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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,
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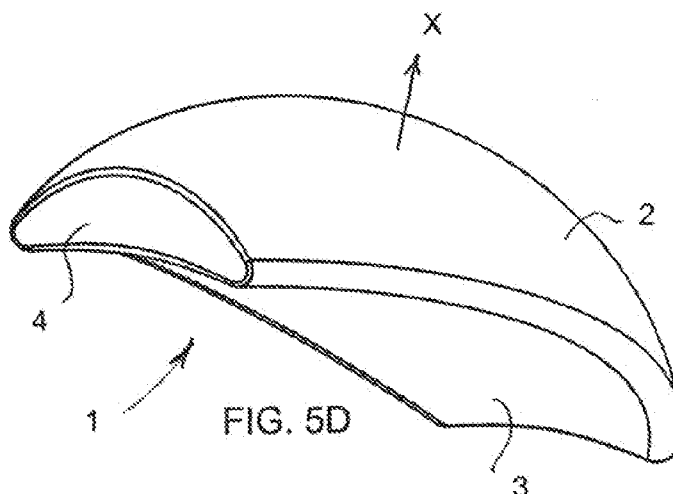
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(54) Title: FLUX-FOCUSED SHAPED PERMANENT MAGNET, MAGNETIC UNIT HAVING THE MAGNETS, DEVICE
HAVING THE MAGNETIC UNITS AND METHOD FOR ASYMMETRICALLY FOCUSING FLUX FIELDS OF PERMA-
NENT MAGNETS



(57) Abstract: A flux-focused, shaped permanent magnet includes a body of magnetic material having multiple surface contouring to form a reduced flux side with convex surfaces and an increased flux side with concave surfaces. The surfaces develop high and low resistance external flux paths creating focused asymmetric flux fields. A magnetic unit having the shaped permanent magnet and a magnetic flux attractor or two shaped permanent magnets interconnected by two segmented permanent magnets and a kinetic device having a stationary stator ring, a rotor disc rotating within the stator ring and a multiplicity of the magnetic units on the stator ring and the rotor disc, are also provided.

A. CLASSIFICATION OF SUBJECT MATTER***H01F 7/02(2006.01)i, H02K 1/22(2006.01)i, H02K 1/17(2006.01)i***

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)

IPC: H01F, G01B, H02K

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 since 1975

Japanese Utility models and applications for Utility models since 1975

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

eKOMPASS (KIPO internal), "Keywords: permanent magnet; contour; concave; convex; focused flux; stator; and rotor"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ----- A	US 7148680 B2 (MIZUTANI, AKITOSHI et al.) 12 December 2006 see abstract; column 4 lines 6-51, column 7 lines 47-67, column 8, column 9 lines 1-9; claims 1-21; and figures 3, 18A, 18B, 19A, 19B	1-4, 21 ----- 5-20
A	US 2002-0050902 A1 (ASANO, YOSHINARI et al.) 2 May 2002 see abstract; paragraphs [0042]-[0046], [0052]; claim 1; and figures 1, 5	1-21
A	US 6025667 A (NARITA, KENJI et al.) 15 February 2000 see abstract; column 1 lines 15-67, column 2 lines 1-31, column 6 lines 46-67, column 7 lines 1-35; claim 1; and figures 5, 7-9	1-21
A	US 7250702 B2 (AKAR, ATEF ABOU et al.) 31 July 2007 see abstract; column 3 lines 56-67, column 4, column 5 lines 1-40, column 6 lines 15-25; claims 1, 7; and figures 1-3, 6	1-21



Further documents are listed in the continuation of Box C.



See patent family annex.

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 7148680 B2	12.12.2006	JP 04-269961 B2	06.03.2009
		JP 2004-317486 A	11.11.2004
		JP 2009-025317 A	05.02.2009
		US 2004-0189288 A1	30.09.2004
US 2002-0050902 A1	02.05.2002	CN 1071510 C	19.09.2001
		CN 1209675 A	03.03.1999
		CN 1209675 C0	03.03.1999
		JP 11-075350 A	16.03.1999
		US 06232862 B1	15.05.2001
		US 06396374 B1	28.05.2002
		US 06084496 A	04.07.2000
		US 06084496 A	04.07.2000
US 6025667 A	15.02.2000	AU 1998-87090 B2	28.09.1998
		AU 747000 B2	09.05.2002
		CN 1213207 A	07.04.1999
		CN 1149728 C	12.05.2004
		CN 1213207 A0	07.04.1999
		EP 0917272 A1	19.05.1999
		EP 0917272 B1	27.11.2002
		JP 11-103546 A	13.04.1999
		KR 10-0609331 B1	24.10.2006
		TW 522636 A	01.03.2003
		US 06025667 A	15.02.2000
US 7250702 B2	31.07.2007	EP 1599930 A2	30.11.2005
		JP 2006-520178 A	31.08.2006
		US 2006-0175923 A1	10.08.2006
		WO 2004-082100 A2	23.09.2004
		WO 2004-082100 A3	23.09.2004