

Title (en)
METALLIC MATERIAL WHICH IS SOLID SOLUTION OF BODY-CENTERED CUBIC (BCC) STRUCTURE HAVING CONTROLLED CRYSTAL AXIS<001>ORIENTATION, AND PROCESS FOR PRODUCING SAME

Title (de)
METALLISCHES MATERIAL ALS FESTE LÖSUNG FÜR EIN KUBISCH-INNENZENTRIERTES GITTER MIT GESTEUERTER KRISTALLACHSEN-AUSRICHTUNG UND HERSTELLUNGSVERFAHREN DAFÜR

Title (fr)
MATÉRIAU MÉTALLIQUE QUI EST UNE SOLUTION SOLIDE D'UNE STRUCTURE CUBIQUE À CORPS CENTRÉ (BCC) AYANT UNE ORIENTATION CONTRÔLÉE DES AXES CRISTALLINS<001>, ET SON PROCÉDÉ DE FABRICATION

Publication
EP 2540845 A4 20160309 (EN)

Application
EP 11747563 A 20110228

Priority

- JP 2010042132 A 20100226
- JP 2011054548 W 20110228

Abstract (en)
[origin: EP2540845A1] An orientation of crystal axis <001> of the metallic material as a solid solution having a structure of body-centered cubic (BCC) is arranged along a work surface of the metallic material by hot rolling process in a temperature range of structuring the metallic material to be BCC single phase solid solution. For example, Fe-Si alloy as the metallic material is heated in the temperature range for BCC single phase solid solution, and processed so as to arrange the orientation of crystal axis <001> along the work surface by pressing the BCC single phase solid solution in a strain rate to maintain work condition for controlling motion of dislocation by atmosphere of solute atom generated in BCC single solid solution and migrating grain boundary by strain energy stored in a crystal grain as driving force.

IPC 8 full level
B21B 3/02 (2006.01); **C21D 8/12** (2006.01); **C22C 38/00** (2006.01); **C22C 38/02** (2006.01); **H01F 1/16** (2006.01)

CPC (source: EP KR US)
B21B 3/02 (2013.01 - KR); **C21D 7/13** (2013.01 - EP KR US); **C21D 8/12** (2013.01 - EP KR US); **C21D 8/1205** (2013.01 - EP US); **C21D 8/1222** (2013.01 - EP KR US); **C22C 38/004** (2013.01 - EP KR US); **C22C 38/02** (2013.01 - EP KR US); **C22C 38/06** (2013.01 - EP KR US); **H01F 1/16** (2013.01 - KR); **B21B 3/02** (2013.01 - EP US); **C21D 2201/05** (2013.01 - EP KR US)

Citation (search report)

- [X] US 2010043928 A1 20100225 - SUNG JIN KYUNG [KR]
- [X] JP 2000309859 A 20001107 - KAWASAKI STEEL CO
- [A] WO 9313231 A1 19930708 - NIPPON STEEL CORP [JP]
- [A] D RAABE ET AL: "Theory of orientation gradients in plastically strained crystals", ACTA MATERIALIA., vol. 50, no. 2, 1 January 2002 (2002-01-01), GB, pages 421 - 440, XP055245853, ISSN: 1359-6454, DOI: 10.1016/S1359-6454(01)00323-8
- See references of WO 2011105609A1

Designated contracting state (EPC)
AL 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 RS SE SI SK SM TR

DOCDB simple family (publication)
EP 2540845 A1 20130102; **EP 2540845 A4 20160309**; CN 102869795 A 20130109; CN 102869795 B 20150708; JP 5492975 B2 20140514; JP WO2011105609 A1 20130620; KR 101433493 B1 20140822; KR 20120127652 A 20121122; US 2012312432 A1 20121213; WO 2011105609 A1 20110901

DOCDB simple family (application)
EP 11747563 A 20110228; CN 201180016355 A 20110228; JP 2011054548 W 20110228; JP 2012501909 A 20110228; KR 20127024629 A 20110228; US 201113580722 A 20110228