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(54) A closure cap for closing a container under vacuum.

(57) A closure cap for closing a container under vacuum, comprising a circular closing disc having a flanged edge, a sealing compound provided therein and a sealing ring of synthetic material, having an L-shaped cross-section. The radially inwardly directed edge of the sealing ring forms an abutment for the circular closing disc. A substantially cylindrical skirt encloses the flanged edge of the closing disc. Inwardly directed projections, adapted to engage underneath the thickened edge of a container to be sealed are provided on the inside of the skirt.

The sealing ring is fitted with a guaranty construction, comprising a tiltable tear-off tab (2), disposed within the standard height (h) of the skirt (4) of the sealing ring (1). The tear-off tab is connected to the skirt by means of two tear lines, extending in axial direction of the skirt.

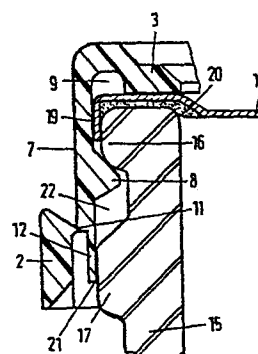


FIG. 7

A closure cap for closing a container under vacuum.

This invention relates to a closure cap for closing a container under vacuum, comprising a circular closing disc having a flanged edge, a sealing compound provided therein, and a sealing ring of synthetic plastics material of L-shaped cross-section, and including an edge  
5 directed radially inwardly and forming an abutment for the circular closing disc and a substantially cylindrical skirt enclosing the flanged edge of the circular closing disc, said skirt having on its inside radially inwardly directed projections adapted to engage underneath the thickened edge of a container to be sealed, and  
10 the sealing ring being further provided with a guaranty construction.

A cap of this type, which is sometimes referred to as a vacuum snap cap, is disclosed in Dutch patent application 7407362. In this prior cap, the guaranty construction is formed by a tear-off guaranty ring provided at the bottom of the skirt, which ring is  
15 fitted with a pull tab projecting radially outwardly of the cap, and with which the cap can be opened without any tool being required. The tear-off guaranty ring forms an undesirable extension of the skirt of the sealing ring, and the radially projecting pull tab impedes the automatic supply of sealing rings via a sealing-ring hopper, since  
20 sealing rings thus designed continually become jammed in the hopper. It is true that after the sealing ring has been torn off, the cap can be reused for closing containers provided with only one thickened edge, but they are not suitable for re-closing jars, i.e. containers provided with a double thickened edge, as are usually  
25 employed for the vacuum preservation of foodstuffs. The lower edge of the skirt in such containers or jars should be in sealing contact with

the second thickened edge of the container, which is not the case with the prior cap.

It is an object of the invention to provide a cap of the above described type that can be used for re-closing containers  
5 having a double thickened edge, with avoidance of the drawbacks going with the above described guaranty construction.

To this effect the invention provides a cap in which the guaranty construction comprises a tiltable tear-off disposed within the standard height of the skirt of the sealing ring, which tear-off  
10 tab is connected to the skirt by means of two tear lines extending in axial direction of the skirt.

In order that, when a container is re-closed, the closure may be insect infection-proof, the sealing ring adjacent the tear-off tab is made double-walled, with an outer wall being formed by the tear-off  
15 tab itself and an inner wall constituting a continuous extension of the lower edge of the skirt.

For the purpose of rendering it difficult for the cap to be opened otherwise than via the tear-off tab, the lower edge of the skirt is preferably bevelled inwardly. In this manner there is no  
20 proper grip on the cap except at the tear-off tab. In order that there may be a proper grip on the cap at the tear-off tab, the tear-off tab extends radially slightly beyond the peripheral edge of the skirt and the tear-off tab is provided at the bottom with a nail edge. In order to facilitate the tilting of the tear-off tab, the  
25 wall thickness of the skirt at said tab is thinner than the rest of the skirt.

For reducing the chance of vacuum leaks in the vacuum-sealed containers, the radially inwardly directed edge of the sealing ring is preferably stepped, with the inner-most edge portion being off-set  
30 in axial direction towards the centre plane through the skirt and parallel to the plane through the upper edge of the skirt. In this manner there is formed a mechanical buffer for absorbing shocks that might result in vacuum leaks.

