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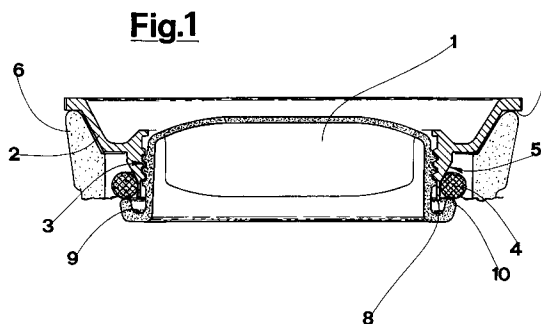
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Hermetically-closing cap for containers.

The invention relates to a hermetically-closing cap for containers. The capsule, which is destined for use with containers which inside is accessible through a mouth (6), comprises an internal element (1) and an external element (2), coaxially coupled, for example by means of a screw-coupling (3), and a ring-shaped elastic gasket (4); by rotating the internal element (1) of the cap, the elastic gasket (4) is pushed along a truncoconical surface (5); thus an increase in the diameter of the elastic gasket (4) is caused, which elastic gasket (4) adheres to the container and determines its closure.



The invention relates to a hermetically-closing cap for containers.

In particular, the containers referred to are of any shape or dimension, having the inside accessible through a mouth, generally arranged on a superior part of the container. An example of such a type of container is a carafe, used for liquid commestible products, and equipped with a beak for dispensing the contents of the said container.

The prior art teaches caps for containers of this type generally cylindrical or conical in shape, which realise the closure by exerting pressure against the mouth of the container; some of these caps however either do not give a guarantee of hermetic closure, or are impractical since they require of the operator a certain effort both to achieve closure and especially to open.

An aim of the present invention is thus to provide a cap which is of simple construction, which permits collect use for an almost unlimited number of operations, both closing and opening, and which, with the collect dimensions, is usable for containers with whatever shape and size, in particular for a carafe-type container.

One advantage of the present invention is that of providing a cap which achieves a hermetic closure and opening of the container with simple and rapid operations.

A further advantage of the cap is that of preventing the seal gasket from "sticking" to the cap or the container.

A still further advantage of the invention is represented by the fact that the cap is easy to clean, since its component parts are separable among themselves, with simple manual operations. These aims and advantages are all attained by the cap object of the present invention, as it is characterised in the claims, which can be used on containers whose inside is accessible through a neck, and which is characterised by the fact that it comprises:

- at least two elements, one internal element and one external element, coaxially coupled by means of a connection which permits axial movements;
- a trunco-conical surface, made on one of the said two elements, which exhibits its smaller-diameter portion near to a rotation surface, belonging to one or to the other of the said two elements;
- an annular-shaped contrast edge, made on the element not bearing the said trunco-conical surface, and having a smaller diameter than the diameter of the mouth of the container;
- a ring-shaped elastic gasket, which internal part encircles, in an initial position, the said rotation surface; the said ring-shaped elastic

gasket being predisposed to interact with the said contrast edge and having, in the said initial position, an external diameter which is smaller than the diameter of the mouth of the said container and internal diameter which is smaller than the diameter of the said contrast edge. Further advantages and characteristics of the present invention will better emerge from the detailed description that follows, made with reference to the accompanying drawings, which represent a preferred embodiment here illustrated in the form of a non-limiting example, and in which:

- Figure 1 shows a vertical elevation section of the cap;
- Figure 2 shows the same section as figure 1 with the cap inserted on the mouth of a container in a closed position, with the element 1 turned at 90 degrees with respect to the position of figure 1. The cap comprises an internal element 1 and an external element 2, distinct between themselves, made in plastic material; it further comprises a ring-shaped elastic gasket 4 made in rubber. These elements 1 and 2 are assembled between themselves by connecting the internal element 1 internally to the external element 2 and inserting between them the elastic gasket 4 in a way which will be better described hereinafter, before inserting the cap itself on the mouth 6 of a container.

The external element 2 is equipped with an edge 7 which permits the cap to rest on the mouth 6 of the container; it further comprises a truncoconical surface 5 which is connected with a rotation surface that, in particular, is constituted by a cylindrical surface 12. Both of these surfaces are made externally on the external element 2.

The external element 2 further comprises an annular striking surface 8 which is made on the inferior part of the external element 2. The internal element 1 comprises an external peripheral thread which, on screwing on to a corresponding internal thread made on the external element 2, constitutes a threaded coupling 3 between elements 1 and 2 allowing them reciprocal rotation and axial movement.

