

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
27 August 2009 (27.08.2009)

PCT

(10) International Publication Number
WO 2009/105595 A3

- (51) **International Patent Classification:**
H02J 7/00 (2006.01) *H02J 7/02* (2006.01)
- (21) **International Application Number:**
PCT/US2009/034607
- (22) **International Filing Date:**
20 February 2009 (20.02.2009)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/030,749 22 February 2008 (22.02.2008) US
- (71) **Applicant (for all designated States except US):** ACCESS BUSINESS GROUP INTERNATIONAL LLC [US/US]; Mail Code 78-2G, 7575 Fulton Street East, Ada, Michigan 49355 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** BAARMAN, David W. [US/US]; 6414 127th Avenue, Fennville, Michigan 49408 (US). NORCONK, Matthew J. [US/US]; 2045 Sandpiper Pt., N.E., Apt. #122, Grand Rapids, Michigan 49505 (US). NGUYEN, Hai D. [US/US]; 1261 Ravanna Ave., SE, Grand Rapids, Michigan 49508 (US). SCHWANNECKE, Joshua K. [US/US]; 632 Kent Street, Portland, Michigan 48875 (US). ZYLSTRA,

Brad A. [US/US]; 829 Orchard Avenue, SE, East Grand Rapids, Michigan 49506 (US).

(74) **Agents:** SHUNTA, Dustin H. et al.; Warner Norcross & Judd LLP, 900 Fifth Third Center, 111 Lyon Street NW, Grand Rapids, Michigan 49503 (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, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, 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, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) **Title:** INDUCTIVE POWER SUPPLY SYSTEM WITH BATTERY TYPE DETECTION

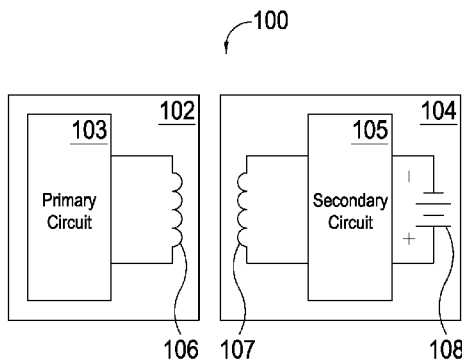
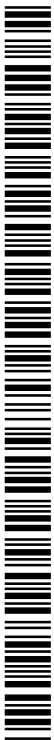


FIG. 1

(57) **Abstract:** An inductive power supply system (100) to wirelessly charge a remote device (104) based on detected battery characteristics. The system includes an inductive power supply (102) with a primary coil (106) capable of inductively providing power to a secondary coil (107) in a remote device (104). The inductive power supply (102) and remote device (104) include communication means for wirelessly communicating. The system further includes a remote device (104), having a battery (108) with detectable battery characteristics. In operation, the remote device (104) is capable of detecting the battery characteristics by applying a qualification charge to the battery (108). The inductive power supply system (100) is capable of identifying the battery (108) installed in the remote device by analyzing the detected battery characteristics. The inductive power supply system (100) selects an appropriate charging algorithm based on the analyzed characteristics.



WO 2009/105595 A3



Published:

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

10 December 2009

- *with international search report (Art. 21(3))*
- *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))*

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/034607

A. CLASSIFICATION OF SUBJECT MATTER INV. H02J7/02 H02J7/00		
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) H02J H01M G01R		
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 practical, search terms used) EPO-Internal, WPI Data, INSPEC, COMPENDEX		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2007/024238 A1 (NAKADE SHOGO [JP] ET AL) 1 February 2007 (2007-02-01) paragraphs [0013], [0017], [0019]; figure 2	1-21
X	US 5 963 012 A (GARCIA JORGE L [US] ET AL) 5 October 1999 (1999-10-05) abstract column 2, line 60 - column 4, line 6; figures 2,3	1-21
X	WO 2004/073166 A (ACCESS BUSINESS GROUP INT LLC [US]; BAARMAN DAVID W [US]) 26 August 2004 (2004-08-26) cited in the application page 15, line 16 - page 16, line 10; figures 7,8	1-21
	----- -/--	
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C.		
<input checked="" type="checkbox"/> 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 document 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. *8* document member of the same patent family		
Date of the actual completion of the international search 13 October 2009		Date of mailing of the international search report 21/10/2009
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 Braccini, Roberto

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2009/034607

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 096 638 A (SEIKO EPSON CORP [JP]) 2 May 2001 (2001-05-02) page 4, line 42 - page 5, line 2; figure 3 -----	8,16
A	US 5 734 253 A (BRAKE CLIFFORD [US] ET AL) 31 March 1998 (1998-03-31) abstract -----	1,9,17, 21

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No PCT/US2009/034607
--

Patent document cited in search report	A1	Publication date	Patent family member(s)	Publication date
US 2007024238	A1	01-02-2007	NONE	
US 5963012	A	05-10-1999	NONE	
WO 2004073166	A	26-08-2004	EP 1590867 A2 JP 2006517778 T KR 20050105200 A	02-11-2005 27-07-2006 03-11-2005
EP 1096638	A	02-05-2001	CN 1296659 A WO 0055955 A1 JP 3888060 B2 TW 522583 B US 6469472 B1	23-05-2001 21-09-2000 28-02-2007 01-03-2003 22-10-2002
US 5734253	A	31-03-1998	NONE	