



- (51) International Patent Classification:
A61B 5/055 (2006.01)
- (21) International Application Number:
PCT/US2012/042141
- (22) International Filing Date:
13 June 2012 (13.06.2012)
- (25) Filing Language:
English
- (26) Publication Language:
English
- (30) Priority Data:
61/496,408 13 June 2011 (13.06.2011) US
61/567,310 6 December 2011 (06.12.2011) US
61/594,690 3 February 2012 (03.02.2012) US

- (72) Inventors; and
- (71) Applicants : EDELSTEIN, William, A. [US/US]; 1213 Southview Road, Baltimore, MD 21218 (US). EL-SHARKAWY, Abdel-Monem, M. [US/US]; 251 Rodgers Forge Road, Apt C, Baltimore, MD 21212 (US).

- (74) Agent: DAVIS, Nathan, B.; Hoffman Warnick LLC, 540 Broadway, 4th Floor, Albany, NY 12207 (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, 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, 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).

Declarations under Rule 4.17:

— of inventorship (Rule 4.17(iv))

Published:

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

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

1 May 2014

(54) Title: MAGNETIC RESONANCE IMAGING (MRI) DEVICE NOISE DAMPENING SYSTEM

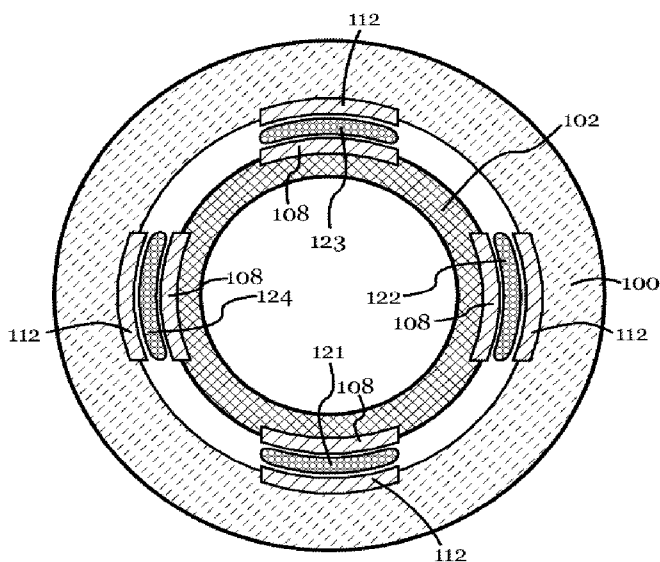


Figure 5

(57) Abstract: Disclosed herein is a magnetic resonance imaging (MRI) device noise dampening system, including an adjustable vibration dampening suspension system arranged between a gradient winding assembly of the MRI device and a support structure supported by a primary magnet assembly of an MRI device, wherein the adjustable vibration dampening suspension system comprises: a plurality of separately inflatable support elements; a vibration reducing material coupled to at least one of a plurality of connecting elements associated with a gradient winding assembly of an MRI device; and/or an acoustic noise absorbing material at least partially filling a space containing a gradient winding assembly of an MRI device.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/42141

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - A61B 5/055 (2012.01)

USPC - 600/410

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: 600/410

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

USPC: 451/38, 75, 86, 91, 94, 95, 97, 98 (text search - see terms below)

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

PubWEST(USPT,PGPB,EPAB,JPAB); Google

Search Terms: magnetic resonance, mri, vibration, dampening, noise, sound, isolation, inflatable, adjustable, magnet, winding, gradient, rf, coil, mount, support, align.

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 2004/0178792 A1 (EDELSTEIN) 16 September 2004 (16.09.2004), entire document especially Figs 2-4; paras [0028],[0033]-[0034]	11-12 ----- 1-10, 13-17, 24-26
X -- Y	US 4,639,672 A (BEAUMONT) 27 January 1987 (27.01.1987), entire document especially Abstract; Fig 1; col 1, lns 26-35; col 2, lns 39-42	18-19, 23 ----- 10, 13-15, 17, 20-22, 24-26
Y	US 2003/0179060 A1 (WANG et al.) 25 September 2003 (25.09.2003), entire document especially paras [0021]-[0022]	1-10, 16, 24, 26
Y	US 2010/0032073 A1 (TANNO et al.) 11 February 2010 (11.02.2010), entire document especially para [0009]	20
Y	US 2005/0026527 A1 (SCHMIDT et al.) 03 February 2005 (03.02.2005), entire document especially Abstract; para [0098], [0101]	21-22
Y	US 5,356,110 A (EDDY) 18 October 1994 (18.10.1994), entire document especially Figs 1-3; col 15, lns 4-10	4, 6
Y	US 6,828,792 B1 (DANBY et al.) 07 December 2004 (07.12.2004), entire document especially Fig 1; col 7, lns 9-16	8
A	US 2005/0083056 A1 (HARVEY et al.) 21 April 2005 (21.04.2005), entire document para [0015]	1-26

 Further documents are listed in the continuation of Box C.

* 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

12 August 2012 (12.08.2012)

Date of mailing of the international search report

04 SEP 2012

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

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 12/42141

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 5,345,177 A (SATO et al.) 06 September 1994 (06.09.1994), entire document especially Figs 1-5	1-26
A	US 2004/0026162 A1 (CHRISTEN) 12 February 2004 (12.02.2004), entire document	1-26
A	US 2003/0080742 A1 (STOFIEL) 01 May 2003 (01.05.2003), entire document	1-26