

## Title (en)

Monobloc elevated curve spiral and method for manufacturing same

## Title (de)

Monoblockspirale zur Erhöhung der Kurve und ihr Herstellungsverfahren

## Title (fr)

Spiral à élévation de courbe monobloc et son procédé de fabrication

## Publication

**EP 2105807 A1 20090930 (FR)**

## Application

**EP 08153598 A 20080328**

## Priority

EP 08153598 A 20080328

## Abstract (en)

The hairspring (21) has a silicon dioxide part, and a spiral spring (25) coaxially mounted on a ferrule (27) formed in a layer made of silicon. A lifting device (2) lifts an external turn of the spring above the layer to improve the concentricity of development of the hairspring. The lifting device comprises a terminal curve (23) e.g. Phillips(RTM: screwdriver) type curve, connected to a lifting unit (4). A metal cylinder receives an axle by pressing. An independent claim is also included for a method for fabricating a monoblock hairspring.

## Abstract (fr)

L'invention se rapporte à un spiral monobloc (21, 21') comportant un ressort-spiral (25, 25') monté coaxialement sur une virole (27, 27') réalisés dans une même couche de matériau à base de silicium. Selon l'invention, le spiral comporte un dispositif d'élévation (2, 2') de la spire externe dudit ressort-spiral au-dessus de ladite couche de matériau à base de silicium afin d'améliorer la concentricité du développement dudit spiral. L'invention se rapporte également à une pièce d'horlogerie comportant un tel spiral et à son procédé de fabrication. L'invention concerne le domaine des mouvements horlogers.

## IPC 8 full level

**G04B 17/06** (2006.01); **G04D 3/00** (2006.01)

## CPC (source: EP US)

**G04B 17/066** (2013.01 - EP US); **G04D 3/0041** (2013.01 - EP US); **Y10T 29/49579** (2015.01 - EP US); **Y10T 29/49581** (2015.01 - EP US); **Y10T 29/49607** (2015.01 - EP US); **Y10T 29/49609** (2015.01 - EP US)

## Citation (applicant)

- EP 1605323 A2 20051214 - COREDEM S A [CH]
- CH 695395 A5 20060428 - ETA SA MFT HORLOGERE SUISSE [CH]
- EP 1612627 A1 20060104 - NIVAROX SA [CH]
- EP 1422436 A1 20040526 - CSEMCT SUISSE D ELECTRONIQUE E [CH]
- EP 1655642 A2 20060510 - ETA SA MFT HORLOGERE SUISSE [CH]
- EP 1584994 A1 20051012 - NIVAROX SA [CH]
- EP 1837722 A2 20070926 - ETA SA MFT HORLOGERE SUISSE [CH]

## Citation (search report)

- [Y] EP 1605323 A2 20051214 - COREDEM S A [CH]
- [YA] CH 695395 A5 20060428 - ETA SA MFT HORLOGERE SUISSE [CH]
- [DY] EP 1837722 A2 20070926 - ETA SA MFT HORLOGERE SUISSE [CH]
- [Y] EP 0732635 A1 19960918 - SUISSE ELECTRONIQUE MICROTECH [CH]
- [A] FR 2315714 A1 19770121 - ANVAR [FR]
- [A] FR 2063156 A1 19710709 - TIMEX CORP [US]

## Cited by

EP2405313A1; EP2613206A1; EP2405312A1; CH704649A1; EP3483666A1; CH702156A1; EP2196868A1; EP2570871A1; EP2184652A1; EP2579104A3; US8979359B2; WO2012127035A1; WO2019092666A1; WO2013092920A3; US8480294B2; US9004748B2; US9755612B2

## Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR

## Designated extension state (EPC)

AL BA MK RS

## DOCDB simple family (publication)

**EP 2105807 A1 20090930; EP 2105807 B1 20151202**; CN 101550978 A 20091007; CN 101550978 B 20120905; HK 1138055 A1 20100813; JP 2009244266 A 20091022; JP 5243324 B2 20130724; SG 155873 A1 20091029; TW 201003341 A 20100116; TW I463282 B 20141201; US 2009245030 A1 20091001; US 2012320718 A1 20121220; US 8296953 B2 20121030; US 8622611 B2 20140107

## DOCDB simple family (application)

**EP 08153598 A 20080328**; CN 200910203911 A 20090327; HK 10103325 A 20100331; JP 2009081425 A 20090330; SG 2009021114 A 20090326; TW 98109548 A 20090324; US 201213601128 A 20120831; US 41430909 A 20090330