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(54) Title: AN ELECTROMAGNETIC BRAKE, A BRAKE, AND A METHOD FOR MAKING A BRAKE

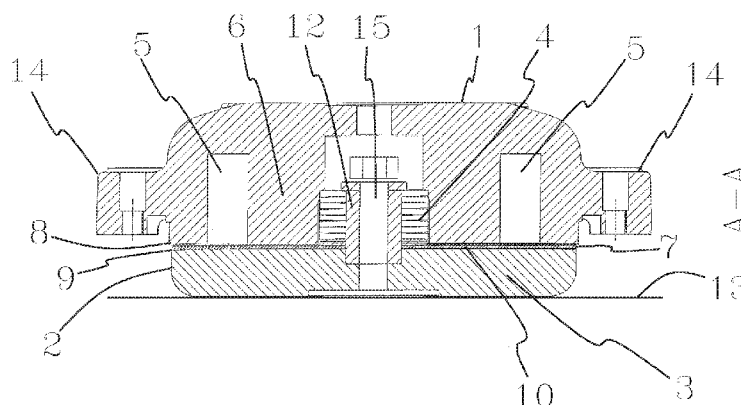


Fig. 1

(57) Abstract: The invention relates to an electromagnetic brake and a method for making an electromagnetic brake. The electromagnetic brake comprises a frame part (1), an armature part (2) movably mounted on the frame part and having a magnetic core (3), one or more spring elements (4) for activating the brake by moving the said armature part (2) forwards, an electromagnet (5) fitted to the frame part (1) and arranged to release the brake by pulling the said armature part (2) backwards by resisting the said one or more spring elements (4), and a planar, elastically bendable damping plate (7) fitted to be bent when the armature part (2) is moving and, while being bent, to produce a damping force (F_d) resisting the bending to dampen brake noise.



INTERNATIONAL SEARCH REPORT

International application No.

PCT/FI2012/050436

A. CLASSIFICATION OF SUBJECT MATTER

See extra sheet

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: F16D, H02K, B66B

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

FI, SE, NO, DK

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

EPO-Internal, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1923345 A1 (MITSUBISHI ELECTRIC CORP) 21 May 2008 (21.05.2008)	1 - 3, 7 - 15
Y	abstract, paragraphs 0013 – 0020, 0034 – 0036, claims, and figures)	4 - 6
Y	DE 29706124 U1 (BRINKMANN KG H) 12 June 1997 (12.06.1997)	6
A	abstract, page 4, lines 16 – 28, claims, and figures	1 - 5, 7 - 15
Y	DE 19925173 A1 (KENDRION BINDER MAGNETE GMBH) 21 December 2000 (21.12.2000)	4 - 6
A	abstract, claims, column 2, lines 18 – 45, and figures	1 - 3, 7 - 15
A	US 4640390 A (SAUMWEBER E. et al.) 03 February 1987 (03.02.1987) abstract, claims, and figures	1 - 15
A	US 4535874 A (POLLINGER H. et al.) 20 August 1985 (20.08.1985) abstract, column 6 line 60 – column 7 line 4, claims, and figures	1 - 15

 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

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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 members(s)	Publication date
EP 1923345 A1	21/05/2008	JP 4925105B2 B2 WO 2007029310 A1 CN 101068737 A	25/04/2012 15/03/2007 07/11/2007
DE 29706124 U1	12/06/1997	None	
DE 19925173 A1	21/12/2000	None	
US 4640390 A	03/02/1987	JP 59212540 A EP 0128276 A1 AT 27728T T DE 3317913 A1	01/12/1984 19/12/1984 15/06/1987 22/11/1984
US 4535874 A	20/08/1985	EP 0102469 A1 DE 3231279 A1	14/03/1984 23/02/1984