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- (72) **Inventor; and**
- (71) **Applicant : FINKLE, Louis** [US/US]; 5012 Verdura Avenue, Lakewood, California 90712 (US).
- (72) **Inventor; and**
- (75) **Inventor/Applicant (for US only): FURIA, Andrea** [IT/US]; 12234 Norlain Avenue, Downey, California 90242 (US).
- (74) **Agent: GREEN, Kenneth**; 8244 Painter Ave., Whittier, California 90602 (US).

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(54) **Title:** ELECTRIC MOTOR AND/OR GENERATOR WITH MECHANICALLY TUNEABLE PERMANENT MAGNETIC FIELD

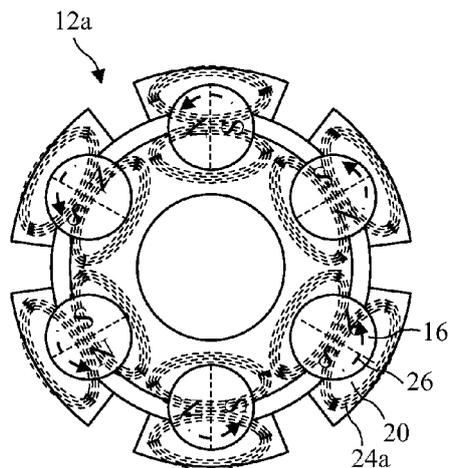


FIG. 7B

(57) **Abstract:** Apparatus and method for tuning the magnetic field (24) of brushless motors and alternators (10) to obtain efficient operation over a broad RPM range. The motor or alternator (10) includes fixed windings (or stator) (14) around a rotating rotor (12) carrying permanent magnets (16). The permanent magnets (16) are generally cylindrical and have North and South poles formed longitudinally in the magnets (16). Magnetically conducting circuits are formed by the magnets (16) residing in magnetic conducting pole pieces (20) (for example, low carbon or soft steel, and/or laminated insulated layers, of non-magnetizable material). Rotating the permanent magnets (16), or rotating non-magnetically conducting shunting pieces (80), inside the pole pieces (20), either strengthens or weakens the resulting magnetic field (24) to adjust the motor or alternator (10) for low RPM torque or for efficient high RPM efficiency. Varying the rotor magnetic field (24) adjusts the voltage output of the alternators (10) allowing, for example, a windmill generator, to maintain a fixed voltage output.



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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)

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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) & Keywords: rotor, pole piece, magnet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2006-254638 A (HITACHI LTD.) 21 September 2006 See paragraphs 13-15 and figures 1-3.	1-20
A	JP 2005-210826 A (FUJITSU GENERAL LTD.) 04 August 2005 See paragraphs 30-34 and figure 3.	1-20
A	JP 2003-088071 A (TOSHIBA CORP.) 20 March 2003 See paragraph 30 and figure 1.	1-20
A	US 05508576 A (NAGATE, TAKASHI et al.) 16 April 1996 See column 4 and figure 3.	1-20
A	KR 10-2005-0116677 A (SAMSUNG ELECTRONICS CO., LTD.) 13 December 2005 See page 2 and figure 1.	1-20

 Further documents are listed in the continuation of Box C. See patent family annex.

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"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

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