

Title (en)

Self-compensating spring for a mechanical oscillator of balance-spring type

Title (de)

Selbstkompensierende Feder für einen mechanischen Oszillator vom Unruh-Spiralfeder-Typ

Title (fr)

Spiral auto-compensateur pour oscillateur mécanique balancier-spiral

Publication

EP 1258786 B1 20080220 (FR)

Application

EP 01810497 A 20010518

Priority

EP 01810497 A 20010518

Abstract (en)

[origin: EP1258786A1] A self-balancing spring for a mechanical balance spring oscillator of a watch movement or other precision instrument, in a paramagnetic Nb-Hf alloy has a thermal coefficient of Youngs modulus (CTE) such that it essentially allows the annulment of the following expression: $1/E \text{ asterisk } dE/dT + 3 \alpha s - 2 \alpha b$ where: E : Youngs modulus for the spring of the oscillator $1/E \text{ asterisk } dE/dT = \text{CTE}$ = thermal coefficient of Youngs modulus of the oscillator spring αs : coefficient of thermal dilation of the oscillator spring αb : coefficient of dilation of the balance wheel of the oscillator. The alloy contains between 2% and 30% atomic of Hf.

IPC 8 full level

G04B 17/22 (2006.01); **C22C 27/02** (2006.01)

CPC (source: EP US)

C22C 27/02 (2013.01 - EP US); **G04B 17/066** (2013.01 - EP); **G04B 17/227** (2013.01 - EP US)

Cited by

EP3502785A1; EP3663867A1; EP3422116A1; CN109116712A; EP3736639A1; EP3889691A1; EP3422115A1; EP3671359A1; CN111349814A; US11550263B2; US11650543B2; US11586146B2; US11966198B2; EP3252541A1; US10338529B2; US11002872B2; EP3159746A1; EP3252542A1; US10409223B2; US10539926B2; US12045013B2; WO2014006229A1; US10372083B2; US10795317B2; US11914328B2; EP4439193A2

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EP 01810497 A 20010518; DE 01810497 T 20010518; DE 60132878 T 20010518; JP 2002142837 A 20020517; JP 2009254944 A 20091106; US 13952602 A 20020506