



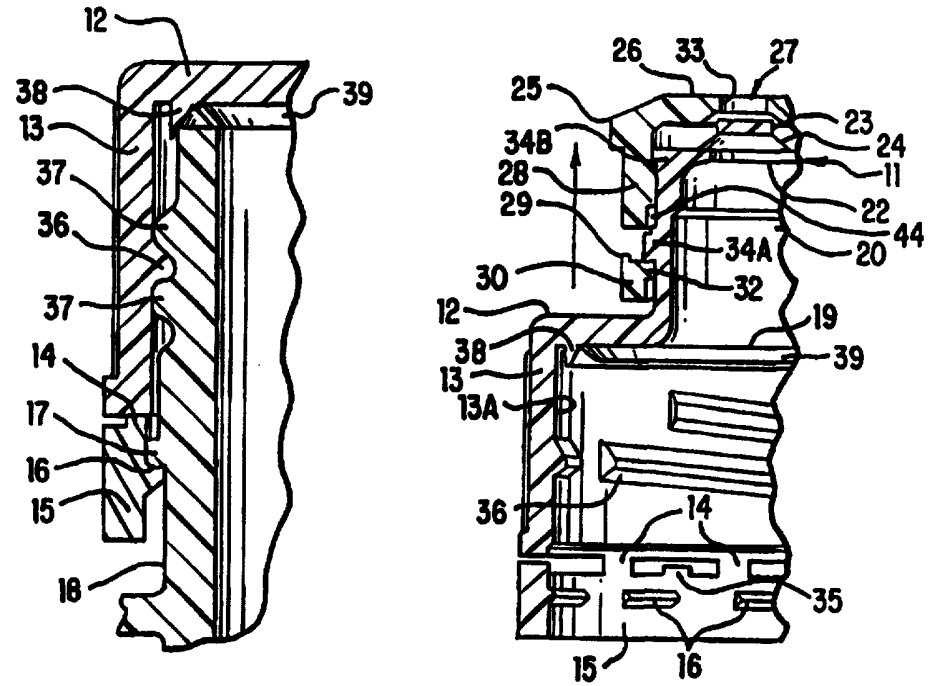
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification ⁶ : B65D 41/34, 47/24, 41/62</p>	<p>A3</p>	<p>(11) International Publication Number: WO 97/38912 (43) International Publication Date: 23 October 1997 (23.10.97)</p>
<p>(21) International Application Number: PCT/US97/06159 (22) International Filing Date: 16 April 1997 (16.04.97) (30) Priority Data: 08/633,225 16 April 1996 (16.04.96) US 08/687,149 24 July 1996 (24.07.96) US 08/838,133 15 April 1997 (15.04.97) US (71) Applicant: INTERNATIONAL PLASTICS AND EQUIPMENT CORPORATION [US/US]; Northgate Industrial Park, R.D. #3, Box 7a, P.O. Box 5311, New Castle, PA 16105 (US). (72) Inventor: LONG, Charles, J., Jr.; R.D. #4, Harlansburgh Road, P.O. Box 62a, New Castle, PA 16101 (US). (74) Agents: WETTACH, Thomas, C. et al.; Titus & McConomy, 20th floor, Four Gateway Center, Pittsburgh, PA 15222 (US).</p>		<p>(81) Designated States: AU, BR, CN, JP, KR, RU, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i> (88) Date of publication of the international search report: 18 December 1997 (18.12.97)</p>

(54) Title: TAMPER EVIDENT PLASTIC CLOSURE

(57) Abstract

The present invention generally provides a threaded tamper-evident closure having an annular hook-shaped flange (16) extending radially inward from the inner surface of the tamper-evident band (15) attached to the bottom edge of the closure body. The hook-shaped flange can be continuous or segmented and forms an upwardly angled surface for engaging the sealing flange (17) on the bottle neck. A plurality of elevated areas (35) extend upwardly from the tamper-evident band in spaced relation to the bottom edge of the closure body. The frangible elements (14) connecting the tamper-evident band to the lower edge of the closure depending annular flange



may be configured to extend from these elevated areas as well as the non-elevated areas of the tamper-evident band. A second preferred embodiment of the present invention provides a threaded tamper-evident plastic closure having a tamper-evident band containing the above-described features, for use with a tamper-evident push-pull resealable pour spout (20) which is substantially leak proof. The present invention also optionally provides a tamper-evident dust cover (90) which encloses the push-pull pour spout closure when inserted on the container. The dust cover is provided with a ratcheted tamper-evident sealing band (91) which remains intact upon initial installation of the dust cover onto the container and which is broken when the dust cover is initially disturbed.

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INTERNATIONAL SEARCH REPORT

Intern. Patent Application No

PCT/US 97/06159

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 6 B65D41/34 B65D47/24 B65D41/62

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 688 724 A (LE MOULAGE AUTOMATIQUE) 27 December 1995 see column 4, line 23 - line 49 see column 6, line 16 - line 28; figure 4 ---	1-3,8
X	NL 7 312 410 A (BANDRINGA-PLASTICS N.V.) 11 March 1975 see page 5, line 15 - line 19; figure 2 ---	1,2,8
X	AU 480 881 A (METAL BOX) 18 September 1975 see page 6, last paragraph - page 7, line 1; figure 3 --- -/--	1,2,7,9, 37

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

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- *E* earlier document but published on or after the international filing date
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- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *Z* document member of the same patent family

Date of the actual completion of the international search

4 July 1997

Date of mailing of the international search report

31.10.97

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 97/06159

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 683 106 A (MIKASA INDUSTRY) 22 November 1995 see column 6, line 50 - column 7, line 7; figure 2	1,3-5,7, 10,14, 15,37
Y	see column 8, line 10 - line 18; figure 6 ---	38
X	US 4 807 770 A (BARRIAC) 28 February 1989 see column 6, line 62 - column 7, line 3; figures 2,6 ---	1,3,7,9, 11-13
Y	DE 37 23 235 A (BAREIN) 26 January 1989 see figure 6 ---	38
A	US 4 664 278 A (BARRIAC) 12 May 1987 cited in the application see figure 1 ---	6
A	US 4 801 030 A (BARRIAC) 31 January 1989 see figure 19 -----	15

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 97/06159

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. Claims 1-15, 37, 38
2. Claims 16-36

1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-15, 37, 38

Remark on Protest

- The additional search fees were accompanied by the applicant's protest.
- No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 97/06159

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