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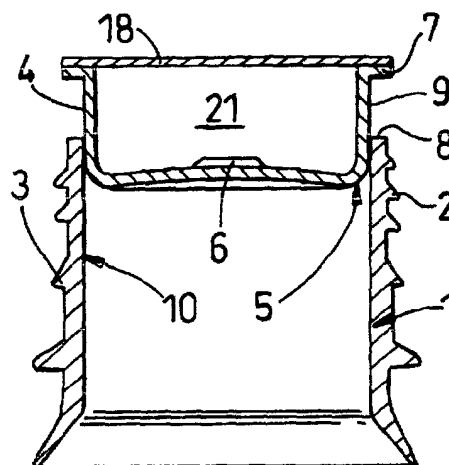
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(54) **Container closures**

(57) This invention relates to container closures and to methods of sealing the container neck on filling of the containers.

A closure assembly comprises a plug 4 adapted to be inserted into the neck 1 of a container to effect an aseptic seal with the container neck 1 and a cap 11 comprising a skirt 13 provided with formations 12 that are adapted to co-operate with complementary formations 2 provided on the container neck 1. The cap 11 and the neck formations 2 are so arranged that the cap 11 can be turned from a fully applied condition to a release position for removal of the cap 11 from the neck 1, the plug 4 being adapted to be inserted into the neck 1 to effect an aseptic seal of the neck 1 prior to application of the cap 11. On subsequent removal of the fully applied cap 11 from the neck 1, the plug 4 is withdrawn from the neck 1 by being held captive to the cap 11.



**Fig. 1**

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# EUROPEAN SEARCH REPORT

Application Number  
EP 02 25 3076

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.7)
X	US 3 035 730 A (BROWN JOHN D ET AL) 22 May 1962 (1962-05-22) * column 2, line 4 - column 3, line 9 * * figures 1,2 *	1,2,7-9	B65D51/18 B65D41/30 B65D51/24 B65D51/30 B65D55/02
X	WO 97 01486 A (PEPSICO INC ;MERO CHRISTOPHER J (US); KANENGISER MARTIN (US)) 16 January 1997 (1997-01-16) * the whole document *	1,2,6-10	
X	US 5 186 775 A (INCORVIA SAMUEL A ET AL) 16 February 1993 (1993-02-16) * column 2, line 65 - column 3, line 2 * * column 4, line 5 - line 15 * * figures 1,3,11,12 *	1,2,7-9	
X	US 4 421 235 A (MORIYA TAKEHIKO) 20 December 1983 (1983-12-20) * column 1, line 44 - line 60 * * figures 12,13 *	1	
A		6	<div>TECHNICAL FIELDS SEARCHED (Int.Cl.7)</div> <div>B65D</div>
<del>The present search report has been drawn up for all claims</del>			
Place of search BERLIN		Date of completion of the search 28 October 2003	Examiner Schultz, O
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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### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

1,2,6-10



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LACK OF UNITY OF INVENTION  
SHEET B

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1,2,6-10

Securing plug and cap together to ensure that on removal of the cap from the container neck, the plug is withdrawn from the neck by being held captive to the cap;

2. Claims: 3-5,22

Securing the cap to the container neck;

3. Claims: 11,12,14-16

Optimizing the geometry of the plug;

4. Claim : 12

Creating a sealing surface between plug and inner part of the container neck at a position spaced from the free end of the container neck;

5. Claim : 13

Manufacturing the plug from a material that comprises oxygen absorbing resins;

6. Claims: 17-21

Protecting the content of the plug;

7. Claims: 23,24

Separate assembling processes of plug and cap to a container neck by, first, applying the plug to the container neck (plugging station) and, secondly, applying the cap to the container neck (capping station);

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

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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-10-2003

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