Title (en)

UPHILL METHOD FOR THE HEAT TREATMENT AND REDUCTION OF INTERNAL STRESSES OF CAST PARTS PRODUCED FROM A LIGHT METAL MELT ,ESPECIALLY AN ALUMINIUM MELT

Title (de)

UPHILL-VERFAHREN ZUM WÄRMEBEHANDELN UND REDUZIEREN VON EIGENSPANNUNGEN VON ,AUS EINER LEICHTMETALLSCHMELZE, INSBESONDERE EINER ALUMINIUMSCHMELZE, ERZEUGTEN GUSSTEILEN

Title (fr)

PROCEDE MONTANT (UPHILL) POUR LE TRAITEMENT THERMIQUE ET POUR LA REDUCTION DE CONTRAINTES INTERNES DANS DES PIECES COULÉES PRODUITES A PARTIR D UN METAL LEGER EN FUSION ,NOTAMMENT D ALLUMINIUM EN FUSION

Publication

EP 1727920 A1 20061206 (DE)

Application

EP 05716282 A 20050322

Priority

- EP 2005003023 W 20050322
- DE 102004014827 A 20040324

Abstract (en)

[origin: DE102004014827B3] In a heat treatment process for a cast aluminium automotive diesel engine cylinder head, the cast block is annealed and then cryogenically shock-quenched with water and liquid nitrogen. After cooling, the temperature of the cylinder head is suddenly raised by placing in concentrated liquid nitrate or chromate salts whose boiling point is above that of water at normal atmospheric pressure.

IPC 8 full level

C21D 1/46 (2006.01); **C21D 1/78** (2006.01); **C22F 1/00** (2006.01); **C22F 1/04** (2006.01); **C22F 1/043** (2006.01); C21D 6/04 (2006.01)

CPC (source: EP US)

C22F 1/04 (2013.01 - EP US); **C22F 1/043** (2013.01 - EP US); C21D 1/46 (2013.01 - EP US); C21D 6/04 (2013.01 - EP US)

Citation (search report)

See references of WO 2005093114A1

Citation (examination)

ROBINSON, J.S., TANNER D.A.: "RESIDUAL STRES DEVELOPMENT AND RELIEF IN HIGH STRENGTH ALUMINIUM ALLOYS USING STANDARD AND RETROGRESSION THERMAL TREATMENTS", MATERIAL SCIENCE AND TECHNOLOGY, vol. 19, April 2003 (2003-04-01), pages 512 - 518, XP008079191

Designated contracting state (EPC)

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DOCDB simple family (publication)

DE 102004014827 B3 20050630; CA 2529019 A1 20051006; CN 1839212 A 20060927; EP 1727920 A1 20061206; JP 2007530779 A 20071101; MX PA06000097 A 20060627; RU 2005140024 A 20060910; UA 82437 C2 20080410; US 2007102074 A1 20070510; WO 2005093114 A1 20051006; ZA 200600021 B 20070131

DOCDB simple family (application)

DE 102004014827 A 20040324; CA 2529019 A 20050322; CN 200580000390 A 20050322; EP 05716282 A 20050322; EP 2005003023 W 20050322; JP 2007504338 A 20050322; MX PA06000097 A 20050322; RU 2005140024 A 20050322; UA A200609456 A 20050322; US 56354405 A 20050322; ZA 200600021 A 20060103