One embodiment of the snap cap according to the invention will now be described, by way of example, with reference to the accompanying drawing, wherein:

Fig. 1 is a top view of the sealing ring;

5 Fig. 2 is a front elevational view of the sealing ring;

Fig. 3 is a cross-sectional view taken on the line III-III of Fig. 1;

Fig. 4 is a bottom view of the sealing ring;

10 Fig. 5 shows a detail of the sealing ring on an enlarged scale;

Fig. 6 illustrates a portion of a jar rim with a part of a snap cap according to the invention thereon at the position of the tear-off tab;

15 Fig. 7 a cross-sectional view similar to Fig. 6 at a position beyond the tear-off tab.

The sealing ring 1 (see Figures 1-5) has an L-shaped cross-section, the one leg of which is formed by the skirt 4, substantially of cylindrical shape and the other leg by the radially inwardly extending edge 3, forming an abutment for a closing disc 18 usually made of metal (see Figs. 6-7). Provided in the wall of the skirt 4 is a  
20 tear-off tab 2 which is connected through tear lines to the wall of the skirt 4. The tear lines 6 extend only along a part of the height h of the sealing ring. Above the tear-off tab 2 the wall thickness 7 of the skirt 4 is thinner, so that the tear-off tab 2 is adapted for  
25 tilting movement, as will be explained in the following. The lower edge 5 of the skirt 4 is bevelled inwardly in order to thus reduce the grip on the cap beside the tear-off tab 2.

Provided on the inside of the skirt wall are projections 8, directed radially inwardly and uniformly distributed over the skirt's  
30 circumference. These projections 8 have a triangular cross-section and are adapted to engage underneath an outwardly thickened edge of a container to be sealed.

Fig. 5 shows the construction of the sealing ring 1 at the position of the tear-off tab 2 on an enlarged scale. The top face 23  
35 of the sealing ring 1 is stepped to cause the thrust face 24 of the

edge 3 to be off-set towards the centre plane through the skirt 4. There is thus formed a chamber 9 which serves as a mechanical buffer for absorbing shocks on the edge, so that the risk of vacuum leaks is substantially reduced. At the position of the tear-off tab 2

5 wall 7 is thinner than the normal wall thickness of the skirt, the difference in thickness being indicated by reference numeral 10. The top side of the tear-off tab 2 has a bevelled face 14, so that when a force F is exerted on the tear-off tab 2, said tab will tilt about the tilting line 11, until the bevelled face 14 comes to abut against

10 the thinned wall portion 7. During the tilting of the tear-off tab 2, the tear lines 6 through which the tear-off tab 2 is connected to the skirt 4 are broken. Accordingly it can be verified whether a container closed by means of a snap cap according to the invention has actually remained closed. At the bottom of the tear-off tab 2 there is provided

15 a recess 13 designed as a nail edge in order to provide a better grip on the tear-off tab 2. Adjacent the tear-off tab 2 the skirt 4 is double-walled. The inner wall 12 is, in axial direction, a continuous extension of the thinned wall 7 and in circumferential direction a continuous extension of the wall of the skirt 4. During the tilting

20 of the tear-off tab 2 about the tilting line 11 no force whatever is exerted on the inner wall 12, so that this retains its original shape.

Figures 6-7 show the snap cap according to the invention disposed on a jar-type container to be sealed. The jar has a glass wall 15 with two thickened rims respectively designated by numerals

25 16 and 17. The snap cap comprises a disc 18 usually of metal, and profiled for strengthening. The closing disc 18 is provided with a flange 19, and a sealing compound 20 is provided at the inner side of the closing disc 18, to provide a vacuum-tight seal on the upper rim 16 of the glass wall 15. The closing disc 18 is pressed

30 on the jar's wall 15 by means of the sealing ring 1, whereby the radially inwardly directed edge 3 comes to lie in contact with the closing disc 18, while the inwardly directed projections 8 engage

underneath the upper thickened rim 16 of the glass wall 15. The upper edge of the sealing ring 1 is stepped to form a buffer space 9.

