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(54) Closure plug with gasket

(57) A plug for containers, particularly intended for food, comprising a shell (1, 101, 201), in the form of a capsule or cap, made of a material unfit for contact with foodstuffs, provided with means (301) for clamping it on the mouth of the container, and with an element (4) interposed between the opening area of the mouth and

the corresponding stop wall (501) of the capsule (1), i.e. the inner side of its top surface. According to the invention, the interposed element (4) and the capsule (1, 201) are provided with cooperating and complementary means for mutual attachment (2, 102; 3, 103).

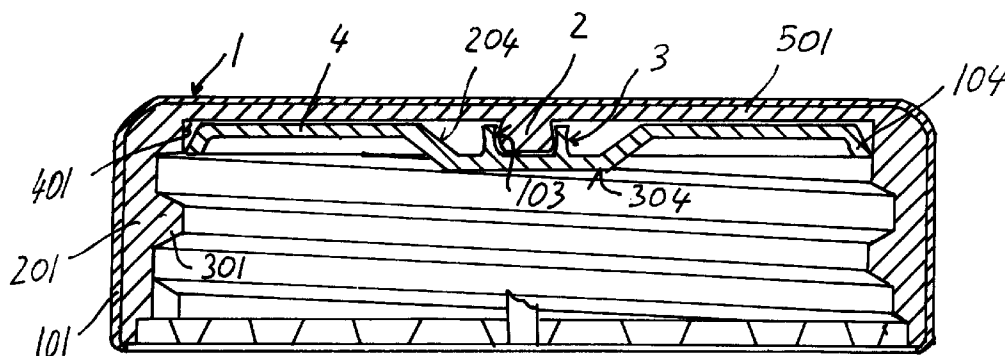


Fig. 1

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Description

[0001] The invention relates to a plug for containers, particularly intended for food, comprising a shell in the form of a capsule or cap, made of a material unfit for contact with foodstuffs, provided with means for clamping it on the mouth of the container, and with an element interposed between the opening area of the mouth and the corresponding stop wall of the capsule, i.e. the inner side of its top surface.

[0002] Capsules of this type are currently known in the art. In order to ensure that the means for clamping the capsule to the container are provided with a sufficient strength and mechanical stiffness, advantages are obtained through making said capsules from a material, particularly from a plastic material, whose use is not allowed for contact with foodstuffs.

[0003] This problem is currently solved by providing interposed disks, which are superposed between the inner side of the capsule top surface, and the mouth area of the container, contacting the said inner side, and being closed by said capsule top surface. The interposed disk is made from a material, especially from a plastic material fit for contact with foodstuffs. Besides having the function to separate the parts of the plug being made of the material unfit for contact with foodstuffs, from the mouth area and from contact with the foodstuff, the disk generally has an additional sealing function.

[0004] Prior art plugs of this type show a serious drawback in that, during the manufacturing process, an incomplete insertion of the interposed disk may occur, thus involving considerable inconveniences and problems during production and packaging. Moreover, when the consumer opens the container, the disk often remains on the mouth of the container, either for a suction effect, or due to small deposits of the product, which may remain between the opposite contact surfaces of the disk and of the mouth of the container.

[0005] The invention has the object to provide a plug of the type described hereinbefore, in such a way that, by means of a simple and cheap construction, the above listed drawbacks of prior art plugs may be effectively obviated.

[0006] The invention achieves the above objects, by providing the separating element and the plastic capsule of a plug of the type described hereinbefore with cooperating and complementary means for mutual attachment.

[0007] Said means may be of any type, and may provide either a time-resisting attachment, or an attachment resisting at least to a predetermined minimum detaching or separating force.

[0008] Particularly, when the capsule and the disk are made of an elastic material, such as plastic, said mutual attachment means may consist of force-fitting means which make use of the elastic deformability of the material.

[0009] One embodiment provides the use of a clutch member, with transverse couplers, and of a clutch seat with undercut housings for said transverse couplers. Either of these two elements may be provided on either part respectively, or more elements may be provided on either part, i.e. on the inner side of the top surface of the capsule, and on the opposite side of the interposed member.

[0010] The clutch member and/or the clutch seat may be the one elastically compressible, and the other elastically expandable, to enable the transverse couplers to be clutched in the coupler seats.

[0011] The transverse couplers and the clutch seats may have cooperating draft surfaces for facilitating the interposed element to be clutched into the attachment position at the top surface of the capsule.

[0012] Advantageously, the transverse couplers and the clutch seats may be appropriately rounded.

