



- (51) **International Patent Classification:**
B25J1/00 (2006.01) **B25J 13/02** (2006.01)
B25J5/00 (2006.01)
- (21) **International Application Number:**
PCT/US2012/035570
- (22) **International Filing Date:**
27 April 2012 (27.04.2012)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/481,099 29 April 2011 (29.04.2011) US
61/481,110 29 April 2011 (29.04.2011) US
61/481,103 29 April 2011 (29.04.2011) US
61/481,089 29 April 2011 (29.04.2011) US
61/481,095 29 April 2011 (29.04.2011) US
61/481,091 29 April 2011 (29.04.2011) US
13/332,146 20 December 2011 (20.12.2011) US
- (71) **Applicant (for all designated States except US):** RAY-
THEON COMPANY [US/US]; 870 Winter Street,
Waltham, Massachusetts 02451 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** JACOBSEN, Steph-
en C. [US/US]; 274 South 1200 East, Salt Lake City, Utah
84102 (US). MCCULLOUGH, John [US/US]; 3820
South 2780 East, Salt Lake City, Utah 84109 (US).
OLIVIER, Marc X. [US/US]; 1941 Wasatch Drive, Salt
Lake City, Utah 84108 (US).
- (74) **Agent:** JOHNSON, Christopher L.; Thorpe North &
Western, LLP, 8180 South 700 East, Suite 350, Sandy,
Utah 84070 (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, 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).

Declarations under Rule 4.17:

- as to the identity of the inventor (Rule 4.1 7(i))
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.1 7(h))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.1 7(in))

[Continued on nextpage]

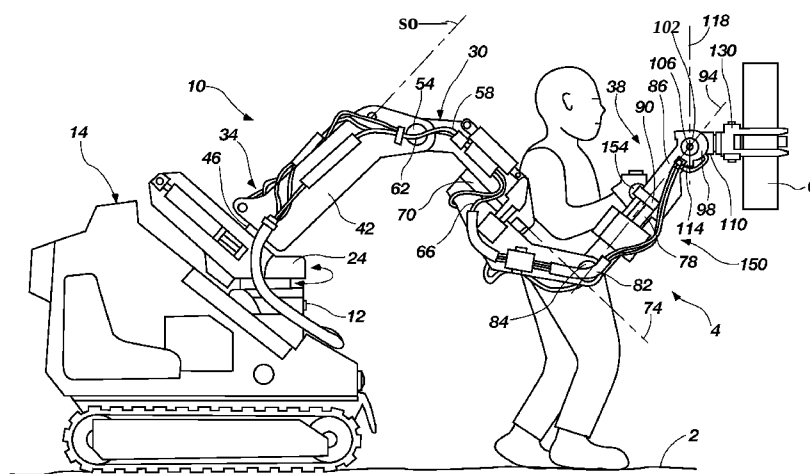
(54) **Title:** ROBOTIC AGILE LIFT SYSTEM WITH EXTREMITY CONTROL

FIG. 1

(57) **Abstract:** A mobile robotic lift assistance system (10) that can accommodate and provide for operator manipulation and control of a robotic arm (30) and associated end effector (130) locally from and via the robotic arm itself, and within a zone of operation (4). The mobile robotic lift assistance system can include one or more robotic arms having an associated extremity control system (150) operable therefrom, wherein the operator enters the zone of operation and engages a control interface (154) device to manipulate and control the robotic arm, any end effector associated therewith, and optionally the mobile platform unit (14). The control interface system facilitates extremity control by the operator of the mobile robotic lift assistance system.

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2012/035570

A. CLASSIFICATION OF SUBJECT MATTER
INV. B25J1/00 B25J5/00 B25J13/02
ADD.

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)
B25J

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

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

EPO-Internal , WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 7 060679 A (TAKENAKA KOMUTEN CO) 7 March 1995 (1995-03-07) abstract; figures 1-4 paragraphs [0014] , [0015] paragraphs [0018] , [0019] paragraph [0025] -----	1-6,9 , 10, 13 , 16, 17
X	JP 5 004177 A (TAKENAKA KOMUTEN CO; KOMATSU MFG CO LTD) 14 January 1993 (1993-01-14) abstract; figures 1,2,3 paragraph [0009] - paragraph [0012] -----	1-6,9 , 13 , 16, 17
X	JP 2005 334999 A (YASKAWA ELECTRIC CORP) 8 December 2005 (2005-12-08) abstract; figures 1,4 paragraphs [0014] , [0015] -----	1-8, 12 , 16, 17



Further documents are listed in the continuation of Box C.



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

8 February 2013

Date of mailing of the international search report

19/02/2013

Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Lumi neuau, Stephane

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/US2012/035570

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 7060679	A	07-03-1995	NONE	

JP 5004177	A	14-01-1993	NONE	

JP 2005334999	A	08-12-2005	JP 4517726 B2	04-08-2010
			JP 2005334999 A	08-12-2005
