



## (51) International Patent Classification:

*F15B 13/02* (2006.01) *F16K 31/12* (2006.01)  
*E02F 9/22* (2006.01) *F16K 31/122* (2006.01)

## (21) International Application Number:

PCT/US2011/062359

## (22) International Filing Date:

29 November 2011 (29.11.2011)

## (25) Filing Language:

English

## (26) Publication Language:

English

## (30) Priority Data:

61/423,303 15 December 2010 (15.12.2010) US  
13/271,971 12 October 2011 (12.10.2011) US

(71) Applicant (for all designated States except US): **CATERPILLAR INC.** [US/US]; 100 N.E. Adams Street, Peoria, IL 61629-9510 (US).

## (72) Inventors; and

(75) Inventors/Applicants (for US only): **MATHER, Daniel** [US/US]; 16820 S. Weber Road, Lockport, IL 60441 (US). **BELSHAN, Daryl** [US/US]; 7209 Faxton Lane, Plainfield, IL 60586 (US).(74) Agents: **SPILLMAN, M., Daniel** et al.; 100 N.E. Adams Street, Peoria, IL 61629-9510 (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, 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, IS, JP, KE, KG, KM, 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, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, 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, MD, 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, 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, ML, MR, NE, SN, TD, TG).

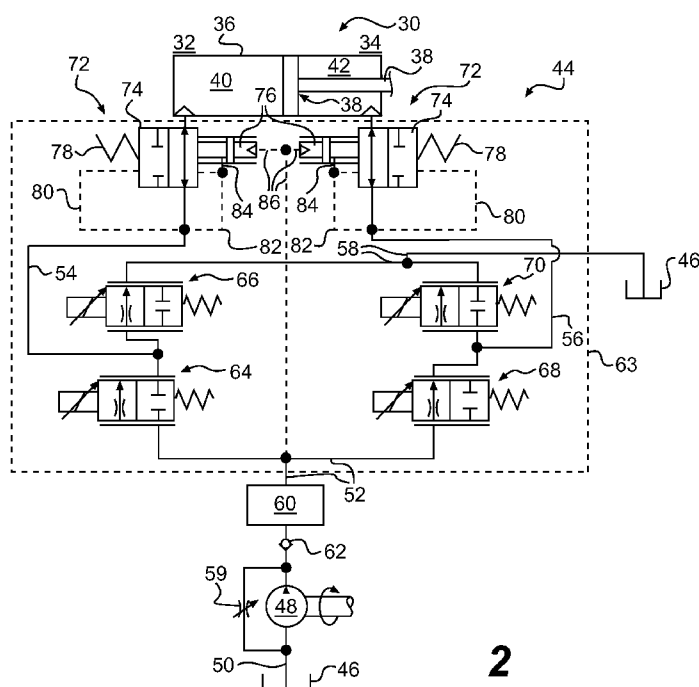
## Published:

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

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

7 September 2012

## (54) Title: HYDRAULIC SYSTEM HAVING LOAD LOCK VALVE



(57) Abstract: A load lock valve (72) for a hydraulic system (44) is disclosed. The load lock valve may have a block (63) with a first bore (88), and a body (90) disposed within the first bore. The body may have a second bore (82), and first and second first radial ports (96, 98) in fluid communication with the second bore. The body may also have a valve seat (100), and a poppet (74) disposed within the body. The poppet may have a nose end (102), a control end (104), a balance passage (80) extending from the control end toward the nose end and terminating short of the nose end, and a third radial port (106) in fluid communication with the balance passage. The load lock valve may further have a spring (78) configured to bias the poppet toward the first opening. The control end of the poppet is fluidly communicated with the first radial port when a sealing surface at the nose end is against the valve seat.

**A. CLASSIFICATION OF SUBJECT MATTER*****F15B 13/02(2006.01)i, E02F 9/22(2006.01)i, F16K 31/12(2006.01)i, F16K 31/122(2006.01)i***

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)

F15B 13/02; F16K 11/18; F15B 11/08; A61G 13/00; F15B 13/042; F16D 31/02

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) &amp; Keywords: lock valve, radial port, poppet, hydraulic

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	US 04012031 A (MITCHELL, LARRY D. et al.) 15 March 1977 See abstract; column 4, line 26 - column 5, line 52 and figures 3, 4	1,10 2-9
Y A	US 03908515 A (JOHNSON, HOWARD L.) 30 September 1975 See column 2 lines 10 - 18 and figure 1	1,10 2-9
A	US 04669494 A (MCBETH, JAMES) 02 June 1987 See abstract; column 5, line 6 - column 8, line 47 and figure 1	1-10
A	US 03933167 A (BYERS, JR. JAMES OTTO) 20 January 1976 See column 2, line 11 - column 3, line 44 and figures 1 - 4	1-10
A	US 04286432 A (BURROWS, J. W. et al.) 01 September 1981 See abstract; column 4, line 40 - column 5, line 53 and figure 1	1-10



Further documents are listed in the continuation of Box C.



See patent family annex.

\* Special categories of cited documents:

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"&amp;" document member of the same patent family

Date of the actual completion of the international search

21 JUNE 2012 (21.06.2012)

Date of mailing of the international search report

**21 JUNE 2012 (21.06.2012)**

Name and mailing address of the ISA/KR

Korean Intellectual Property Office  
189 Cheongsu-ro, Seo-gu, Daejeon Metropolitan  
City, 302-701, Republic of Korea

Facsimile No. 82-42-472-7140

Authorized officer

Choi Jeong Won

Telephone No. 82-42-481-8439



**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/US2011/062359**

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 04012031 A	15.03.1977	JP 51-119476 A	20.10.1976
US 03908515 A	30.09.1975	JP 1043076 C	23.04.1981
		JP 50-054778 A	14.05.1975
		JP 55-035563 B	16.09.1980
US 04669494 A	02.06.1987	None	
US 03933167 A	20.01.1976	None	
US 04286432 A	01.09.1981	None	