[0013] According to a preferred embodiment, and particularly when the means for clamping the capsule are provided with thread and therefore require the capsule to have a cylindrical symmetry, there may be provided an interposed element in the form of a disk having a surface arranged to cover the whole inner side of the capsule top surface, also circular, whereas there are provided a single clutch member and a single complementary clutch seat, respectively associated to the capsule top surface and to the opposite side of the interposed element or vice versa, which are coaxial with respect to the capsule top surface and to the interposed element.

[0014] Advantageously, the clutch element and the clutch seat also have a circular symmetry.

[0015] In one embodiment, on the inner side of the capsule top surface, a coaxial appendix projects towards the mouth of the container, and may be substantially spherical or cylindrical, with an outer radial annular peripheral ledge, whereas the clutch seat is on the interposed element, on the side facing the capsule top surface and has a bush- or cup-like shape, whose inner profile is complementary to that of the clutch appendix respectively, i.e. spherical or cylindrical with a radial annular expansion.

[0016] The clutch seat and the clutch appendix of the type described above may have continuous walls or consist of one-piece bodies, or may consist of at least one tongue a pair of tongues or a crown of tongues, arranged in a predetermined pattern, and possibly separated by notches, gaps or slots.

[0017] Obviously, the means for mutual snap attachment between the interposed element and the capsule may also be made in a different manner, there being provided transverse coupling expansions on the inner walls of the clutch seats, whereas the corresponding coupler seats are provided in the form of niches, sags or recesses in the outer surface of the clutch members.

[0018] Thanks to the expedients disclosed above, the interposed element is firmly fixed to the capsule top sur-

face and firmly held in position, both during production and packaging of the product, and on its use by consumers.

[0019] The remarkable simplicity of the expedients of the invention actually allows to reduce to a very little charge, all the difficulties and costs for producing the plug according to the invention as compared to prior art plugs.

[0020] Besides all functional advantages, a considerable safety advantage has to be remarked. Since the interposed element is always attached to the plug, in its right operating position, it cannot come off and get lost, nor get damaged, when it is separated from the container. In these cases, especially when the container is frequently used, the user might close the container without the interposed element, or with a damaged one, thus exposing the foodstuff to the material of the plug being unfit for it.

[0021] Additional improvements of the invention form the subject of the dependent claims.

[0022] The characteristics of the invention and the advantages derived therefrom will appear more clearly from the following description of some non-limiting embodiments, illustrated in the annexed drawings, in which:

Fig. 1 shows a cross section, with respect to a diametrical plane, of a plug according to the invention.
Fig. 2 shows a variant embodiment of the means for clamping the interposed element to the capsule.

[0023] Referring to figure 1, a screw plug for containers, especially intended for foodstuffs, and particularly for bottles, is formed by a capsule 1 having a cylindrical cap-like shape. The capsule 1 consists of an outer shell 101, which is particularly made of metal, for example aluminum, or similar, and of an inner shell 201, which is made of a different material, particularly of a plastic material unfit or unusable with foodstuffs. The inner shell 201 has an inner thread 301, which is complementary to that formed on the mouth of the container, whereas, on the top part, it terminates with a niche 401. The niche 401 is closed, at its top, by the top surface of the inner shell 201 of the capsule, which has a circular shape. At the center of the inner side of the top surface 501 of the inner shell 201, there is provided a coaxial clutch appendix 2, which projects towards the open side of the capsule 1. The clutch appendix 2, having a cylindrical symmetry with respect to the axis of the capsule 1, has radial expansions for coupling to lateral expansions 103 of a clutch seat 3, protruding out of the opposite side of an interposed disk 4. The interposed disk 4 is made of a plastic material, whose usage is fit and allowed in contact with food, such as polyethylene, or similar. The radial extension of the interposed disk 4 is such, that the latter wholly superposes the inner side of the top surface 501 of the inner shell 201 of the capsule 1, and at least partially, preferably entirely, the peripheral

lateral wall of the niche 401. The peripheral edge 104 of the interposed disk 4 may be appropriately shaped, as indicated in the figure, by at least partially folding it so as to have it superposed to the lateral wall of the niche 401, or this deformation may be made by the edge around the opening of the container, while it is clamped on its mouth.

[0024] The clutch seat 3 is placed coaxially, in a sag 204 of the interposed disk 4, so as to allow for a sufficient axial extension of the clutch appendix 2 and of the clutch seat 3. This sag is preferably formed by deforming the interposed disk 4 and, on the side opposite to the clutch seat 3, it forms a protrusion 304. Besides generating a gap for providing the clutch seat 3 and for the clutch appendix 2, the sag 204, which is provided with a truncated cone shape, helps, together with the folded peripheral edge 104, to provide the interposed disk 4 with a certain structural stiffness, and possibly with a certain elasticity, having the function to cushion and absorb the forces which tend to hold it against the bottle mouth, so as to reduce the effect thereof, directly on the clutch appendix and on the clutch seat 2, 3.

