Title (en)

METHOD FOR PRODUCING SHEET SEMIFINISHED PRODUCT FROM A TITANIUM ALLOY

Title (de)

VERFAHREN ZUR HERSTELLUNG EINES HALBFERTIGEN BLECHPRODUKTS AUS EINER TITANVERBINDUNG

Title (fr)

PROCÉDÉ DE FABRICATION D'UN BLANC EN FEUILLE À PARTIR D'UN ALLIAGE DE TITANE

Publication

EP 2048260 A4 20090415 (EN)

Application

EP 07747854 A 20070314

Priority

- RU 2007000123 W 20070314
- RU 2006125691 A 20060706

Abstract (en)

[origin: EP2048260A1] The invention relates to plastic working of metals, more specifically to rolling sheets, and is concerned with a method of manufacturing a semi-finished sheet product from a titanium alloy having a submicrocrystalline structure suitable for low-temperature superplastic deformation. The invention can be most efficiently used to manufacture semi-finished thin sheets, including foil, from a low-plastic two-phase titanium alloy. The object of the invention is to improve quality of semi-finished sheet products made from a titanium alloy adapted for further low-temperature superplastic deformation. A method of manufacturing a semi-finished sheet product from a titanium alloy adapted for low-temperature superplastic deformation, including rolling a billet with a prepared structure at a temperature below the polymorphous transformation temperature in isothermal or quasi-isothermal conditions provided by heating the rolls, the method characterized in that said rolling is carried out in conditions of low-temperature superplastic deformation, the deformation being performed, predominantly in a first pass, to a strain amount of μ#¥μ min , where μ min is the minimum amount at which a structural state required to provide cooperative grain boundary sliding in the deformation process is formed in the alloy in selected rolling temperature/rate conditions; after each subsequent rolling pass the billet is cooled immediately on exiting the deformation region to maintain the structural state obtained in the deformation; a time period of heating the billet in a furnace for a subsequent rolling pass is restricted to prevent disturbance of the alloy structural state obtained in the previous rolling pass.

IPC 8 full level

B21B 3/00 (2006.01); **C22F 1/18** (2006.01)

CPC (source: EP US)

C22F 1/16 (2013.01 - EP US); **C22F 1/183** (2013.01 - EP US); B21B 3/00 (2013.01 - EP US)

Citation (search report)

- [X] WO 9817836 A1 19980430 - GEN ELECTRIC [US], et al
- [A] SU 1613505 A1 19901215 - UNIV DNEPROPETROWSK [SU]
- [A] SU 1623826 A1 19910130 - INDZTITUT RROVLEM DZVERKNRLADZ [SU]
- [A] JP S63230858 A 19880927 - SUMITOMO METAL IND
- [A] SALISHCHEV G ET AL: "DYNAMIC RECRYSTALLIZATION AND SUPERPLASTICITY IN TIAL", GAMMA, TITANIUM, ALUMINIDES, PROCEEDINGS OF A SYMPOSIUM, XX, XX, 1 June 1995 (1995-06-01), pages 595 - 602, XP002052802
- [A] VALIAKHMETOV O R ET AL: "MECHANICAL PROPERTIES OF THE TITANIUM ALLOY VT8 WITH SUBMICROCRYSTALLINE STRUCTURE", THE PHYSICS OF METALS AND METALLOGRAPHY / FIZIKA METALLOV IMETALLOVEDENIE, INTERPERIODICA PUBLISHING, XX, vol. 70, no. 4, 1 January 1990 (1990-01-01), pages 198 - 200, XP002052799, ISSN: 0031-918X
- See references of WO 2008004906A1

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA HR MK RS

DOCDB simple family (publication)

EP 2048260 A1 20090415; **EP 2048260 A4 20090415**; RU 2320771 C1 20080327; US 2008302451 A1 20081211; WO 2008004906 A1 20080110

DOCDB simple family (application)

EP 07747854 A 20070314; RU 2006125691 A 20060706; RU 2007000123 W 20070314; US 91264907 A 20070314