



(43) International Publication Date
6 February 2014 (06.02.2014)

- (51) International Patent Classification:
G04C 13/11 (2006.01) H02K 37/02 (2006.01)
- (21) International Application Number:
PCT/US2012/065199
- (22) International Filing Date:
15 November 2012 (15.11.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
13/562,214 30 July 2012 (30.07.2012) US
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- (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, 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, 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, ML, MR, NE, SN, TD, TG).

Published:

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

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

18 June 2015

(54) Title: CONTROLLER FOR BACK EMF REDUCING MOTOR

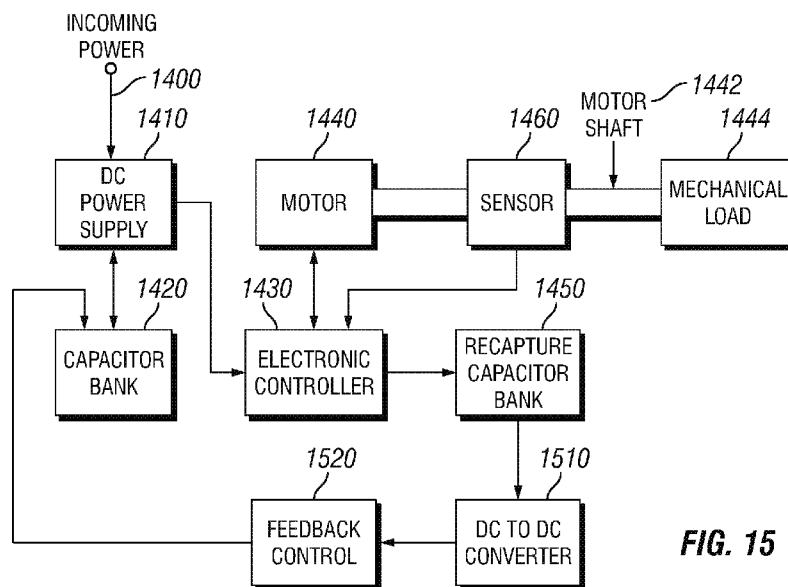


FIG. 15

(57) Abstract: Embodiments of controllers for electric motors, and methods of operation for the same are disclosed. More particularly, the controllers and methods of operation are for motors designed to operate so as to reduce Back EMF.

WO 2014/021911 A3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/65199

A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - G04C 13/11, H02K 37/02 (2012.01) USPC - 310/49.48 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: 310/49.48 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 310/10, 40R, 111, 49.23, 49.48 (text search - see terms below) Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PatBase; PubWEST(USPT,PGPB,EPAB,JPAB); Google Search Terms: motor, controller, DC, recapture, recover, capture, coil, winding, energy, emf, position, sensor, detector, diode, capacitor		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X -- Y	US 4,459,519 A (ERDMAN) 10 July 1984 (10.07.1984), entire document especially Fig 1; col 8, lns 42-57; 9, lns 49-54; col 17, lns 38-46	1-8, 12-15 ----- 9-11
Y	US 6,664,750 B2 (PELONIS) 16 December 2003 (16.12.2003), entire document especially col 2, lns 35-39	9
Y	US 2006/0125436 A1 (LIN) 15 June 2006 (15.06.2006), entire document especially para [0013]	10
Y	US 5,861,724 A (ACKERSON) 19 January 1999 (19.01.1999), entire document especially col 9, lns 27-32	11
X	US 2011/0074232 A1 (MURRAY) 31 March 2011 (31.03.2011), entire document especially Fig 4; para [0023], [0025], [0042], [0046]	1, 12
A	US 4,005,347 A (ERDMAN) 25 January 1977 (25.01.1977), entire document	1-15
A	US 2012/0139368 A1 (Murray, III) 07 June 2012 (07.06.2012), entire document	1-15
A	WO 2011/019897 A2 (MURRAY) 17 February 2011 (17.02.2011), entire document	1-15
A	US 4,780,632 A (MURRAY) 25 October 1988 (25.10.1988), entire document	1-15
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Date of the actual completion of the international search 02 January 2013 (02.01.2013)		Date of mailing of the international search report 01 FEB 2013
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