

Title (en)  
COLD-WORKED STEELS WITH PACKET-LATH MARTENSITE/AUSTENITE MICROSTRUCTURE

Title (de)  
KALTVERFORMTE STÄHLE MIT PAKET-LANZETT-MARTENSIT/AUSTENIT-GEFÜGE

Title (fr)  
ACIERS ECROUIS A MICROSTRUCTURE MARTENSITIQUE/AUSTENITIQUE A LATTAGES PAR PAQUETS

Publication  
**EP 1563106 B1 20120606 (EN)**

Application  
**EP 03783653 A 20031118**

Priority

- US 0336875 W 20031118
- US 42783002 P 20021119
- US 64583303 A 20030820

Abstract (en)  
[origin: WO2004046400A1] Strain-hardened steel alloys having a high tensile strength are prepared by cold working of alloys whose microstructure includes grains in which laths of martensite alternate with thin films of stabilized austenite. Due to the high dislocation density of this microstructure and the tendency of the strains to move between the martensite and austenite phases, the strains created by cold working provide the microstructure with unique mechanical properties including a high tensile strength. Surprisingly, this is achieved without the need for intermediate heat treatments (patenting, in the case of steel wire) of the steel between cold working reductions.

IPC 8 full level  
**C21D 1/18** (2006.01); **C21D 7/04** (2006.01); **C21D 7/10** (2006.01); **C21D 8/00** (2006.01); **C21D 8/02** (2006.01); **C21D 8/06** (2006.01); **C21D 1/19** (2006.01)

CPC (source: EP KR US)  
**C21D 1/185** (2013.01 - EP US); **C21D 7/02** (2013.01 - EP US); **C21D 7/04** (2013.01 - KR); **C21D 7/10** (2013.01 - EP US); **C21D 8/00** (2013.01 - KR); **C21D 8/02** (2013.01 - KR); **C21D 8/06** (2013.01 - EP KR US); **C21D 1/18** (2013.01 - EP US); **C21D 1/19** (2013.01 - EP US); **C21D 2211/001** (2013.01 - EP US); **C21D 2211/005** (2013.01 - EP US); **C21D 2211/008** (2013.01 - EP US)

Designated contracting state (EPC)  
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

Designated extension state (EPC)  
AL LT LV MK

DOCDB simple family (publication)  
**WO 2004046400 A1 20040603**; AU 2003291066 A1 20040615; AU 2003291066 B2 20080828; BR 0316361 A 20050927; BR 0316361 B1 20111227; CA 2502114 A1 20040603; CA 2502114 C 20120724; EP 1563106 A1 20050817; EP 1563106 A4 20060816; EP 1563106 B1 20120606; ES 2386425 T3 20120820; HK 1074060 A1 20051028; JP 2006506534 A 20060223; KR 20050086674 A 20050830; MX PA05005104 A 20050701; NO 20053021 D0 20050620; NO 20053021 L 20050818; PT 1563106 E 20120802; RU 2005119192 A 20060120; RU 2301838 C2 20070627; TR 200501633 T2 20050621; US 2004149362 A1 20040805; US 2008236709 A1 20081002

DOCDB simple family (application)  
**US 0336875 W 20031118**; AU 2003291066 A 20031118; BR 0316361 A 20031118; CA 2502114 A 20031118; EP 03783653 A 20031118; ES 03783653 T 20031118; HK 05107280 A 20050822; JP 2004570622 A 20031118; KR 20057008762 A 20050516; MX PA05005104 A 20031118; NO 20053021 A 20050620; PT 03783653 T 20031118; RU 2005119192 A 20031118; TR 200501633 T 20031118; US 13259308 A 20080603; US 64583303 A 20030820