In order to render the interspace 22 between the two thickened rims 16 and 17 insect infection-proof, the bevelled lower edge 5 should, at 25, be in sealing contact with the outer wall of the thickened rim 17.

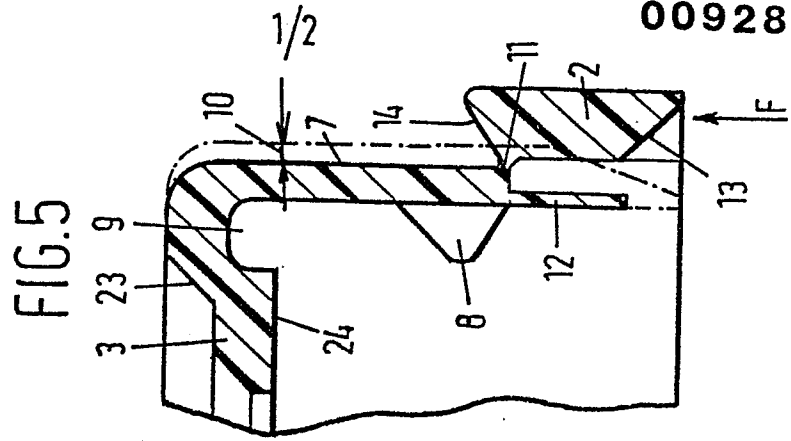
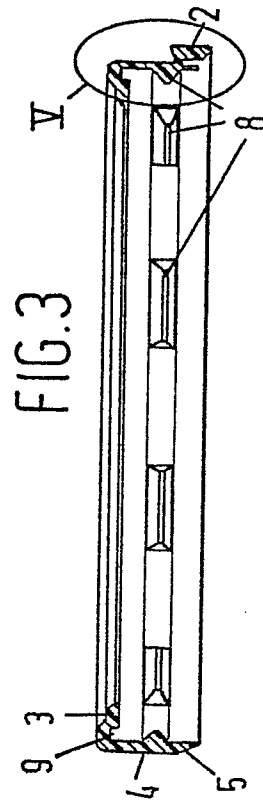
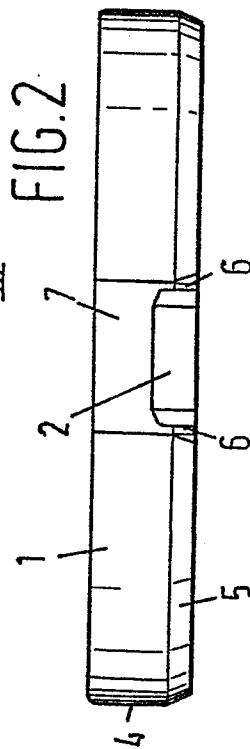
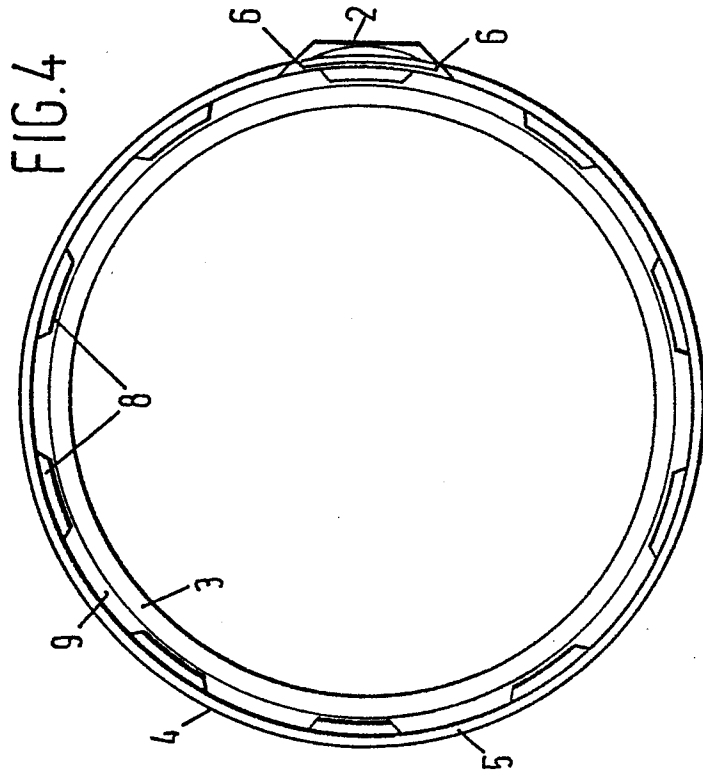
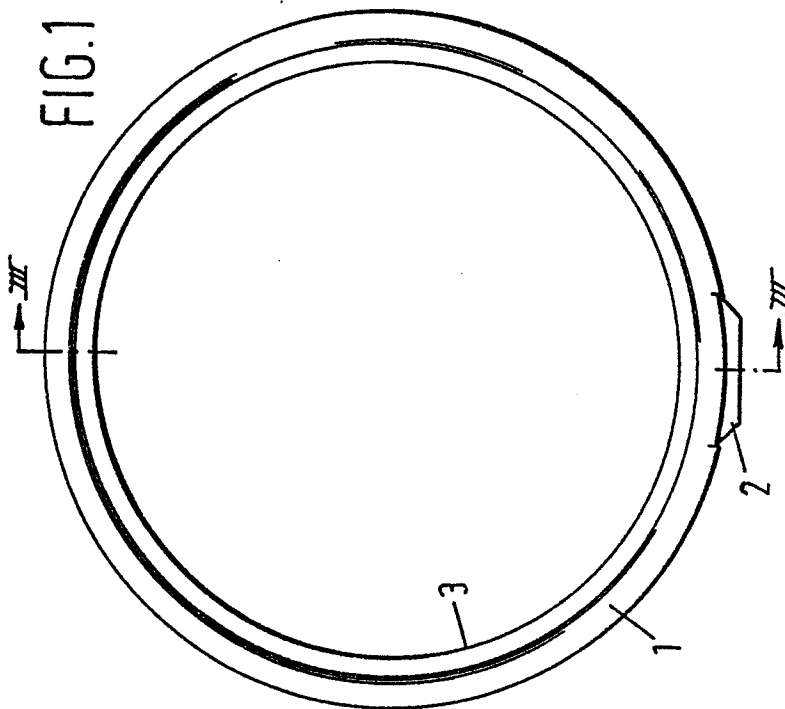
Even after the guaranty structure has been ruptured, i.e. after the tilting of the tear-off tab 2, the space 22 must remain sealed and this can be achieved by means of the double-walled form of the skirt 4 of the sealing ring, as shown in Fig. 7. The inner wall 12 is in surface-to-surface contact with the outer wall of the thickened rim 17, so that even after the tilting of the tear-off tab 2 a sealing of the space 22 is achieved at the edge 21.

