

United States Patent [19]  
Bojardi

[11] 3,920,141  
[45] Nov. 18, 1975

[54] STOPPER FOR CONTAINERS, ESPECIALLY BOTTLES AND FLASKS

[76] Inventor: Tiziano Bojardi, Viale Indipendenza 39, Trezzano S/Naviglio, Italy

[22] Filed: Apr. 23, 1974

[21] Appl. No.: 463,351

[30] Foreign Application Priority Data

Jan. 8, 1974 Italy 19197/74

[52] U.S. Cl. 215/251; 215/253

[51] Int. Cl. B65D 41/40

[58] Field of Search 215/249, 250, 251, 252, 215/253, 274

[56] References Cited

UNITED STATES PATENTS

1,214,675 2/1917 Heath 215/253  
1,908,245 5/1933 Hogg 215/252

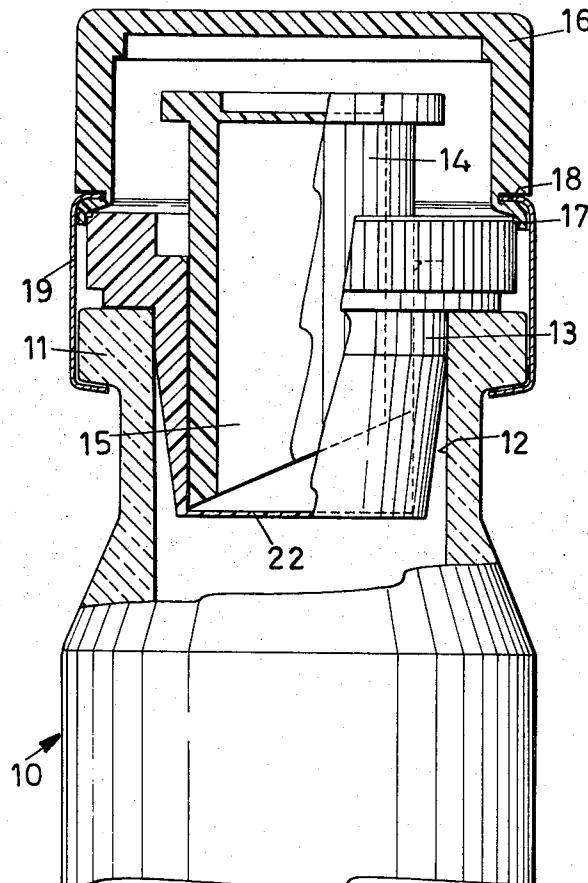
2,081,138	5/1937	Andersen .....	215/251
2,940,627	6/1960	Schultz .....	215/250
3,156,369	11/1964	Bowes .....	215/250 X
3,193,128	7/1965	Ravn .....	215/250
3,278,063	10/1966	Kranzhoff .....	215/249 X
3,464,576	9/1969	Rohde .....	215/252

Primary Examiner—Donald F. Norton  
Attorney, Agent, or Firm—Fleit & Jacobson

[57] ABSTRACT

A stopper for bottles and similar containers is disclosed, which comprises a caplike portion having an annular flange engaging a first curled edge of an annular strip, the other (bottom) edge of the strip being clamped onto the container's neck. The strip has a number of rupturing lines so that, by pulling the cap portion, the strip is broken in several points and can be removed, the cap being thus disengaged.

