness, which is chamfered at its lower edge at 13b and adapted to facilitate the introduction of said skirt into the neck 6. A hermetic seal may be assured by imparting to the external portion of the sealing skirt 13 a diameter a little greater than the internal diameter of the neck 6.

Such sealing skirts are already used on one piece caps of the type comprising a simple external retaining member used to snap it onto the neck of a bottle.

Finally, FIG. 3 shows the internal profile of the lower collar 2 and the way in which this collar cooperates with the shoulder 14 at the base of the neck 6, thus forming a supplemental retaining joint, the effect of which is added to that of the threads in the upper part 4 of the cap.

As has already been stated, the lower collar 2 may fall in response to gravitational force along the neck 1a of the bottle 1 after the cap has been unscrewed from the bottle, but this collar 2 can in no case slide upward to the top of the neck of the bottle 1.

It will of course be appreciated that the embodiment which has just been described may be modified as to detail, and improvements or additions be made, and that certain components thereof may be replaced by their mechanical equivalents without thereby departing from the basic principles of the invention.

What is claimed is:

1. Tamper-proof and loss-proof cap for a bottle having a neck provided with external threads and an external shoulder beneath said threads, said cap comprising a continuous lower collar dimensioned to be engaged beneath said shoulder, an upper part having internal threads mating with the external threads on said bottle, and a connecting strip having two discrete ends and upper and lower edges, encircling said body between said upper and lower parts, so that said two ends at least nearly abut each other, said upper edge being attached to said upper part and said lower edge to said lower collar by rows of pins extending the greater part of the length of said edges, said upper edge being also attached adjacent one of said ends to said upper part by a web substantially wider and stronger than said pins while said lower edge is attached near the other of said ends to said lower collar by a web substantially wider and stronger than said pins,

whereby rotation of upper part in one direction carries said lower part unruptured with it due to abutment of said strip ends, whereas rotation of said upper part in the opposite direction results in rupture of said pins with said upper part remaining attached to said lower collar only by said connecting strip.

2. Cap as claimed in claim 1 which comprises, a sealing skirt depending from and within said internally threaded upper part, the upper part of said skirt having an external diameter greater than the internal diameter

of the neck of the bottle, while its lower part has a smaller thickness and external diameter than said upper part, is connected to said upper and thicker part by a frusto-conical portion and terminates at its lower edge in an external chamfer, said lower part facilitating the introduction of said sealing skirt into the neck of

the bottle.

3. Cap as claimed in claim 2 in which the central portion of said upper part inside the sealing skirt is thicker than its peripheral portion surrounding said skirt.

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