



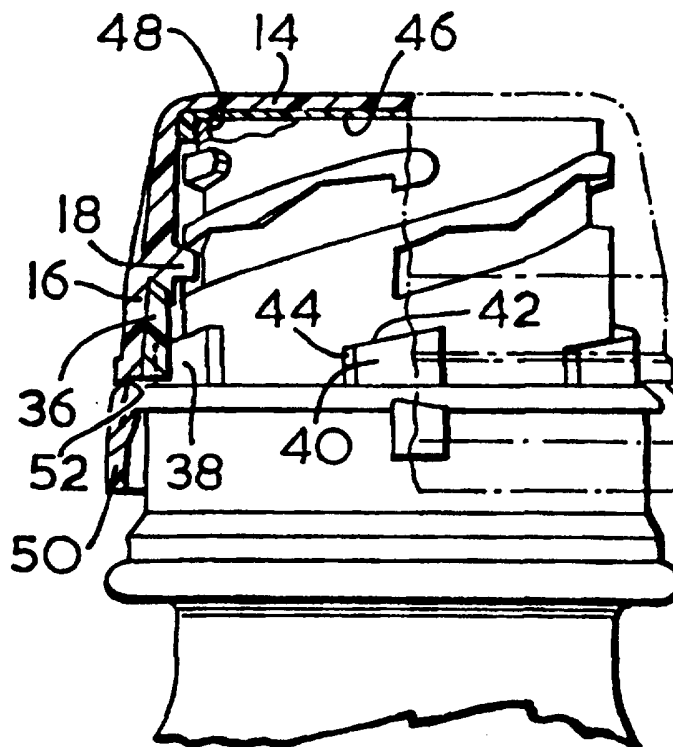
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : B65D 41/04		A3	(11) International Publication Number: WO 97/21602
			(43) International Publication Date: 19 June 1997 (19.06.97)
(21) International Application Number: PCT/GB96/03028 (22) International Filing Date: 9 December 1996 (09.12.96) (30) Priority Data: 9525146.8 8 December 1995 (08.12.95) GB 9525876.0 18 December 1995 (18.12.95) GB (71) Applicant (for all designated States except US): BEESON AND SONS LIMITED [GB/GB]; Hertford House, Denham Way, Rickmansworth WD3 2XB (GB). (72) Inventors; and (75) Inventors/Applicants (for US only): KING, Roger, Milner [GB/GB]; White End Park Farm, Latimer, Buckinghamshire HP5 1UL (GB). KING, Witney, Milner [GB/GB]; White End Park Farm, Latimer, Buckinghamshire HP5 1UL (GB). (74) Agent: HOWICK, Nicholas, Keith; Carpmals & Ransford, 43 Bloomsbury Square, London WC1A 2RA (GB).			(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published With international search report. (88) Date of publication of the international search report: 12 September 1997 (12.09.97)

(54) Title: CONTAINER CLOSURE ASSEMBLY WITH PROFILED SCREW THREADS

(57) Abstract

The invention provides container closure assemblies, especially for carbonated beverage containers, having substantially helical second thread segment (20) with a profiled lower thread surface (24). The profiled lower thread surface (24) includes a first, lower region (28) with a low pitch and a second region (30) with a steep pitch. The thread (20) may also include a step feature (32) to block unscrewing of the closure at an intermediate position where gas venting can take place, and a third region (34) of the said lower surface having a low pitch adjacent to the step. The closures are easy to apply and remove, and do not blow off unpredictably or uncontrollably under pressure.



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	GB	United Kingdom	MW	Malawi
AT	Austria	GE	Georgia	MX	Mexico
AU	Australia	GN	Guinea	NE	Niger
BB	Barbados	GR	Greece	NL	Netherlands
BE	Belgium	HU	Hungary	NO	Norway
BF	Burkina Faso	IE	Ireland	NZ	New Zealand
BG	Bulgaria	IT	Italy	PL	Poland
BJ	Benin	JP	Japan	PT	Portugal
BR	Brazil	KE	Kenya	RO	Romania
BY	Belarus	KG	Kyrgyzstan	RU	Russian Federation
CA	Canada	KP	Democratic People's Republic of Korea	SD	Sudan
CF	Central African Republic	KR	Republic of Korea	SE	Sweden
CG	Congo	KZ	Kazakhstan	SG	Singapore
CH	Switzerland	LI	Liechtenstein	SI	Slovenia
CI	Côte d'Ivoire	LK	Sri Lanka	SK	Slovakia
CM	Cameroon	LR	Liberia	SN	Senegal
CN	China	LT	Lithuania	SZ	Swaziland
CS	Czechoslovakia	LU	Luxembourg	TD	Chad
CZ	Czech Republic	LV	Latvia	TG	Togo
DE	Germany	MC	Monaco	TJ	Tajikistan
DK	Denmark	MD	Republic of Moldova	TT	Trinidad and Tobago
EE	Estonia	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	UG	Uganda
FI	Finland	MN	Mongolia	US	United States of America
FR	France	MR	Mauritania	UZ	Uzbekistan
GA	Gabon			VN	Viet Nam

INTERNATIONAL SEARCH REPORT

Intern. Application No

PCT/GB 96/03028

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B65D41/04

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	GB 261 370 A (PASSAIC METAL WARE COMPANY) 14 April 1927	1,22, 24-26
Y	see the whole document	2,11-21
A	---	3
Y	GB 2 288 390 A (BIRKETT) 18 October 1995 cited in the application	2
A	see figures 1,4-7	4-6
Y	---	---
Y	WO 95 05322 A (SAGER) 23 February 1995 cited in the application	11-21
A	see the whole document	---
A	---	---
A	WO 91 07331 A (BEESON AND SONS LIMITED) 30 May 1991 see abstract; figures 3-5	1
	-----	---

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *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.
- *&* document member of the same patent family

Date of the actual completion of the international search 4 April 1997	Date of mailing of the international search report 25.06.1997
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax (+ 31-70) 340-3016	Authorized officer Lenoir, C

INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB 96/ 03028

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 1-26
2. claims 27-30

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.:

1-26

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/GB 96/03028

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 261370 A		NONE	
GB 2288390 A	18-10-95	NONE	
WO 9505322 A	23-02-95	AU 677689 B	01-05-97
		AU 7348794 A	14-03-95
		BR 9407244 A	24-09-96
		CA 2168462 A	23-02-95
		CN 1132496 A	02-10-96
		EP 0712366 A	22-05-96
		JP 9501380 T	10-02-97
		US 5533633 A	09-07-96
WO 9107331 A	30-05-91	NONE	