The internal element 1 comprises a contrast edge 10, annular in shape, which has a smaller diameter than the diameter of the mouth 6 of the container and which interacts with the elastic gasket 4, forcing the said elastic gasket 4 to move during the relative clockwise-direction rotation between the internal element 1 and the external element 2, along the tract of surface which is more-or-less truncoconical; it further comprises a contrast surface 9 which, following the axial movement between the two elements, strikes against the striking

surface 8 made on the internal element 1 and limits the degree of rotation in clockwise direction of the internal element 1 with respect to the external element 2, that is the degree of axial movement of the one with respect to the other.

The internal element 1 further comprises a handle 11 activatable from the outside of the cap, which allows the operator easily to turn the internal element 1 with respect to the external element 2.

The cap is assembled by screwing the internal element 1 internally to the external element 2, after having disposed the elastic gasket 4 to encircle the cylindrical surface 12. In this initial position, in which the elastic gasket 4 is kept away from the contrast edge 10, the elastic gasket 4 exhibits an external diameter which is smaller than the container mouth 6 diameter, and an internal diameter which is smaller than the diameter of the said contrast edge 10.

The elastic gasket 4, following the clockwise screwing-up of the internal element 1 with respect to the external element 2, is pushed by the contrast edge 10 along the truncoconical surface 5, from the said initial position to a position in which the elastic gasket 4 is compressed between the cap and the mouth 6 of the container; in this position the elastic gasket 4 guarantees the container mouth seal.

The frictional generated between the edge 7 and the mouth of the container, exerting a slight pressure during the screwing-up operation, permits the rotation of the internal element 1 with respect to the external element 2 without creating rotation of the whole cap with respect to the mouth 6 of the container.

By rotating the internal element 1 with respect to the external element 2 in an anticlockwise direction, the elastic gasket 4 spontaneously returns, thanks to its elasticity, into the initial seating constituted by the cylindrical surface 12. In this way, even when there are substances such as sugar present, which might make the elastic gasket 4 sticky, there is never any sticking of the elastic gasket 4 to the container or vice-versa.

To separate the various parts among themselves, it is enough to unscrew, in an anticlockwise direction, the internal element 1 up until the two elements detach one from the other; it should be noted that such a rotation, contrary to a clockwise rotation, is not limited by any striking element. It is thus extremely easy to effect the cleaning of the various parts of the cap which are successively reconnected among themselves as indicated above.

Claims

1. A hermetically-closing cap for containers, to be used on containers which inside is accessible through a mouth, characterised by the fact of comprising:
 - at least two elements, an internal element (1) and an external element (2), coaxially coupled by means of a connection which permits axial movements;
 - a trunco-conical surface (5), made on one of the said two elements (1 and 2), which exhibits its smaller-diameter portion near to a rotation surface, belonging to one or to the other of the said two elements (1 and 2);
 - an annular-shaped contrast edge (10), made on the element (1 or 2) not bearing the said trunco-conical surface (5), and having a smaller diameter than the diameter of the mouth (6) of the container;
 - a ring-shaped elastic gasket (4), which internal part encircles, in an initial position, the said rotation surface; the said ring-shaped elastic gasket (4) being pre-disposed to interact with the said contrast edge (10) and having, in the said initial position, an external diameter which is smaller than the diameter of the mouth (6) of the said container and internal diameter which is smaller than the diameter of the said contrast edge (10).
2. A cap as in claim 1, characterised by the fact that the said connection between the said internal element (1) and the said external element (2) is constituted by a threaded coupling (3).
3. A cap as in claim 1 characterised by the fact that the external element (2) exhibits an edge (7) conformed in such a way that it rests on the mouth (6) of the said container.
4. A cap as in claims 2 and 3, characterised by the fact that the said ring-shaped elastic gasket (4), the said truncoconical surface (5) and the said contrast edge (10) are conformed in such a way that, when the said edge (7) is resting on the mouth (6) of the container, the elastic gasket (4), following a screwing-up in one direction of the internal element (1) with respect to the external element (2), is pushed by the contrast edge (10) along the truncoconical surface (5) from the said initial position to a position in which the elastic gasket (4) is compressed between the cap and the mouth (6) of the container; the said elastic gasket (4) being

further conformed and arranged so as to return spontaneously, following a screwing in the opposite direction, into the said initial position.