CLAIMS.

1. A closure cap for closing a container under vacuum, comprising a circular closing disc having a flanged edge, a sealing compound provided therein, and a sealing ring of synthetic plastics material having an L-shaped cross-section, and including an edge  
5 directed radially inwardly and forming an abutment for the circular closing disc and a substantially cylindrical skirt enclosing the flanged edge of the circular closing disc, said skirt having on its inside radially inwardly directed projections adapted to engage underneath the thickened edge of a container to be sealed, and the  
10 sealing ring being further provided with a guaranty construction, characterized in that the guaranty construction comprises a tiltable tear-off tab (2) disposed within the standard height (h) of the skirt (4) of the sealing ring (1), which tear-off tab (2) is connected to the skirt (4) by means of two tear lines (6)  
15 extending in axial direction of the skirt (4).
2. A closure cap according to claim 1, characterized in that adjacent the tear-off tab (2) the sealing ring (1) is double-walled, with an outer wall being formed by the tear-off tab (2) and an inner wall (12) forming a continuous extension of the lower edge (5)  
20 of the skirt (4).
3. A closure cap according to claims 1-2, characterized in that the lower edge (5) of the skirt (4) outside the tear-off tab is bevelled inwardly.
4. A closure cap according to claims 1-3, characterized in  
25 that the tear-off tab (2) extends radially slightly beyond the peripheral wall of the skirt (4) and is provided at the bottom with a nail edge (13).
5. A closure cap according to claims 1-4, characterized in that the wall (7) of the skirt (4) is thinner adjacent the tear-off tab (2).