[0025] In the embodiment shown in figure 1, the clutch appendix has a spherical shape, having an angle greater than 180°, or substantially spherical, and so has the clutch seat. Both the clutch appendix and the clutch seat, or either of them, is formed by a one-piece body. Alternatively, the clutch seat and/or the clutch appendix may be made in the form of at least two pairs of diametrically opposite tongues or of a crown of tongues or other elements.

[0026] In the variant embodiment shown in figure 2, the clutch seat 3 and the clutch appendix 2 are substantially cylindrical, and have respective complementary radial annular expansions, inside the former 103 and outside the latter 102.

[0027] What has been said above as regards the embodiment of figure 1 also applies to this embodiment, i.e. the appendix and the clutch seat may be either made of one-piece bodies or of groups or crowns of tongues, or similar.

[0028] Further, both embodiments may be varied, in that the clutch seat 3 and the clutch appendix 2 may be also placed the former on the disk and the latter on the inner shell 201 of the capsule. Moreover, the coupling expansions 102 and recesses 103 may be also alternatively provided on the clutch seat 3, and on the coupling appendix 2, contrary to what has been described.

[0029] According to a further variant, the interposed disk 4 and the inner shell 201 of the capsule 1 may have more than one clutch appendix and more than one complementary clutch seat, arranged in different patterns and also with different constructions.

[0030] Naturally, the invention is not limited to the above disclosure and illustrations but may be greatly varied, particularly as regards construction to models reaching an equal utility and having the same guiding principle.

Claims

1. A plug for containers, particularly intended for food, comprising a shell (1, 101, 201), in the form of a capsule or cap, made of a material unfit for contact with foodstuffs, provided with means (301) for clamping it on the mouth of the container, and with an element (4) interposed between the opening area of the mouth and the corresponding stop wall (501) of the capsule (1), i.e. the inner side of its top surface, characterized in that the interposed element (4) and the capsule (1, 201) are provided with cooperating and complementary means for mutual attachment (2, 102; 3, 103). 5
2. A plug as claimed in claim 1, characterized in that the means (2, 102, 3, 103) for attaching the interposed element (4) to the capsule (1, 201) are of a type suitable to ensure a permanent attachment. 10
3. A plug as claimed in claim 1, characterized in that the means (2, 102, 3, 103) for attaching the interposed element (4) to the capsule (1, 201) are of a type suitable to ensure an attachment resisting at least to a predetermined minimum detaching or separating force. 15
4. A plug as claimed in claims 1 or 3, characterized in that the capsule (1, 201) or at least a part thereof, and the interposed element (4) are made of an elastic material, such as plastic, said mutual attachment means (2, 102, 3, 103) consisting of snap-fitting means which make use of the elastic deformability of the material. 20
5. A plug as claimed in one or more of the preceding claims, characterized in that the means for mutual attachment of the capsule (1, 201) to the interposed element (4) consist of at least a clutch member (2), with transverse couplers (102), and of a clutch seat (3) with undercut coupling housings (103) for said transverse couplers (102), while either of these two elements may be provided on either part respectively. 25
6. A plug as claimed in claim 5, characterized in that the capsule (1, 201) and the interposed element (4) have more than one of said clutch members and of said clutch seats (2, 3). 30
7. A plug as claimed in one or more of the preceding claims, characterized in that the clutch member and/or the clutch seat (2, 3) may be the one elastically compressible, and the other elastically expandable, to enable the transverse couplers (102) to be clutched in the coupler seats (103). 35
8. A plug as claimed in one or more of the preceding claims, characterized in that the transverse couplers (102) and the clutch seats (103) may have cooperating draft surfaces for facilitating the interposed element (4) to be clutched into the attachment position at the top surface (501) of the capsule (1). 40
9. A plug as claimed in one or more of the preceding claims, characterized in that the transverse couplers (102) and the clutch seats (103) may be rounded in an appropriate and complementary manner. 45
10. A plug as claimed in one or more of the preceding claims, characterized in that the means for clamping the capsule (1) are provided with thread (301) and therefore require the capsule (1) to have a cylindrical symmetry, the interposed element (4) being in the form of a disk having a surface arranged to cover the whole inner side of the top surface (501) of the capsule (1), also circular, whereas there are provided a single clutch member (2) and a single complementary clutch seat (3), respectively associated to the top surface (501) of the capsule (1) and to the opposite side of the interposed element (4) or vice versa, which are coaxial with respect to the top surface (501) of the capsule (1) and to the interposed element (4). 50
11. A plug as claimed in one or more of the preceding claims, characterized in that the clutch element (2) and the clutch seat (3) also have a circular symmetry. 55
12. A plug as claimed in one or more of the preceding claims, characterized in that, on the inner side of the top surface (501) of the capsule (1), a coaxial appendix (2) projects towards the mouth of the container, and may be substantially spherical or cylindrical, with an outer radial annular peripheral ledge (102), whereas the clutch seat (3) is on the interposed element (4), on the side facing top surface of the capsule (1) and has a bush- or cup-like shape, whose inner profile is complementary to that of the clutch appendix (2) respectively, i.e. spherical or cylindrical with a radial annular expansion (103). 60
13. A plug as claimed in one or more of the preceding claims, characterized in that the clutch seat (3) and the clutch appendix (2) may have continuous walls or consist of one-piece bodies, or may consist of at least one tongue a pair of tongues or a crown of tongues, arranged in predetermined patterns, and possibly separated by notches, gaps or slots. 65
14. A plug as claimed in one or more of the preceding claims, characterized in that the capsule (1, 201) and/or the interposed element (4) have means

