

Title (en)
METHOD FOR MANUFACTURING A HAIRSPRING WITH A PREDETERMINED STIFFNESS BY REMOVING MATERIAL

Title (de)
HERSTELLUNGSVERFAHREN EINER SPIRALFEDER MIT EINER VORBESTIMMTEN STEIFIGKEIT DURCH WEGNAHME VON MATERIAL

Title (fr)
PROCEDE DE FABRICATION D'UN SPIRAL D'UNE RAIDEUR PREDETERMINEE PAR RETRAIT DE MATIERE

Publication
EP 3181938 A1 20170621 (FR)

Application
EP 15201330 A 20151218

Priority
EP 15201330 A 20151218

Abstract (en)
[origin: JP2017111131A] PROBLEM TO BE SOLVED: To provide a method for manufacturing a balance spring having very high dimensional accuracy and a proper rigidity.SOLUTION: The present invention relates to a method for manufacturing a balance spring having a predetermined rigidity. The method includes the steps of: manufacturing a balance spring having a dimension in which its thickness is increased; and determining a rigidity of the balance spring formed in the step a), in order to obtain the balance spring having a dimension necessary for the predetermined rigidity by removing a material with a certain volume.SELECTED DRAWING: Figure 2

Abstract (fr)
Procédé de fabrication d'un spiral (5c) d'une raideur (C) prédéterminée comportant les étapes de fabrication d'un spiral (5c) selon des dimensions surépaissies, de détermination de la raideur (C) du spiral (5c) formé lors de l'étape a) afin de retirer le volume de matériau pour obtenir le spiral (5c) aux dimensions nécessaires à ladite raideur (C) prédéterminée.

IPC 8 full level
F16F 1/10 (2006.01); **G04B 17/06** (2006.01); **G04D 7/08** (2006.01); **G04D 7/10** (2006.01)

CPC (source: CN EP US)
G04B 17/066 (2013.01 - EP US); **G04D 3/0069** (2013.01 - CN); **G04D 3/0074** (2013.01 - CN); **G04D 7/10** (2013.01 - EP US)

Citation (applicant)

- EP 1422436 A1 20040526 - CSEMCT SUISSE D ELECTRONIQUE E [CH]
- EP 2423764 A1 20120229 - ROLEX SA [CH]

Citation (search report)

- [A] EP 1213628 A1 20020612 - EBAUCHESFABRIK ETA AG [CH]
- [A] CH 709516 A2 20151015 - BREITLING MONTRES SA [CH]
- [A] EP 2455825 A1 20120523 - NIVAROX SA [CH]
- [A] WO 2012007460 A1 20120119 - ETA SA MFT HORLOGERE SUISSE [CH], et al

Cited by
EP3543795A1; EP3915788A1; WO2019180596A1; WO2019166922A1; WO2019180558A1; WO2021186332A1; EP3543796A1; CN111919176A; EP3845770A1; RU2723966C1; EP4310598A1; WO2019180177A1; US11822289B2; EP3882714A1; WO2021186333A1; EP3907565A1; WO2021224804A1; US11300926B2; EP4303668A1; US11703804B2; EP4030241A1; EP4030242A1; TWI774925B; EP3982205A1; EP3882710A1; EP4312084A1; WO2021053501A1; EP4202576A1; WO2023117350A1; EP4030243A1; WO2022152857A1; EP4273632A1; EP3907567A1; US11880165B2; EP3769162B1

Designated contracting state (EPC)
AL 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 RS SE SI SK SM TR

Designated extension state (EPC)
BA ME

DOCDB simple family (publication)
EP 3181938 A1 20170621; EP 3181938 B1 20190220; CN 106896708 A 20170627; CN 106896708 B 20191015; CN 110376871 A 20191025; JP 2017111131 A 20170622; JP 6343651 B2 20180613; US 10324417 B2 20190618; US 2017176940 A1 20170622

DOCDB simple family (application)
EP 15201330 A 20151218; CN 201611164448 A 20161216; CN 201910652696 A 20161216; JP 2016234770 A 20161202; US 201615354317 A 20161117