



(12) **EUROPEAN PATENT APPLICATION**

(88) Date of publication A3:  
**05.01.2005 Bulletin 2005/01**

(51) Int Cl.7: **B65D 90/26, B67D 5/34**

(43) Date of publication A2:  
**03.11.2004 Bulletin 2004/45**

(21) Application number: **04252574.1**

(22) Date of filing: **01.05.2004**

(84) Designated Contracting States:  
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR**  
**HU IE IT LI LU MC NL PL PT RO SE SI SK TR**  
Designated Extension States:  
**AL HR LT LV MK**

(72) Inventor: **Denby, Carl**  
**Selby, North Yorkshire YO8 4HL (GB)**

(74) Representative: **Spaargaren, Jerome et al**  
**Electronic Intellectual Property,**  
**Suite 308,**  
**The Foundry,**  
**156 Blackfriars Road**  
**London SE1 8EN (GB)**

(30) Priority: **01.05.2003 GB 0310079**

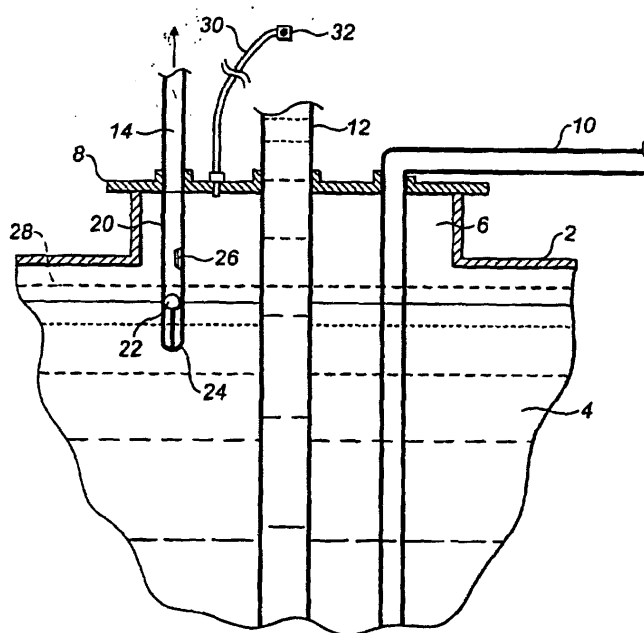
(71) Applicant: **Denby, Carl**  
**Selby, North Yorkshire YO8 4HL (GB)**

(54) **Method and apparatus for refilling liquid storage tanks**

(57) A method of refilling a liquid storage tank (2),  
said method comprising providing:

a gaseous outlet (14) for removing gaseous content  
from the tank during delivery of liquid to the tank;  
a fluid flow restrictor (20) arranged to restrict flow  
through said gaseous outlet in response to a filling

condition within the tank exceeding a threshold level;  
and  
pressure sensitive means (30) fluidly connected to  
the interior of the tank for sensing a build up of pressure  
within the tank in response to operation of said  
fluid flow restrictor.



**FIG. 3**



European Patent  
Office

# EUROPEAN SEARCH REPORT

Application Number  
EP 04 25 2574

| 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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | GB 2 307 027 A (RISBRIDGER W & J LTD)<br>14 May 1997 (1997-05-14)                                                         | 1,6,7,<br>13-15                                     | B65D90/26<br>B67D5/34                                   |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | * page 4, paragraph 2 *                                                                                                   | 2-5                                                 |                                                         |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | US 4 083 387 A (STIEBER ALBERT ET AL)<br>11 April 1978 (1978-04-11)<br>* column 1, line 9 - line 20 *                     | 2-4                                                 |                                                         |
| Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EP 0 063 191 A (CONWAY CHARLES S)<br>27 October 1982 (1982-10-27)<br>* page 11, line 5 - line 9 *                         | 5                                                   |                                                         |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | GB 2 323 355 A (DENBY CARL)<br>23 September 1998 (1998-09-23)<br>* the whole document *                                   | 1,6,7,<br>13-15                                     |                                                         |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | GB 2 317 382 A (RISBRIDGER BARRY CHARLES ;<br>RISBRIDGER W & J LTD (GB))<br>25 March 1998 (1998-03-25)<br>* figures 1,2 * | 1,6,7,<br>13-15                                     |                                                         |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | GB 2 257 131 A (VEEDER ROOT LTD)<br>6 January 1993 (1993-01-06)<br>* the whole document *                                 | 1,6,7,<br>13-15                                     | TECHNICAL FIELDS<br>SEARCHED (Int.Cl.7)<br>B65D<br>B67D |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | US 5 435 335 A (KLOP ELMER P)<br>25 July 1995 (1995-07-25)<br>* column 3, line 7 - line 19; figure 2 *                    | 8-11,16,<br>17                                      |                                                         |
| X                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | US 4 630 655 A (SMILGYS BRUNO S ET AL)<br>23 December 1986 (1986-12-23)<br>* figures 1,3 *                                | 12                                                  |                                                         |
| The present search report has been drawn up for all claims                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                           |                                                     |                                                         |
| Place of search<br>Munich                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                           | Date of completion of the search<br>29 October 2004 | Examiner<br>Desittere, M                                |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone<br/>Y : particularly relevant if combined with another document of the same category<br/>A : technological background<br/>O : non-written disclosure<br/>P : intermediate document</p> <p>T : theory or principle underlying the invention<br/>E : earlier patent document, but published on, or after the filing date<br/>D : document cited in the application<br/>L : document cited for other reasons<br/>&amp; : member of the same patent family, corresponding document</p> |                                                                                                                           |                                                     |                                                         |

EPO FORM 1503 03.82 (P0401)



European Patent  
Office

Application Number  
EP 04 25 2574

### 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 8

- ☒ 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:



European Patent  
Office

**LACK OF UNITY OF INVENTION**  
**SHEET B**

Application Number  
EP 04 25 2574

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: 1-7,13-15

Liquid tank overfill prevention method whereby a sensor senses the activation of a vent flow restrictor; tank and apparatus therefor.

---

2. claims: 8-11,16,17

Liquid tank overfill method whereby a main vent is restricted and a secondary vent is activated; tank and apparatus therefor.

---

3. claim: 12

Liquid flow restrictor with float subjected to an attractive force.

---

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

EP 04 25 2574

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.

29-10-2004

| Patent document<br>cited in search report |   | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
|-------------------------------------------|---|---------------------|----------------------------|---------------------|
| GB 2307027                                | A | 14-05-1997          | GB 2275677 A , B           | 07-09-1994          |
| US 4083387                                | A | 11-04-1978          | CA 1037345 A1              | 29-08-1978          |
| EP 0063191                                | A | 27-10-1982          | EP 0063191 A1              | 27-10-1982          |
|                                           |   |                     | AT 15014 T                 | 15-09-1985          |
|                                           |   |                     | DE 3171889 D1              | 26-09-1985          |
| GB 2323355                                | A | 23-09-1998          | AU 6738498 A               | 20-10-1998          |
|                                           |   |                     | WO 9842615 A1              | 01-10-1998          |
| GB 2317382                                | A | 25-03-1998          | NONE                       |                     |
| GB 2257131                                | A | 06-01-1993          | NONE                       |                     |
| US 5435335                                | A | 25-07-1995          | NONE                       |                     |
| US 4630655                                | A | 23-12-1986          | NONE                       |                     |