

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
28 December 2006 (28.12.2006)

PCT

(10) International Publication Number
WO 2006/138464 A3

- (51) **International Patent Classification:**
B65D 51/00 (2006.01) *G01F 23/00* (2006.01)
- (21) **International Application Number:**
PCT/US2006/023312
- (22) **International Filing Date:** 15 June 2006 (15.06.2006)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
60/595,214 15 June 2005 (15.06.2005) US
- (71) **Applicant (for all designated States except US):** **SKILEX
FREEPOUR SYSTEMS** [US/US]; 3768 Paces Ferry
West, SE, Atlanta, GA 30339 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **GHAZI, Babak,
Robert** [US/US]; 3768 Paces Ferry Way, Atlanta, GA
30339 (US). **D'ARRIGO, Paul, Sakichi** [US/US]; 4128
Lenox Circle, Atlanta, GA 30319 (US).
- (74) **Agents:** **NEEDLE, William, H.** et al.; NEEDLE &
ROSENBERG, P.C., SUITE 1000, 999 Peachtree Street,
Atlanta, GA 30309-3915 (US).
- (81) **Designated States (unless otherwise indicated, for every
kind of national protection available):** AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

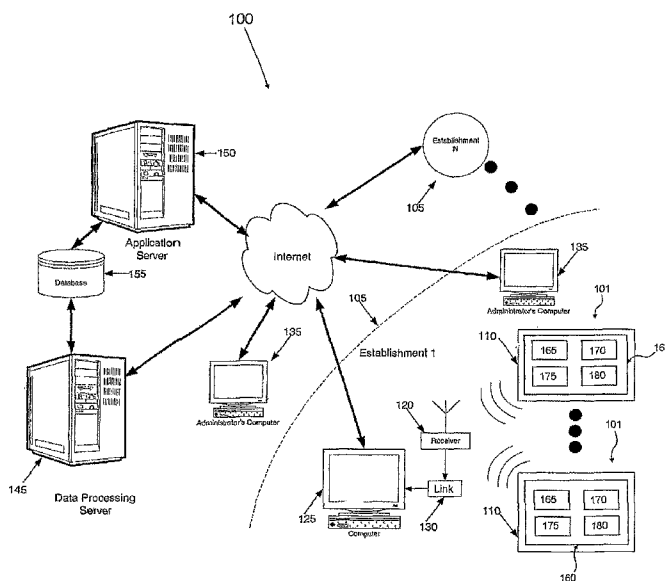
(84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) **Date of publication of the international search report:**
30 August 2007

[Continued on next page]

(54) **Title:** WIRELESS LIQUID-LEVEL MEASURING FREE POUR SPOUT



(57) **Abstract:** Disclosed are systems, apparatuses and methods for determining the amount of liquid contained within a vessel. In one aspect, a liquid dispensing apparatus is provided comprising a pour spout mountable to an opening formed by a liquid containing vessel. A range sensor assembly is housed within the pour spout and comprises a trigger pulse source capable of receiving an actuation signal to thereby provide a trigger pulse and an echo pulse detector capable of providing an echo pulse detection signal. A microcontroller is provided in communication with the range sensor assembly. The microcontroller is configured to send an actuation signal to the trigger pulse source and to receive an echo pulse detection signal from the echo pulse detector, and, in a further aspect, can be configured to determine an elapsed time occurring between an actuation of the trigger pulse source and a subsequent detection of an echo pulse.

WO 2006/138464 A3



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 06/23312

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8): N65D 51/00 (2007.01), G01F 23/00 (2007.01)
USPC: 215/200, 116/227

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)
USPC: 215/200, 116/227

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 215/40; 116/200; 137/101.25, 87.01 (text search - see terms below)

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

PubWEST(USPT,PGPB,EPAB,JPAB); Google
Search Terms: pour spout, echo, fluid level, liquid level, wireless

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2005/0033532 A1 (Mogadam) 10 February 2005 (10.02.2005), entire document, especially Fig 1 and 5, para [0009] - [0043]	1-20
Y	US 5,157,639 A (Leszczynski) 20 October 1992 (20.10.1992), entire document, especially col 2, ln 55 - col 6, ln 53	1-20
A	US 4,572,253 A (Farmer, et al) 25 February 1986 (25.02.1986), entire document	1-20
A	US 4,782,239 A (Hirose, et al.) 01 November 1988 (01.11.1988), entire document	1-20

Further documents are listed in the continuation of Box C.

* Special categories of cited documents:	"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
"A" document defining the general state of the art which is not considered to be of particular relevance	"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
"E" earlier application or patent but published on or after the international filing date	"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
"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)	"&" document member of the same patent family
"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	

Date of the actual completion of the international search 17 April 2007 (17.04.2007)	Date of mailing of the international search report 11 JUL 2007
---	--

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: Lee W. Young PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774
---	--