

Title (en)

Method and device for continuous treatment of a metal strip

Title (de)

Vorrichtung und Verfahren zur kontinuierlichen Behandlung eines Metallbandes

Title (fr)

Dispositif et procédé destinés au traitement continu d'une bande métallique

Publication

EP 2722112 B1 20150624 (DE)

Application

EP 13183368 A 20130906

Priority

DE 102012110010 A 20121019

Abstract (en)

[origin: EP2722112A1] The apparatus has a heat-treatment device (2) which is provided to pass a metal strip (1) without contacting with the metal strip. A strip centering device (7) is provided to adjust the position of the metal strip in a strip-travel plane to transverse to a strip-travel direction. An upstream inlet end of the heat-treatment device is provided with a heating zone (3) while a downstream outlet end is provided with a cooling zone (4). The strip centering device is arranged within the cooling zone. An independent claim is included for a method for continuously treating metal strip.

IPC 8 full level

C21D 9/56 (2006.01); **B21B 39/00** (2006.01); **C21D 9/54** (2006.01); **C21D 9/63** (2006.01); **C21D 11/00** (2006.01)

CPC (source: EP KR US)

C21D 9/46 (2013.01 - EP US); **C21D 9/54** (2013.01 - US); **C21D 9/56** (2013.01 - EP KR US); **C21D 9/563** (2013.01 - EP US); **C21D 9/564** (2013.01 - EP US); **C21D 9/573** (2013.01 - KR); **C21D 9/63** (2013.01 - EP US); **C22F 1/04** (2013.01 - EP US)

Citation (opposition)

Opponent : EBNER Industrieofenbau GmbH

- US 5472528 A 19951205 - BOYER MICHEL [FR]
- EP 0068272 A1 19830105 - DAIDO STEEL CO LTD [JP]
- EP 0117896 A2 19840912 - ELMEG [DE]
- US 4218002 A 19800819 - WHALEN JOHN M [US]
- EP 1443120 A1 20040804 - KRAMER CARL PROF DR-ING [DE]
- US 5431755 A 19950711 - HAJO HELMUT [DE], et al
- US 5798007 A 19980825 - BOYER MICHEL [FR], et al
- DE 10326071 A1 20050113 - KRAMER CARL [DE]
- US 5964114 A 19991012 - NOE ROLF [DE], et al
- US 6413470 B1 20020702 - KRAMER CARL [DE]
- JP S5848641 A 19830322 - DAIDO STEEL CO LTD
- DE 10337502 B4 20060330 - KRAMER CARL [DE]
- US 2010175452 A1 20100715 - OHLERT JOACHIM [DE], et al
- PROF. DR.-ING . C. KRAMER: "Continuous heat treatment of floatingly guided copper alloy strips", HEAT PROCESSING, June 2003 (2003-06-01), XP055276421
- M IMOSE: "Heating and Cooling Technology in the Continuous Annealing", TRANSACTIONS ISIJ, 1985, XP055276436

Cited by

WO2017133867A1; RU2744007C2; WO2016096173A1

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 2722112 A1 20140423; **EP 2722112 B1 20150624**; CA 2829532 A1 20140419; CA 2829532 C 20200310; CN 103773943 A 20140507; CN 103773943 B 20180206; DE 102012110010 A1 20140424; DE 102012110010 B4 20160901; ES 2543328 T3 20150818; HU E025366 T2 20160229; KR 102162942 B1 20201007; KR 20140050552 A 20140429; PL 2722112 T3 20151130; RU 2013146678 A 20150427; RU 2623520 C2 20170627; US 10415113 B2 20190917; US 2014110890 A1 20140424

DOCDB simple family (application)

EP 13183368 A 20130906; CA 2829532 A 20131008; CN 201310489275 A 20131018; DE 102012110010 A 20121019; ES 13183368 T 20130906; HU E13183368 A 20130906; KR 20130123296 A 20131016; PL 13183368 T 20130906; RU 2013146678 A 20131018; US 201314056372 A 20131017