

Title (en)

Hardened spring steel, spring element and method for manufacturing a spring element

Title (de)

Gehärteter Federstahl, Federelement und Verfahren zur Herstellung eines Federelements

Title (fr)

Acier à ressort, élément de ressort et procédé de fabrication d'un élément de ressort

Publication

EP 2192201 B1 20190424 (DE)

Application

EP 09014562 A 20091123

Priority

- DE 102008058516 A 20081121
- DE 102009011118 A 20090303

Abstract (en)

[origin: EP2192201A1] The tempered spring steel (1) comprises an edge layer (2), within which the hardness of the interior outwardly drops and which is softened by a heat treatment and/or induction heating, where the spring steel is tempered in its entire cross-section. The edge layer has a thickness of 500-800 μm , a hardness of 590 HV up to in a depth of 300-800 μm , and a hardness of 500 HV from a depth of 50 μm . The spring steel has a core region (3), which begins in a depth of 800 μm and has a hardness of 600 HV. An independent claim is included for a method for producing a spring steel.

IPC 8 full level

C21D 1/02 (2006.01); **C21D 8/06** (2006.01); **C21D 9/02** (2006.01)

CPC (source: EP)

C21D 1/02 (2013.01); **C21D 8/065** (2013.01); **C21D 9/02** (2013.01); **C21D 9/525** (2013.01)

Citation (examination)

- JP S6274027 A 19870404 - HIGH FREQUENCY HEATTREAT
- JP S61218843 A 19860929 - NHK SPRING CO LTD
- US 2003168136 A1 20030911 - KAWABE NOZOMU [JP], et al
- JP 2002089599 A 20020327 - TAMA SPRING KK

Cited by

DE102017107487A1; WO2023121182A1; KR20230093723A

Designated contracting state (EPC)

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 SE SI SK SM TR

DOCDB simple family (publication)

EP 2192201 A1 20100602; **EP 2192201 B1 20190424**; DE 102009011118 A1 20100527; JP 2010133558 A 20100617

DOCDB simple family (application)

EP 09014562 A 20091123; DE 102009011118 A 20090303; JP 2009266839 A 20091124