Title (en)

METHOD FOR SHAPING A BARREL SPRING MADE OF AMORPHOUS METAL

Title (de)

VERFAHREN ZUM UMFORMEN EINER TRIEBFEDER AUS METALLISCHEN GLAS

Title (fr)

PROCÉDÉ POUR LA MISE EN FORME D'UN RESSORT DE BARILLET EN VERRE METALLIQUE

Publication

EP 4092489 A1 20221123 (FR)

Application

EP 22170104 A 20090609

Priority

- EP 08405153 A 20080610
- EP 08405192 A 20080804
- EP 09771888 A 20090609
- CH 2009000191 W 20090609

Abstract (en)

[origin: EP2133756A2] The mainspring is formed from a metallic glass monolithic ribbon, where thickness of the mainspring amounts approximately between 50 and 150 micrometers. Shape of the mainspring in a free state is defined by a radius of an nth turn in a wound state so that the mainspring, which is wound into Archimedean spiral, is stressed to the maximum bending stress over the entire length. The radius is produced by adding the radius of a barrel core with multiplication of a number of winding turns and the ribbon thickness.

Abstract (fr)

Procédé pour la mise en forme d'un ressort de barillet formé d'un ruban monolithique en verre métallique.Le procédé comporte une première étape de formation d'un ruban en verre métallique par une technique de trempe sur roue, ainsi que des étapes de mise en forme du ressort de barillet, à partir de ce ruban.

IPC 8 full level

G04B 1/14 (2006.01)

CPC (source: EP US)

G04B 1/145 (2013.01 - EP US)

Citation (applicant)

EP 0942337 A1 19990915 - SEIKO EPSON CORP [JP]

Citation (search report)

- [A] EP 0942337 A1 19990915 - SEIKO EPSON CORP [JP]
- [A] US 2007133355 A1 20070614 - HARA TATSUO [JP], et al
- [A] US 3187416 A 19650608 - PAUL TUETEY, et al
- [A] DE 3136303 A1 19830414 - VACUUMSCHMELZE GMBH [DE]

Designated contracting state (EPC)

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DOCDB simple family (publication)

EP 2133756 A2 20091216; **EP 2133756 A3 20110413**; **EP 2133756 B1 20160720**; CH 698962 A2 20091215; CH 698962 B1 20141031; CN 101604141 A 20091216; CN 101604141 B 20120627; CN 102057336 A 20110511; CN 102057336 B 20130703; EP 2286308 A1 20110223; EP 2286308 B1 20220504; EP 4092489 A1 20221123; JP 2009300439 A 20091224; JP 2011523066 A 20110804; JP 5518852 B2 20140611; JP 5656369 B2 20150121; US 2009303842 A1 20091210; US 2011072873 A1 20110331; US 8348496 B2 20130108; US 8720246 B2 20140513; WO 2010000081 A1 20100107

DOCDB simple family (application)

EP 09405089 A 20090527; CH 2009000191 W 20090609; CH 8092009 A 20090526; CN 200910159542 A 20090609; CN 200980121741 A 20090609; EP 09771888 A 20090609; EP 22170104 A 20090609; JP 2009136880 A 20090608; JP 2011512804 A 20090609; US 47994709 A 20090608; US 99654209 A 20090609