6 Claims, 7 Drawing Figures



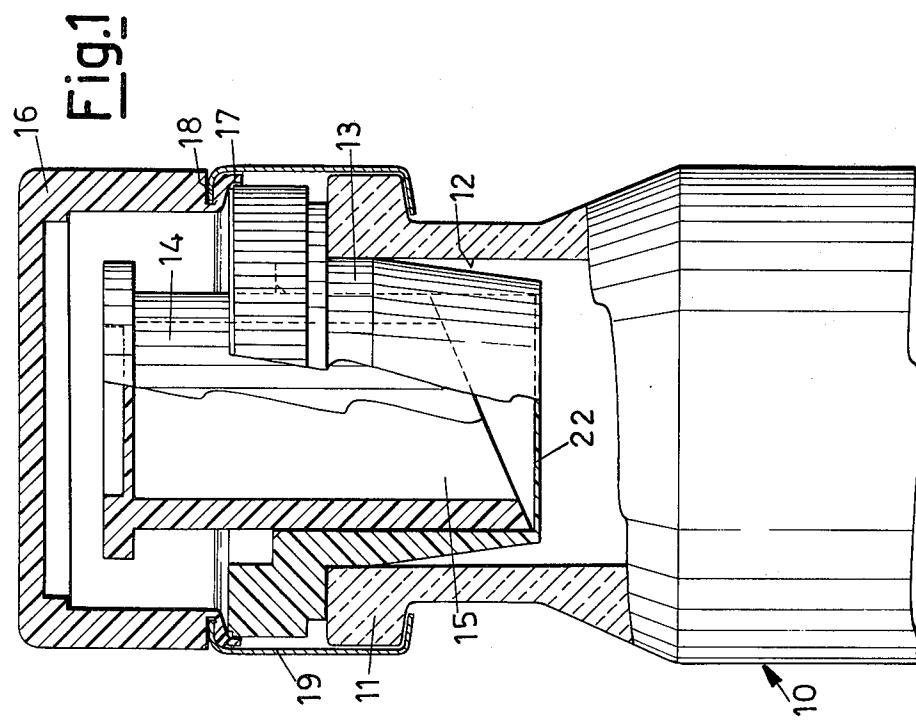
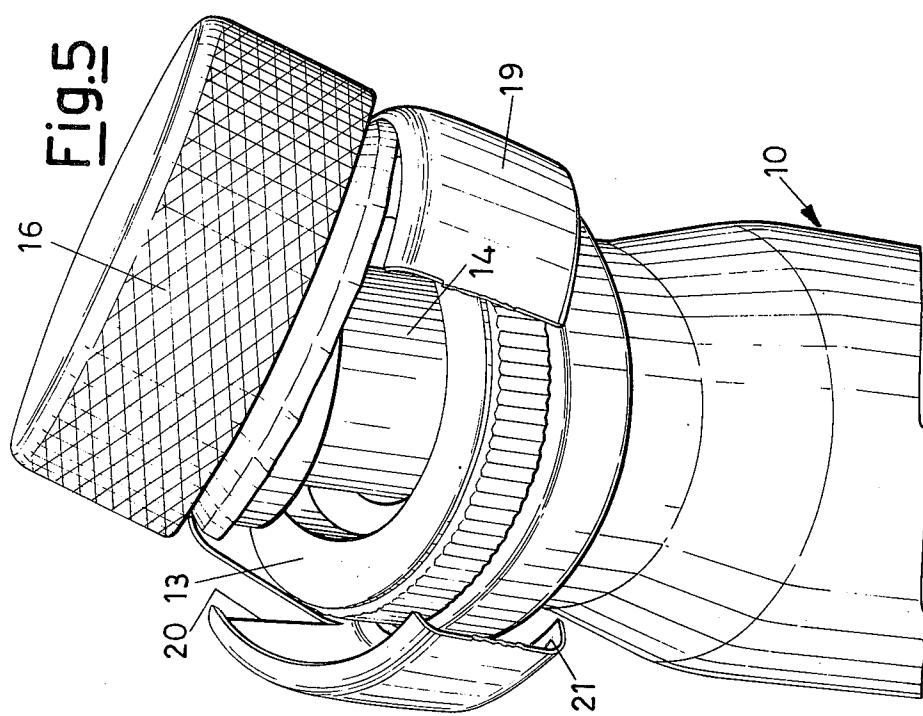
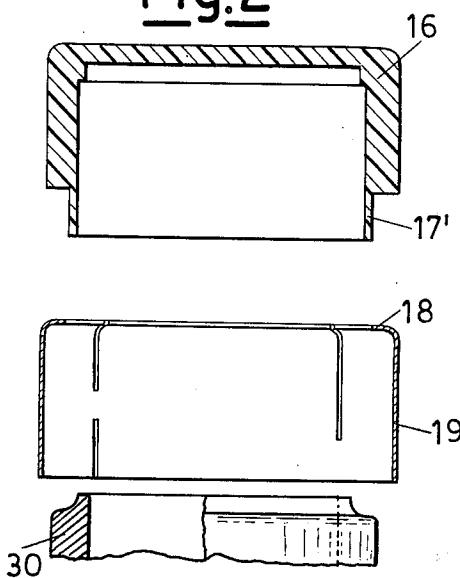
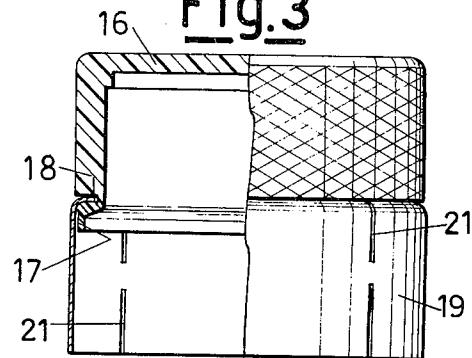
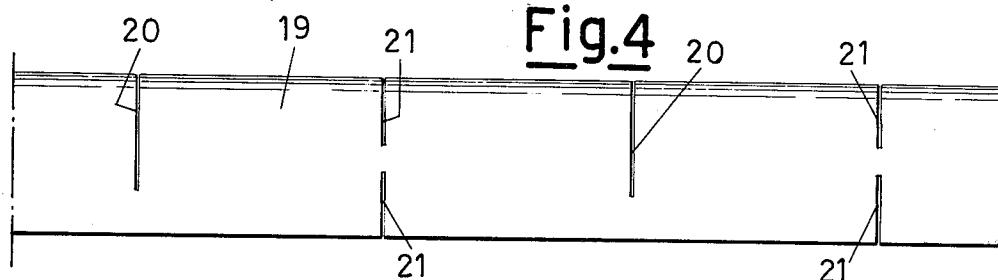
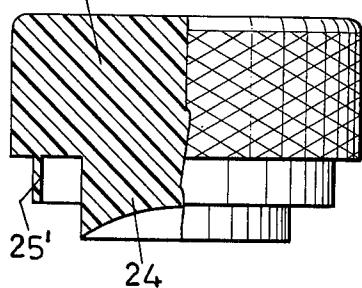
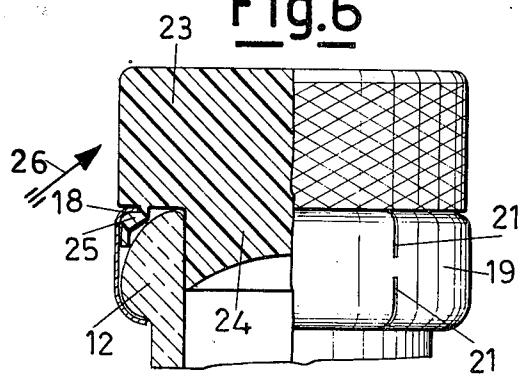


