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Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))
- of inventorship (Rule 4.17(iv))

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))
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(54) Title: IMPROVEMENTS FOR CONTAINERS AND COVERS

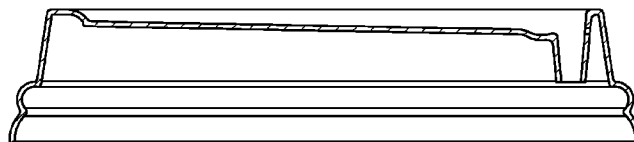
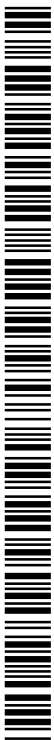


FIG. 1

(57) Abstract: A device and system that can perform bi-directional gas and fluid communication, thereby preventing the accidental spill and splash of sloshing liquids through the sip-hole orifice of a liquid container and/or the sip-hole orifice of its lid, but that still allows liquid to flow through the sip-hole. This is achieved by cutting into the sip-hole, extending the sip-hole and creating a tubular flow-path or labyrinth flow-path that can channel and direct the flow of liquid into a controlled and desired flow and rate via an inlet configured to do so, and by adding a removable plug. These elements help to buffer and deflect sloshing liquid thereby minimizing or preventing the accidental release of liquid, and in many cases improving the purposeful flow of liquid back into the container.



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB15/53402

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(8) - B65D 43/02, 43/10, 43/14, 43/16 (2016.01) CPC - B65D 43/02, 51/16, 51/1611 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) IPC(8) Classifications: B65D 21/00, 43/02, 43/10, 43/14, 43/16, 47/06, 47/08, 47/36, 51/16 (2016.01) CPC Classifications: B65D 43/02, 43/10, 43/14, 43/16, 47/06, 47/08, 47/36, 51/16, 51/1605, 51/1611, 2543/00009, 2543/00018, 2543/00074, 2543/00092 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC Classifications: 220713 Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PatSeer (US, EP, WO, JP, DE, GB, CN, FR, KR, ES, AU, IN, CA, INPADOC Data); cup, beverage, container, drink, coffee, disposable, extension, tube, lid, cover, mouth, lip, concave, curve, depression, curve, contour, spill, splash, labyrinth, tortuous, biodegradable, edible, thermal, temperature		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X --- Y	US 2005/0173443 A1 (CRUDGINGTON C. B. JR.) August 11, 2005; figures 1, 7, 8; paragraphs [0011], [0013], [0019], [0034]	1-3, 4/1-4/3, 19, 20, 24 --- 21-23, 25
Y	WO 2014/043740 A1 (LA VEE S. et al.) March 27, 2014; figure 5b; paragraph [0041]	21
Y	US 2002/0167989 A1 (RUSSO M. L.) November 14, 2002; paragraphs [0017]-[0021]	22
Y	US 2010/0308046 A1 (SERRA G.) December 9, 2010; paragraph [0071]	23, 25
X	WO 2014/014844 A1 (CRUDGINGTON C. B. JR.) January 23, 2014; figures 1, 2, 6-8	1-3, 4/1-4/3, 19, 20, 24
A	US 2010/0301048 A1 (TOKUNGA S.) December 2, 2010; entire document	1-3, 4/1-4/3, 19-25
A	US 2010/0133272 A1 (WHITAKER C. S. et al.) June 3, 2010; entire document	1-3, 4/1-4/3, 19-25
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family 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 application or patent 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 03 June 2016 (03.06.2016)		Date of mailing of the international search report <b>15 SEP 2016</b>
Name and mailing address of the ISA/ Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-8300		Authorized officer Shane Thomas PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB15/53402

**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 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.: 5-17  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:  
-\*\*\*-Continued Within the Next Supplemental Box-\*\*\*-

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 additional fees, this Authority did not invite payment of additional fees.
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.:  
Group I: claims 1-4, 19-25

**Remark on Protest**

- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- No protest accompanied the payment of additional search fees

INTERNATIONAL SEARCH REPORT  
Information on patent family members

International application No.

PCT/IB15/53402

---Continued from Box No. III Observations where unity of invention is lacking---

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: claims 1-4, 19-25 are directed toward an improved container cover with at least one integrated tube extending from the perimeter of said partially concave sip-hole, said tube extending inward to a length of at least two millimeters (2.0mm).

Group II: claim 18 are directed toward an improved beverage lid comprising; a rim and lip for securing lid to a container, a raised top side above the said rim, a lip-groove, a nose-depression, at least one channeled groove, at least one liquid-pool, at least one air-liquid-drain hole, and at least one liquid backstop; whereby said components work together to limit and control gas-liquid molecule communication bi-directly between a container, a lid and their surrounding.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons.

The special technical features of Group I include an improved container cover, comprising: at least one integrated tube extending from the perimeter of said partially concave sip-hole, said tube extending inward to a length of at least two millimeters (2.0mm); and at least one inlet opening along said integrated extending tube; whereby said partially concave sip-hole on said cover is extended by said integrated tube and said integrated inlet is configured to help control and limit fluid communication within said extended tube, so that configuration of partially concave sip-hole with extended tube and inlet form a liquid-pull-drain that helps to pool and guide escaped and settling liquid on top of said container cover back into the container where it began (which are not present in Group II).

The special technical features of Group II include an improved beverage lid comprising; a rim and lip for securing lid to a container, a raised top side above the said rim, at least one inlet opening on a side wall, a lip-groove, a nose-depression, at least one channeled groove, at least one liquid-pool, at least one air-liquid-drain hole, and at least one liquid backstop; whereby said components work together to limit and control gas-liquid molecule communication bi-directly between a container, a lid and their surrounding (which are not present in Group I).

The common technical features of Groups I-II include an improved container cover, comprising: with at least one sip-hole that is at least partially concave to form a liquid-pull-drain; at least one integrated tube; and at least one inlet opening; and fitting the beverage lid on a compatible container in a sealed manner.

These common technical features are disclosed by US 2005/0173443 A1 to CRUDGINGTON, JR. (hereinafter 'Crudgington'). Crudgington discloses an improved beverage lid/container cover (10; figure 1), comprising: at least one sip-hole (sip hole; annotated figure) that is at least partially concave (including a concave portion; annotated figure) to form a liquid-pull-drain (the concavity of the sip hole would pull liquid towards opening 42; annotated figure); at least one integrated tube (tube; annotated figure); and at least one inlet opening (inlet; annotated figure); and fitting the beverage lid/container cover on a compatible container in a sealed manner (the lid 10 includes a mounting portion 19 for affixing the lid to a drinking cup; paragraph [0034]).

Because the common technical features are disclosed by CRUDGINGTON, the inventions are not so linked as to form a single general inventive concept. Therefore, Groups I-II lack unity.