



- (51) **International Patent Classification:**
G06F 13/42 (2006.01) *G06F 9/44* (2006.01)
- (21) **International Application Number:**
PCT/US2013/050946
- (22) **International Filing Date:**
17 July 2013 (17.07.2013)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
61/672,530 17 July 2012 (17.07.2012) US
- (71) **Applicant:** MILWAUKEE ELECTRIC TOOLS CORPORATION [US/US]; 13135 West Lisbon Road, Brookfield, WI 53005 (US).
- (72) **Inventor:** MERGENER, Matthew, J.; W149 N9935 Rimrock Road, Germantown, WI 53022 (US).
- (74) **Agents:** RIZZUTO, Kevin, P. et al.; Michael Best & Friedrich LLP, 100 East Wisconsin Avenue, Suite 3300, Milwaukee, WI 53202-4108 (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, BN, 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, 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, PA, 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, KM, ML, MR, NE, SN, TD, TG).

Published:

- 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))

- (88) **Date of publication of the international search report:**
13 March 2014

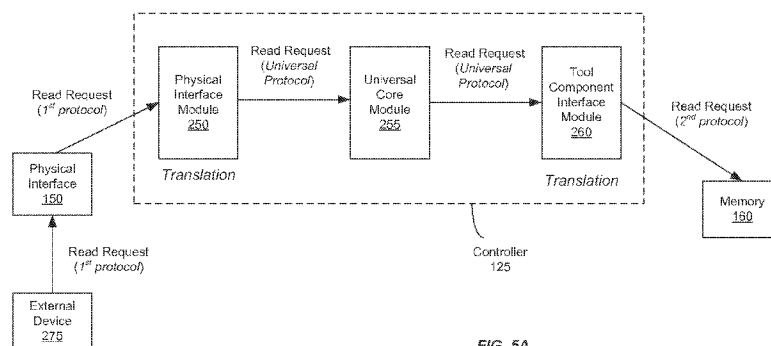
(54) **Title:** UNIVERSAL PROTOCOL FOR POWER TOOLS

FIG. 5A

(57) **Abstract:** A system and method for communicating with power tools using a universal protocol. The universal protocol may be implemented using a universal core module that is installed across a variety of power tools and other devices to enable communications therewith. Communications to and from the power tools are translated to a universal protocol once received. The translated communications are handled by the universal core module of a particular tool according to a set of rules. In response, the universal core module outputs communications according to the universal protocol and the set of rules, which may be translated to another protocol for receipt by components of the tool or an external device. The communications may be used, for example, to obtain tool performance data from the tools and to provide firmware updates.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/050946**A. CLASSIFICATION OF SUBJECT MATTER****G06F 13/42(2006.01)i, G06F 9/44(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
G06F 13/42; A61B 5/01; B25F 5/02; H04J 3/16; G06F ; B25F 5/00; H02K 11/00; G06F 9/44Documentation 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 modelsElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: power tool, protocol, translate, memory, universal protocol.**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 2012-061673 A2 (INGERSOLL-RAND COMPANY) 10 May 2012 See page 2, line 26 - page 3, line 21, page 13, lines 8-11; and claim 1.	1-20
A	WO 2004-010253 A2 (BLACK & DECKER INC.) 29 January 2004 See paragraphs [0017]-[0021]; claim 1; and figures 1-2.	1-20
A	US 6967972 B1 (LEV VOLFTSUN et al.) 22 November 2005 See column 6, line 36 - column 7, line 16, column 14, lines 8-16; claim 1; and figure 1.	1-20
A	WO 2012-027739 A2 (MILWAUKEE ELECTRIC TOOL CORPORATION) 01 March 2012 See paragraph [0044]; and figures 6-7.	1-20
A	US 2011-0056716 A1 (ANDREAS JONSSON et al.) 10 March 2011 See paragraphs [0001], [0018]-[0020]; and claims 53-64.	1-20



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

22 January 2014 (22.01.2014)

Date of mailing of the international search report

22 January 2014 (22.01.2014)

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

BYUN, Sung Cheal

Telephone No. +82-42-481-8262



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2013/050946

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2012-061673 A2	10/05/2012	CN 103282165 A EP 2635411 A2 WO 2012-061673 A3	04/09/2013 11/09/2013 09/08/2012
WO 2004-010253 A2	29/01/2004	AU 2003-254020 A1 BR 0312938 A CA 2493193 A1 CA 2493193 C CN 100378715 C0 CN 1682006 A CN 1682006 C0 EP 1543215 A2 EP 1543215 A4 EP 1543215 B1 NO 20050854 A NZ 537985 A TW I306204 A TW I306204 B US 2004-085193 A1 US 2006-195202 A1 US 7054696 B2 US 7346406 B2 WO 2004-010253 A3	09/02/2004 21/06/2005 29/01/2004 17/02/2009 02/04/2008 12/10/2005 02/04/2008 22/06/2005 12/10/2005 27/02/2013 17/02/2005 23/02/2007 11/02/2009 11/02/2009 06/05/2004 31/08/2006 30/05/2006 18/03/2008 13/05/2004
US 6967972 B1	22/11/2005	US 6111893 A US 6151390 A US 6741610 B1	29/08/2000 21/11/2000 25/05/2004
WO 2012-027739 A2	01/03/2012	CN 103188990 A EP 2608713 A2 US 2013-0188058 A1 WO 2012-027739 A3	03/07/2013 03/07/2013 25/07/2013 07/06/2012
US 2011-0056716 A1	10/03/2011	CA 2716871 A1 CN 101960696 A EP 2269286 A1 EP 2278699 A1 JP 2011-517301 A WO 2009-108093 A1	03/09/2009 26/01/2011 05/01/2011 26/01/2011 02/06/2011 03/09/2009