

Title (en)  
TIMEPIECE COMPRISING A MECHANICAL MOVEMENT THE OSCILLATING RATE OF WHICH IS CONTROLLED BY AN ELECTRONIC DEVICE

Title (de)  
UHR, DIE EIN MECHANISCHES UHRWERK UMFASST, DESSEN GANGGENAUIGKEIT DURCH EINE ELEKTRONISCHE VORRICHTUNG REGULIERT WIRD

Title (fr)  
PIÈCE D'HORLOGERIE COMPRENANT UN MOUVEMENT MÉCANIQUE DONT LA MARCHE EST RÉGULÉE PAR UN DISPOSITIF ÉLECTRONIQUE

Publication  
**EP 3540528 B1 20200805 (FR)**

Application  
**EP 18162191 A 20180316**

Priority  
EP 18162191 A 20180316

Abstract (en)  
[origin: JP2019158882A] To provide a timepiece comprising a mechanical movement whose rate is regulated by an electronic device.SOLUTION:  
A timepiece includes a mechanical oscillator, formed by a balance and a piezoelectric balance spring 8, and a regulating device 62 for regulating the frequency of the mechanical oscillator. The mechanical oscillator is arranged to be able to produce time-separated regulating pulses, each comprising a momentary decrease in an electrical resistance applied by the regulating device to between two electrodes 20, 22 of the balance spring relative to a nominal electrical resistance. Each regulating pulse produces a variation of rate which varies as a function of its moment of starting in a half-period of the mechanical oscillator, where a characteristic function of this variation of rate relative to the moment of starting of at least one regulating pulse respectively in at least one half-period of the mechanical oscillator is negative in a first temporal zone of the at least one half-period and positive in a second temporal zone of the at least one half-period.SELECTED DRAWING: Figure 5

IPC 8 full level  
**G04C 3/04** (2006.01); **G04B 17/06** (2006.01)

CPC (source: CN EP US)  
**G04B 17/063** (2013.01 - US); **G04B 17/066** (2013.01 - CN EP US); **G04B 17/227** (2013.01 - CN); **G04B 17/28** (2013.01 - US); **G04C 3/04** (2013.01 - EP US); **G04C 3/047** (2013.01 - US)

Cited by  
EP4130890A1; EP4099100A1

Designated contracting state (EPC)  
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DOCDB simple family (publication)  
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**EP 18162191 A 20180316**; CN 201910193381 A 20190314; JP 2019042361 A 20190308; US 201916354217 A 20190315