



(51) International Patent Classification:  
*B01D 35/30* (2006.01)

(21) International Application Number:

PCT/US2014/038826

(22) International Filing Date:

20 May 2014 (20.05.2014)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/825,209 20 May 2013 (20.05.2013) US  
14/170,133 31 January 2014 (31.01.2014) US

(71) Applicant: THERMOS L.L.C. [US/US]; 475 N. Martingale Road, Suite 1100, Schaumburg, Illinois 60173 (US).

(72) Inventor; and

(71) Applicant : LANE, Marvin [US/US]; 475 N. Martingale Road, Suite 1100, Schaumburg, Illinois 60173 (US).

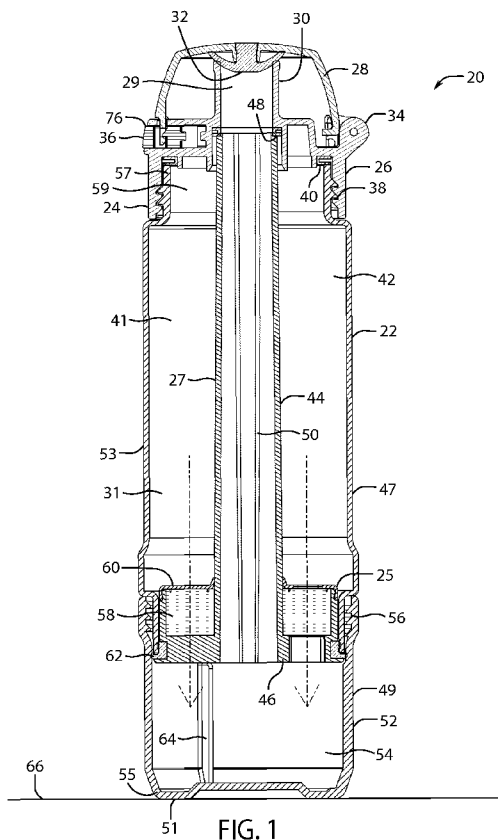
(74) Agents: DIEKHOFF, Brian, B. et al.; Polsinelli PC, 100 South Fourth Street, Suite 1000, St. Louis, Missouri 63102-1825 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV,

[Continued on next page]

(54) Title: BOTTLE SYSTEM AND METHOD FOR FILTERING OR TREATING A BEVERAGE



(57) Abstract: A beverage filter or treatment bottle system has a bottle, lid, and a beverage improvement component such as a filter element. A filter element may be positioned to separate the interior space of the bottle into a filtered beverage compartment and an unfiltered beverage compartment. A tube passes through the filter into fluid communication with the filtered beverage compartment. The tube extends through the unfiltered beverage compartment to a nozzle in the lid of the bottle. A lid cover is fastenable onto the lid to enclose and close the nozzle. A filter cartridge may be provided. A UV sterilizer may be provided. An air bypass may be provided.





MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK,  
SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, KM, ML, MR, NE, SN, TD, TG).

— 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))

**Published:**

— with international search report (Art. 21(3))

**(88) Date of publication of the international search report:**

12 February 2015

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2014/038826

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(8) - B01D 35/30 (2014.01) CPC - B01D 35/30 (2014.10) 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) - A45F 3/16; A47G 19/22; B01D 35/30; C02F 1/28, 1/32 (2014.01) CPC - A45F 3/16; A47G 19/2266; B01D 35/30; C02F 1/002, 1/283, 1/32, 2307/02 (2014.10) Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC - 99/275; 210/311, 360.2, 455; 215/308, 316; 220/369, 703; 222/189.06, 189.1, 464.1, 464.3 (keyword delimited) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PatBase, Google Patents, Google Search terms used: pure water, filter, filtration, purify, strain, ultra violet, UV, bottle, beverage, water, drink, tube		
<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	CN 202739535 U (MIAO) 20 February 2013 (20.02.2013) see machine translation	1, 33, 38, 40, 48-50, 54-56
---		-----
Y		2-5, 16, 20-31, 36-37, 39
Y	US 2004/0144711 A1 (CLUFF et al) 29 July 2004 (29.07.2004) entire document	2-5, 16
Y	US 2005/0051476 A1 (CHEN et al) 10 March 2005 (10.03.2005) entire document	20-21, 36
Y	US 6,523,711 B1 (HUGHES et al) 25 February 2003 (25.02.2003) entire document	22-26, 31
Y	CN 102556483 A (IDEMOTO) 11 July 2012 (11.07.2012) see machine translation	27-31, 39
Y	US 6,079,589 A (MATSUYAMA et al) 27 June 2000 (27.06.2000) entire document	37
A	US 2005/0279768 A1 (CHATRATH) 22 December 2005 (22.12.2005) entire document	1-42, 48-56
A	US 6,458,303 B1 (FUEHRER et al) 01 October 2002 (01.10.2002) entire document	1-42, 48-56
A	PURE WATER TECHNOLOGY. Timothy Whitehead. Copyright 2010 [retrieved on 2014-11-13]. Retrieved from the internet: <URL: http://www.purewatertechnology.co.uk/innovation.html>	1-42, 48-56
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/>		
* 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 14 November 2014		Date of mailing of the international search report <b>17 DEC 2014</b>
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201		Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2014/038826

**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.:  
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:

See extra sheet.

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.:  
1-42, 48-56

**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

International application No.

PCT/US2014/038826

CONTINUED FROM BOX NO. III:

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 need to be paid.

Group I, claims 1-42, 48-56 are drawn to a beverage bottle.  
Group II, claims 43-47 are drawn to a filter system.

The inventions listed in Groups I and 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, a beverage bottle system comprising a bottle body defining a beverage compartment and a body mouth, a transfer tube extending from a filtered beverage compartment approximately to the body mouth, the transfer tube passing through an unfiltered beverage compartment without being in fluid communication with the unfiltered beverage compartment, a lid fastenable onto the bottle body, the lid defining a drinking opening being in fluid communication to the transfer tube, are not present in Group II; and the special technical features of Group II, a filter comprising a transfer tube connected to an approximate center of a filter holder, the filter comprising one of a filter element and a filter cartridge having an outer substantially cylindrical wall configured to fit into the filter holder, the one of the filter element and the filter cartridge having an inner substantially cylindrical wall configured to fit around a portion of the transfer tube, are not present in Group I.

Groups I and II share the technical features of a bottle body and a filter holder mounted within the bottle body, the filter holder dividing an interior space of the bottle body into an unfiltered beverage compartment and a filtered beverage compartment, a transfer tube, and a filter for filtering a beverage flowing therethrough. However, these shared technical features do not represent a contribution over the prior art. Specifically, US 6,733,669 B1 to Crick teaches of a bottle body (12, Fig. 1) and a filter holder mounted within the bottle body (horizontal portion at 24, Fig. 5), the filter holder dividing an interior space of the bottle body into an unfiltered beverage compartment (upper unfiltered water chamber 20, Fig. 5) and a filtered beverage compartment (lower filtered water chamber 16, Fig. 5), a transfer tube (32, 34, Fig. 8), and a filter for filtering a beverage flowing therethrough (26, Fig. 6).

Since none of the special technical features of the Group I and II inventions are found in more than one of the inventions, unity is lacking.