5. A cap as in claim 1, characterised by the fact of being equipped with at least two striking surfaces (8 and 9), made one on each of the said two elements (1 and 2), conformed in such a way as to limit the degree of axial movement, in one direction, of the two elements (1 and 2). 5 10
6. A cap as in claim 2, characterised by the fact that the said internal element (1) is equipped with a handle (11), activatable from the outside of the cap, which permits of effecting the rotation of the internal element (1) with respect to the external element (2). 15
7. A cap as in claim 1, characterised by the fact that the said truncoconical surface (5) and the said rotation surface both belong to the said external element (2); the said rotation surface being constituted by a cylindrical surface (12), connected to the said truncoconical surface (5). 20 25

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Fig.1

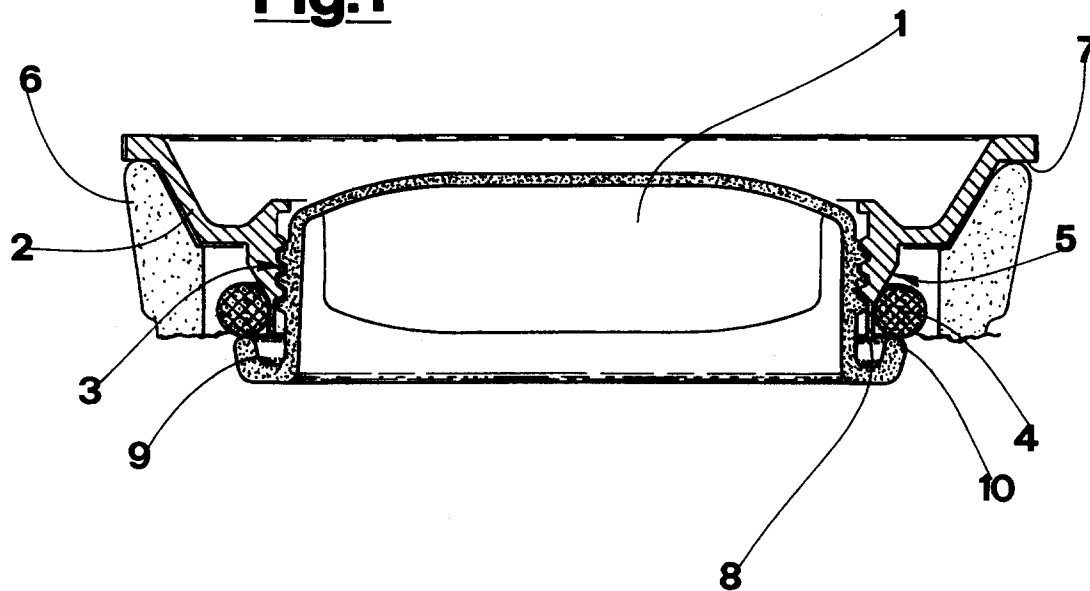
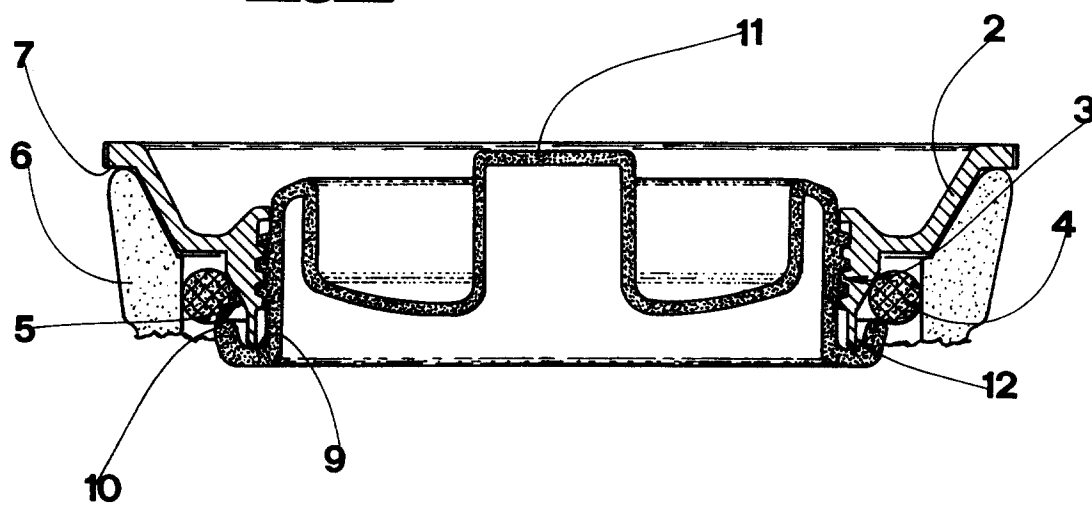


Fig.2





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 92 83 0688

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.5)
X	US-A-4 440 309 (T. MORIMOTO) * the whole document * ---	1-4,6	B65D39/12
A	GB-A-317 573 (G. FERGUSON) * the whole document * ---	1-4	
A	US-A-2 753 074 (L. SCHMID) * the whole document * ---	1-4	
A	US-A-2 462 445 (H. WEISS) * column 3, line 56 - column 4, line 21; figures 5-8 * -----	1-4	
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 17 November 1993	Examiner PERNICE, C
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			