

Title (en)  
Hairspring for sprung balance

Title (de)  
Spiralfeder für Unruh-Spiralfeder

Title (fr)  
Spiral pour résonateur balancier-spiral

Publication  
**EP 2154583 A1 20100217 (FR)**

Application  
**EP 09405126 A 20090724**

Priority  
• EP 08405188 A 20080729  
• EP 09405126 A 20090724

Abstract (en)  
The hairspring has two plates (1a, 1b) that are integrated with respect to each other by their respective ends and coplanar, where the hairspring is made of single-crystal silicon or quartz. The plates are wound into spirals with an angular offset neutralizing lateral forces exerted on a central axle when one of the ends of each plate is angularly displaced around the central axle with respect to the other end of each plate. Thickness and height of the plates are variable, and the single-crystal silicon is covered with an amorphous silicon dioxide layer.

Abstract (fr)  
Spiral pour résonateur balancier-spiral, comportant n lames, n $\geq$  2, solidaires par au moins une de leurs extrémités homologues respectives et enroulées en spirales avec un décalage angulaire apte à neutraliser les forces latérales susceptibles d'être exercées sur son axe central lorsqu'une des extrémités de chaque lame est déplacée angulairement autour dudit axe central par rapport à son autre extrémité.

IPC 8 full level  
**G04B 17/06** (2006.01)

CPC (source: EP US)  
**G04B 17/066** (2013.01 - EP US); **G04B 17/20** (2013.01 - EP US)

Citation (applicant)  
EP 1422436 A1 20040526 - CSEMCT SUISSE D ELECTRONIQUE E [CH]

Citation (search report)  
• [XY] FR 2024511 A1 19700828 - PORTESCAP LE PORTE  
• [X] FR 575433 A 19240730  
• [E] EP 2104006 A1 20090923 - NIVAROX SA [CH]  
• [PX] EP 2063325 A2 20090527 - RICHEMONT INT SA [CH]  
• [Y] EP 1605182 A1 20051214 - SUISSE ELECTRONIQUE MICROTECH [CH]  
• [DY] EP 1422436 A1 20040526 - CSEMCT SUISSE D ELECTRONIQUE E [CH]  
• [A] US 209642 A 18781105  
• [A] FR 1217857 A 19600506 - CT TECH DE L IND HORLOGERE

Cited by  
CH705398A1; EP3181938B1; EP3181940B1

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 MK MT NL NO PL PT RO SE SI SK SM TR

Designated extension state (EPC)  
AL BA RS

DOCDB simple family (publication)  
**EP 2151722 A1 20100210; EP 2151722 B1 20180912; EP 2151722 B8 20210331**; CH 699178 A2 20100129; CH 699178 B1 20140515; CN 101639661 A 20100203; CN 101639661 B 20120704; CN 102520605 A 20120627; CN 102520605 B 20140226; EP 2154583 A1 20100217; EP 2154583 B1 20200805; EP 2523053 A1 20121114; EP 2523053 B1 20211222; JP 2010032522 A 20100212; JP 2014089214 A 20140515; JP 5474432 B2 20140416; JP 5657152 B2 20150121; US 2010027382 A1 20100204; US 2011249537 A1 20111013; US 8002460 B2 20110823; US 8393783 B2 20130312

DOCDB simple family (application)  
**EP 08405188 A 20080729**; CH 11582009 A 20090723; CN 200910166916 A 20090728; CN 201110428053 A 20090728; EP 09405126 A 20090724; EP 12180170 A 20090724; JP 2009173347 A 20090724; JP 2014019915 A 20140205; US 201113166343 A 20110622; US 51142009 A 20090729