

Title (en)  
MECHANICAL TIMEPIECE HAVING TRAIN WHEEL OPERATION CONTROLLER

Title (de)  
MECHANISCHE UHR MIT EINER RÄDERWERKSSTEUERUNGSEINHEIT

Title (fr)  
MONTRE MECANIQUE AVEC UNITE DE COMMANDE DE ROUAGE

Publication  
**EP 1164441 A1 20011219 (EN)**

Application  
**EP 99961377 A 19991224**

Priority  
JP 9907290 W 19991224

Abstract (en)  
A mechanical type timepiece of the invention is provided with a mainspring constituting a power source, a front train wheel rotated by rotational force when the mainspring is rewound and an escapement & speed control apparatus for controlling rotation of the front train wheel. The escapement & speed control apparatus includes a balance with hairspring alternately repeating right-hand rotation and left-hand rotation, an escape wheel & pinion rotated based on rotation of the front train wheel and a pallet fork for controlling rotation of the escape wheel & pinion based on operation of the balance with hairspring. The balance with hairspring includes a hairspring, a balance stem and a balance wheel. The mechanical type timepiece according to the invention further includes a crystal oscillator constituting an oscillation source, IC including a dividing unit for inputting an output signal outputted by oscillation of the crystal oscillator, dividing the signal and outputting a signal with regard to time and a power source for operating IC and is provided with a time measuring unit for counting time and a train wheel operation detecting unit for detecting a rotational operation state of the train wheel. The mechanical type timepiece according to the invention is further provided with a train wheel operation control unit for controlling operation of the train wheel based on a count signal counted by the time measuring unit and an operational state signal indicating a rotational operation state of the train wheel detected by the train wheel operation detecting unit. <IMAGE>

IPC 1-7  
**G04B 17/20**; **G04C 3/04**; **G04C 9/08**

IPC 8 full level  
**G04C 3/04** (2006.01); **G04C 3/08** (2006.01); **G04C 10/00** (2006.01); **G04C 11/00** (2006.01)

CPC (source: EP)  
**G04C 3/04** (2013.01); **G04C 3/047** (2013.01); **G04C 3/08** (2013.01); **G04C 10/00** (2013.01); **G04C 11/00** (2013.01)

Citation (search report)  
See references of WO 0148565A1

Cited by  
EP3584645A1; CN110955139A; CN112305890A; EP3540528A1; CN110275420A; EP3629103A1; CN110967959A; US11619910B2; US11599065B2; US11415946B2; US11586148B2; US11300929B2

Designated contracting state (EPC)  
CH DE GB LI

DOCDB simple family (publication)  
**WO 0148565 A1 20010705**; CN 1347520 A 20020501; CN 1434933 A 20030806; EP 1164441 A1 20011219; EP 1241538 A1 20020918; EP 1241538 A4 20050615; HK 1046170 A1 20021227; WO 0148567 A1 20010705

DOCDB simple family (application)  
**JP 9907290 W 19991224**; CN 00806505 A 20000208; CN 00819167 A 20000208; EP 00902142 A 20000208; EP 99961377 A 19991224; HK 02107368 A 20021009; JP 0000679 W 20000208