(204, 304) for force absorbing support of the clutch appendix (2) or of the clutch seat (3) associated thereto.

15. A plug as claimed in claim 14, characterized in that said means (204, 304) consist of deformations transverse to the plane of the interposed element (4) in the area next or close to the clutch seat or appendix (2, 3) associated thereto.

16. A plug for containers, particularly intended for food, wholly or partially as described, illustrated and for the purposes stated herein.

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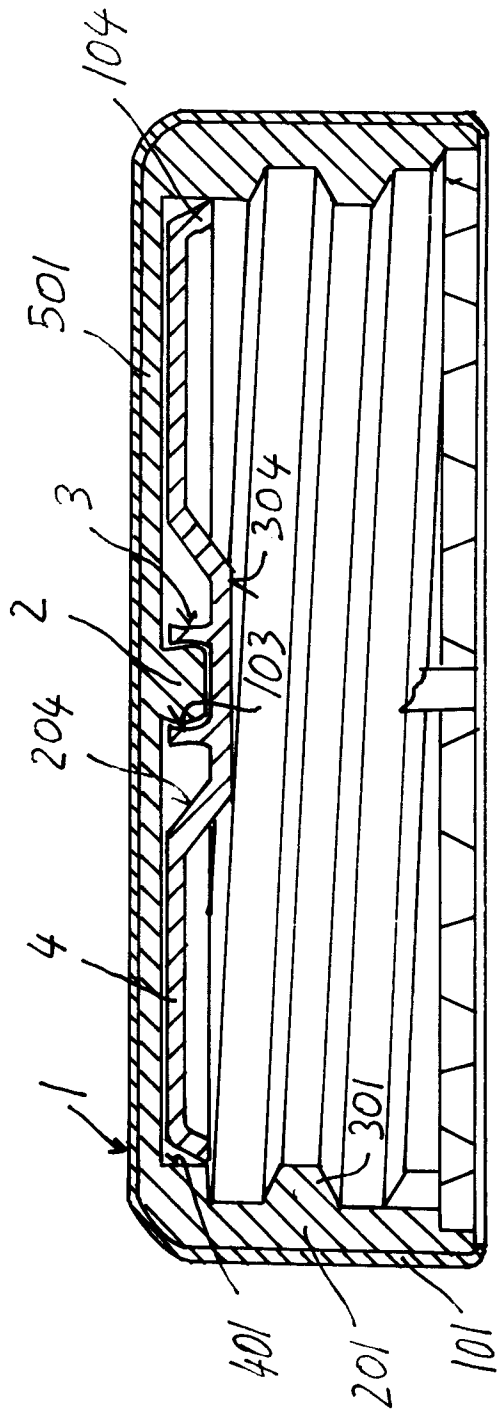


Fig. 1

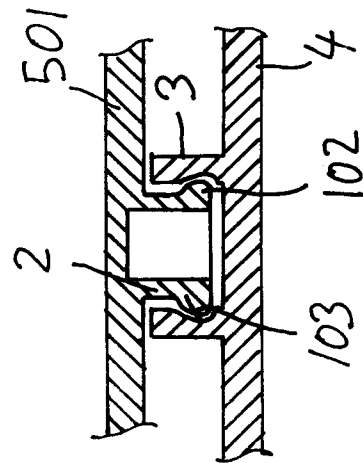


Fig. 2



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EUROPEAN SEARCH REPORT

Application Number
EP 98 10 5210

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.6)
X	BE 547 660 A (DEJEAN) * the whole document * ---	1-5, 7-16	B65D53/04 B65D41/04
X	US 3 189 209 A (OWENS) 15 June 1965 * column 4, line 18 - column 7, line 53 * * figures 1-9 * ---	1-3, 5, 6, 10, 16	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B65D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 28 January 1999	Examiner Farizon, P
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	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 10 5210

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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28-01-1999

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