6. A closure cap according to any one of claims 1-5, characterized in that the radially inwardly directed edge (3) of the sealing ring (1) has a stepped design, with the innermost edge portion (3) being off-set in axial direction towards the centre plane through  
5 the skirt (4) and parallel to the plane (23) through the upper edge of the skirt.





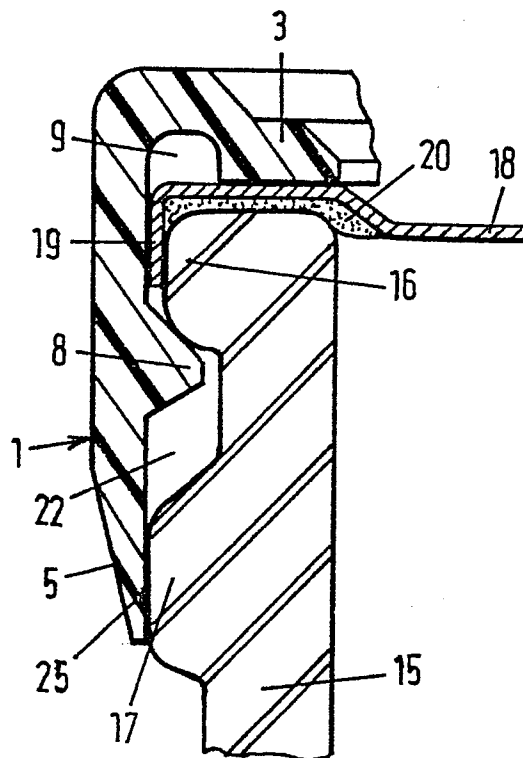


FIG. 6

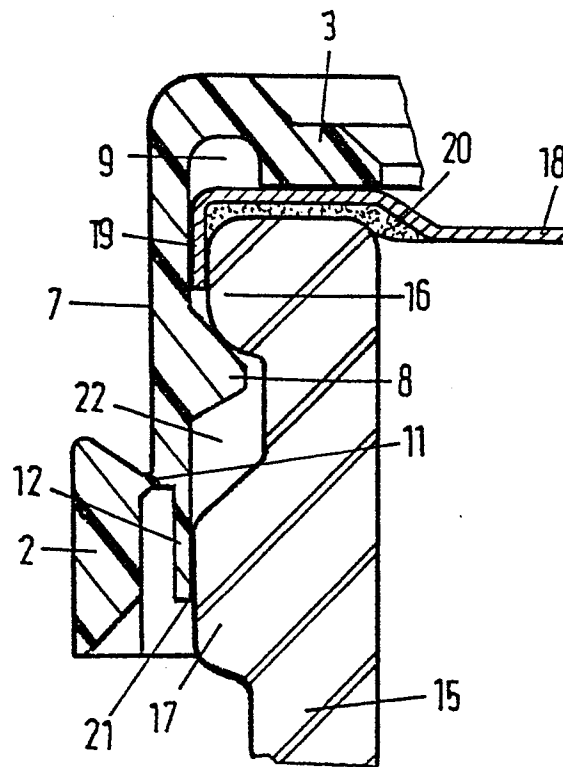


FIG. 7



DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. <sup>3</sup> )
X	GB-A-2 082 151 (ILLINGWORTH) * Figures 3,4,7; page 2, lines 34-37 *	1,3,4	B 65 D 55/08
A	BE-A- 658 683 (ANGELO GUALA & CO.) * Figure 1 *	1	
A	GB-A-1 172 929 (MARCEL) * Figures 1,4 *	2,4	
A	FR-A-2 215 361 (JOHN DALE LTD.) * Figure 2; page 5, lines 14-16 *	3	
A	FR-A-2 231 577 (ANCHOR HOCKING CORP.) * Figures 14,18 *	4,6	
A	DE-A-2 011 109 (WINBERG) * Figures 4,6; page 5, lines 11-17 *	4,5	B 65 D
A	US-A-4 066 181 (ROBINSON et al.) * Figure 6; column 2, lines 40-43 *	6	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 30-06-1983	Examiner STEEGMAN R.
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	