Fig.2Fig.3Fig.4Fig.7Fig.6

## STOPPER FOR CONTAINERS, ESPECIALLY BOTTLES AND FLASKS

Stoppers are known which are formed by a cap slipped or screwed on the mouth of a container and held thereon by an annular metal strip which clamps the cap onto the mouth.

The removal of the strip, which is a guaranty seal for the contents of the container, takes place in a number of ways.

More particularly, if the cap is screwed, the strip can be made rupturable due to the axial motion induced in the cap as it is being unscrewed.

The strip can also be removed by merely tearing it out; to this purpose, the strip has a gripping ear.

In either case the strip is fitted with lessened strength lines which facilitates the break according to pre-selected steps.

These systems, as well as other conventional systems, have a number of defects.

The screwable caps require a screw-thread with certain tolerances, that which cannot be easily made on glass containers.

According to the conventional art it is also suggested to fit onto the glass container a portion of screw-threaded bushing, but at the cost of a greater intricacy and expense for the finished stopper.

The tear strips are a source of defects which are known to everybody; as a matter of fact the gripping ear cannot be conveniently grasped by hand and, inter alia, is inherently prone to cause cuts. In addition, the fracture-inducing lines cannot easily be obtained with the required resistance; if the rupture requires an exceedingly high force the ear is stripped without breaking the strip; if it requires too low a force, accidental breaks are likely to occur, that which renders the sale of the container impossible, as it has been deprived of its guaranty.

The invention aims at providing a stopper for a container in which a cap can be removed by merely pulling it, reliably causing the break of a guaranty metal strip which clamps the cap and the container mouth together.

An additional object of the present invention is to provide a stopper in which the removal of the cap can be carried out with a limited force and with a simple movement, so that it is adaptable to any kind of user.

The stopper according to the invention comprises a cap portion having an annular flange engaging a first curled edge of an annular strip, the other edge of which clamps the container's neck, the strip having along its generating lines, a number of lessened resistance lines which facilitate rupturing.

The advantages and features of the stopper according to the invention will become clearer from the ensuing description of exemplary embodiments thereof as shown in the accompanying drawings, wherein:

FIG. 1 shows a stopper according to the invention, as applied to a container, and partially in section.

FIG. 2 is an exploded diametrical sectional view of parts which make up the stopper of FIG. 1.

FIG. 3 shows partially in section the parts of FIG. 2 as assembled together.

FIG. 4 shows a plan view of one of the component parts of the stopper of FIG. 1.

FIG. 5 is a perspective view of the stopper of FIG. 1 while being ruptured.

FIGS. 6 and 7 show, in partly sectional views, a further embodiment of the stopper according to the invention.

As shown in FIG. 1, a container, partly shown at 10, has a bead 11 on its mouth 12, in which a hollow plug 13 is slipped; in this plug, which is known per se, is housed a piston 14 forming a chamber 15 intended to hold a product to be admixed with the liquid contained in the vessel 10 at the time of its use. The stopper according to the invention comprises a cap 16 having at its bottom a flange 17 holding the curled edge 18 of a metal strip 19, the latter being additionally clamped beneath the bead 11.

In order that the structure of the seal according to the invention may become still clearer, FIG. 2 indicates one of the ways of forming it, which has proven to be an advantage.

