

Title (en)

Multistage continuous carburizing and quenching furnace and continuous carburizing and quenching method

Title (de)

Mehrstufiger Ofen und Verfahren zum kontinuierlichen Aufkohlen und Abschrecken

Title (fr)

Four mult-étages et procédé pour la carburation en continue et la trempe

Publication

**EP 1612291 B1 20080123 (EN)**

Application

**EP 05013682 A 20050624**

Priority

JP 2004187556 A 20040625

Abstract (en)

[origin: EP1612291A1] A carburizing zone 11, a diffusion zone 12, and a temperature lowering zone 13 are sequentially disposed in a furnace. The furnace interior is divided into first- to fourth-stage carburizing furnace areas I to IV by first- to fourth-stage transport roller conveyors 14-1 to 14-4 and carrying-out roller conveyors 15-1 to 15-5. Heat treatment pallets 50 on which metallic materials are respectively placed are loaded into the respective carburizing furnace areas I to IV in accordance with a preset order of the carburizing furnace areas at an interval corresponding to a quenching cycle, so as to perform uniform carburizing without variations in the respective carburizing furnace areas I to IV. The heat treatment pallets 50 from temperature lowering zones 13-1 to 13-4 in the respective carburizing furnace areas I to IV are immersed in a quenching medium in a quenching zone 21 in the aforementioned order of the carburizing furnace areas, so as to perform uniform quenching without variations.

IPC 8 full level

**C23C 8/20** (2006.01); **C21D 9/00** (2006.01); **C23C 8/80** (2006.01)

CPC (source: EP)

**C21D 9/0062** (2013.01); **C23C 8/20** (2013.01); **C23C 8/80** (2013.01); **F27B 9/025** (2013.01); **F27B 9/20** (2013.01); **C21D 9/0018** (2013.01); **C21D 9/005** (2013.01); **C21D 9/0056** (2013.01); **F27B 9/38** (2013.01); **F27D 2003/0065** (2013.01)

Cited by

CN114182194A; CN102564117A; CN114134453A; CN113843417A; WO2017036053A1

Designated contracting state (EPC)

DE FR

DOCDB simple family (publication)

**EP 1612291 A1 20060104**; **EP 1612291 B1 20080123**; DE 602005004448 D1 20080313; DE 602005004448 T2 20090115; JP 2006009087 A 20060112; JP 4540406 B2 20100908

DOCDB simple family (application)

**EP 05013682 A 20050624**; DE 602005004448 T 20050624; JP 2004187556 A 20040625