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- (71) **Applicant:** HARBIN INSTITUTE OF TECHNOLOGY [CN/CN]; No. 92 West Da-Zhi Street, Nangang District, Harbin, Heilongjiang 150001 (CN).
- (72) **Inventors:** TAN, Jiubin; No. 92, West Da-Zhi Street, Nangang District, Harbin, Heilongjiang 150001 (CN). CUI, Junning; No. 92, West Da-Zhi Street, Nangang District, Harbin, Heilongjiang 150001 (CN). WANG, Lei; No. 92, West Da-Zhi Street, Nangang District, Harbin, Heilongjiang 150001 (CN).
- (74) **Agent:** INTELLECPRO CHINA LIMITED; QI, Yonghong, Patent Division, 11/F, Tower C, Five Buildings, 9

Chegongzhuang Dajie, Xicheng District, Beijing 100044 (CN).

- (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, IR, 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, SA, 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.

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[Continued on next page]

- (54) **Title:** MAGNETICALLY SUSPENDED AND PLANE-DROVE VIBRATION ISOLATOR

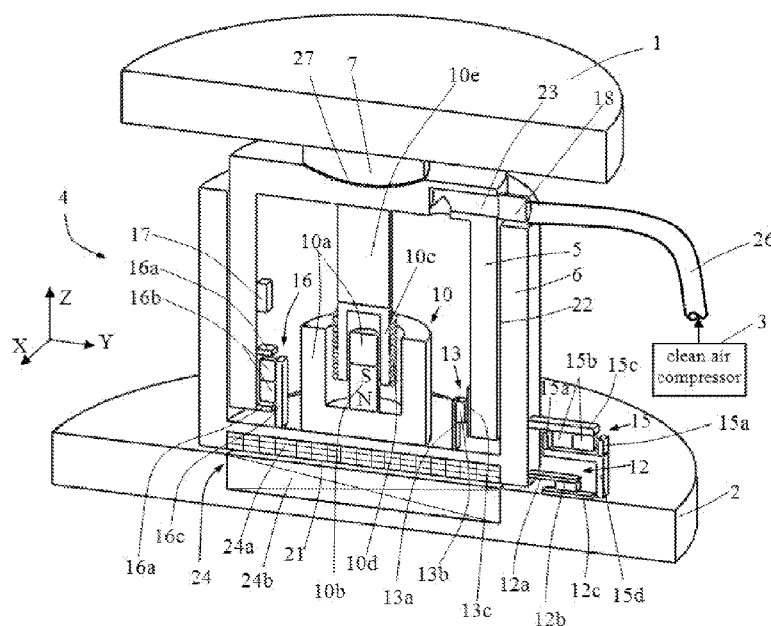


Fig. 2

(57) **Abstract:** A magnetically suspended and plane-drove vibration isolator with zero stiffness comprises an upper mounting plate, a lower mounting plate and a main body. A sleeve of the main body is lubricated and supported against the lower mounting plate by a magnetically suspended planar motor. A piston cylinder fitted in the sleeve is lubricated against the sleeve by a cylindrical air bearing surface. The angle degree of freedom between the upper mounting plate and the lower mounting plate is decoupled by a spherical air bearing. A position close-loop control system is formed to precisely control the relative position between the upper mounting plate and the lower mounting plate.

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- *with international search report (Art. 21(3))*
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INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2014/072277

A. CLASSIFICATION OF SUBJECT MATTER

F16F 15/027(2006.01)i; F16C 32/06(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)

F16F; G03F; H01L21/-; F16C32/-

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

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

CNABS;VEN;EPODOC;WPI;CNKI;ISI;IEEE:HARBIN INST, HARBIN INSTITUTE, HAIT, WANG L, WANG LEI, TAN J, JINBIN, CUI J, CUI JUNNING, ZHAO B, ZHAO Bo, vibrat+, oscillat+, shock+, isolat+, absor+, suppress+, eliminat+, damp +, air+, gas+, +magnet+, aerostatic, sens+, detect+, displac+, shift+, mov+, vioce

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 103047341A (HARBIN INST. OF TECHNOLOGY) 17 April 2013 (2013-04-17) claims 1-8	1-8
A	WO 99/05573A1 (ASM LITHOGRAPHY B.V.) 04 February 1999 (1999-02-04) the abstract, description, page 9, line 24 to page 11, line 22	1-8
A	EP 1803970A2 (INTEGRATED DYNAMICS ENG. GMBH) 04 July 2007 (2007-07-04) the whole document	1-8
A	CN 102734379A (HARBIN INST. OF TECHNOLOGY) 17 October 2012 (2012-10-17) the whole document	1-8
A	JP 2005331009A (NIPPON KOGAKU KK) 02 December 2005 (2005-12-02) the whole document	1-8
A	CN 101398636A (HUAZHONG UNIVERSITY OF SCIENCE AND TECHNOLOGY) 01 April 2009 (2009-04-01) the whole document	1-8

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

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“&” document member of the same patent family

Date of the actual completion of the international search

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STATE INTELLECTUAL PROPERTY OFFICE OF THE
P.R.CHINA(ISA/CN)
6,Xitucheng Rd., Jimen Bridge, Haidian District, Beijing
100088 China

Authorized officer

ZHUANG,Huimin

Facsimile No. (86-10)62019451

Telephone No. (86-10)82245504

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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 101158815A (SHANGHAI MICRO ELECTRONICS EQUIPMENT CO., LTD.) 09 April 2008 (2008-04-09) the whole document	1-8

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/CN2014/072277

Patent document cited in search report		Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN	103047341A	17 April 2013	None	
WO	99/05573A1	04 February 1999	EP 0927380A1	07 July 1999
			DE 69817750D1	09 October 2003
			JP 2001503203A	06 March 2001
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			EP 1803970A3	28 November 2007
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CN	101398636A	01 April 2009	CN 100573341C	23 December 2009
CN	101158815A	09 April 2008	None	