The cap 16 is formed with an annular cylindrical extension 17' having a diameter adapted to be slipped into the strip 19, in correspondence with the edge 18. Subsequently, the projection 17' is pressed with a specially provided mould as diagrammatically shown at 30, to form the flange 17, thus obtaining the cap 16 shown in FIG. 3.

Obviously the stopper as shown in FIG. 3 is easily applied to the neck of a container by clamping, for example by rolling, the strip.

FIG. 4 shows a plan developed view of the strip 19, in which there can clearly be seen the break lines 20 and 21. It can be seen that the lines 20 are limited to a portion of the generating lines of the strip, leaving one end unaffected, whereas the lines 21 have an interruption at the central area of the strip.

The opening of the capsule of FIG. 1 is shown in FIG. 5. A pulling force on the cap 16 in such a direction to draw it away from the container, causes the strip 19 to be torn so that it is flared out and breaks at the lines 20 and 21.

It should be noted that by so doing the strip is both withdrawn from the cap and the container and can easily be removed.

As the cap has been removed, the plug 13 can be withdrawn after having ejected its contents by pressing the piston 14, the latter rupturing the diaphragm 22 and putting in communication the chamber 15 with the interior of the vessel 10.

A cap according to the invention, in addition to being a protection and a binding means for another seal whatsoever, as shown in FIGS. 1-5, can be as itself a container's stopper.

A closure of this kind is shown in FIG. 6; it comprises a stopper 23 which, with its extension 24, makes a seal inside the neck 12 of a container. Also in this case, of course, the stopper 23 has a flange 25 which is wholly similar to the flange 17 forming a grasping member for the strip 19.

In FIG. 7 there is shown an advantageous form of structure for the stopper, prior to the application of the guaranty strip.

An annular projection 25', similar to the projection 17' is adapted to be clinched into the strip 19, the latter being freely slipped thereon; by this clinching action the stopper is stably fastened to the strip.

The opening of the stopper of FIG. 6 takes place by tearing, for example by pressing with a finger in the direction of the arrow 26. The torn out strip can completely be removed and the stopper can be reused to close the container after each use again.

It is apparent that, within the scope of the invention, the cap 16 can take a number of shapes, in addition to those shown hereinabove at 16 and at 23. It should only have a flange for engaging the top edge of the strip.

The ways in which the flange can be formed can be varied, although the clinching as shown of an annular extension is particularly advantageous. More particularly this clinching action can take place with a hot punch if the capsule is formed by a thermoplastics material.

Likewise, the break lines of the strip 19, as exemplarily shown at 20 and 21 can have the appropriate shape, number and extension consistently with the component material and its thickness; however, they should, as a rule, extend along the generating lines of the strip.

The stopper according to the invention can be very conveniently ruptured: any movement tending to withdraw the stopper from the container, a motion which, *inter alia*, is instinctive for the user, performs that axial action which causes the strip break, the strip falling completely without leaving any sharp cutting edge on the container or the stopper.

What I claim is:

1. A stopper for a container having a neck devoid of screw threads, the neck having an upper edge defining an open end and a radially extending bead having a bottom wall formed on the container neck adjacent the neck upper edge comprising, in combination, the cap having a bottom edge portion disposed above the bottom wall of the bead on a container, a downwardly extending, annular flange on said cap adjacent said bottom edge portion, and annular sealing strip having a circumferentially extending upper edge portion disposed in overlying clamping engagement with said

flange and a circumferentially extending lower edge portion disposed in underlying clamping engagement with the bottom wall of said bead with said cap extending upwardly from said sealing strip, said strip being provided with a plurality of circumferentially spaced, axially extending break lines whereby a tilting force applied laterally to said cap ruptures said strip along one or more of said break lines.

2. A stopper in accordance with claim 1, wherein said cap is provided with a circumferentially extending shoulder on said bottom edge portion inwardly of said flange for overlying sealing engagement with the upper surface of said bead.

3. A stopper in accordance with claim 2, wherein said cap is provided with a downwardly extending portion of reduced diameter to form said shoulder, said portion of reduced diameter being arranged to be accommodated within said container neck in sealing relationship therewith.

4. A stopper in accordance with claim 1, including a sealing member disposed within said container neck and within the interior of said stopper.

5. A stopper in accordance with claim 1, wherein a portion of said flange extends radially outward along said cap bottom edge portion to define with said cap bottom edge portion a circumferentially extending recess for accommodating said sealing strip upper edge portion.

6. A stopper in accordance with claim 1, wherein said break lines comprise slits formed in said sealing strip, said slits extending transversely of said strip in circumferentially spaced relationship between said strip upper and lower edge portions.

\* \* \* \* \*

35

40

45

50

55

60

65