

Title (en)  
Composite balance

Title (de)  
Unruh von Kompositmaterialien

Title (fr)  
Balancier composite

Publication  
**EP 2485095 A1 20120808 (FR)**

Application  
**EP 12164386 A 20090313**

Priority  
• EP 09721945 A 20090313  
• EP 08153093 A 20080320  
• EP 12164386 A 20090313

Abstract (en)  
The balance (45) has a hub (39) connected to a fellow (37) by arms (40-43), where the balance is formed in a silicon-based material layer. The fellow includes an additional part approximately in shape of a notched ring (23) with higher density than that of the silicon-based material to increase inertia of the balance, where the additional part is formed from a metal material. The part is mounted in a recess formed in a main face of the fellow. The ring has a series of studs spaced at regular intervals to compensate for thermal expansion in the additional part.

Abstract (fr)  
L'invention se rapporte à un balancier composite (45, 45') formé dans une couche (21) en un matériau à base de silicium et comportant un moyeu (39, 39') relié à une serge (37, 37') par au moins un bras (40, 41, 42, 43). Selon l'invention, la serge (37,37') comporte au moins une partie supplémentaire sensiblement en forme d'anneau crénelé (23, 23') de plus grande densité que ledit matériau à base de silicium permettant d'augmenter l'inertie dudit balancier. L'invention se rapporte également à un procédé 1 de fabrication d'un tel balancier. 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 KR US)  
**G04B 17/063** (2013.01 - EP KR US); **G04D 3/0038** (2013.01 - EP KR US); **G04D 3/0069** (2013.01 - EP KR US)

Citation (applicant)  
• EP 1655642 A2 20060510 - ETA SA MFT HORLOGERE SUISSE [CH]  
• EP 1584994 A1 20051012 - NIVAROX SA [CH]

Citation (search report)  
• [A] GB 2416408 A 20060125 - LEVINGSTON GIDEON R [FR]  
• [A] GB 1083209 A 19670913 - TISSOT HORLOGERIE  
• [A] FR 1301938 A 19620824 - LIP SA  
• [A] EP 0732635 A1 19960918 - SUISSE ELECTRONIQUE MICROTECH [CH]

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Designated contracting state (EPC)  
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**EP 2104005 A1 20090923**; CN 101978327 A 20110216; CN 101978327 B 20120718; EP 2257855 A1 20101208; EP 2257855 B1 20121205; EP 2485095 A1 20120808; EP 2485095 B1 20130619; HK 1154087 A1 20120420; JP 2011525614 A 20110922; JP 2013068638 A 20130418; JP 2013231732 A 20131114; JP 5443626 B2 20140319; JP 5603458 B2 20141008; KR 20100138927 A 20101231; RU 2010142923 A 20120427; RU 2468405 C2 20121127; TW 201007395 A 20100216; TW I438589 B 20140521; US 2011103196 A1 20110505; US 8550699 B2 20131008; WO 2009115464 A1 20090924

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