

Title (en)

METHOD FOR CONTACTLESSLY COOLING STEEL SHEETS AND DEVICE THEREFOR

Title (de)

VERFAHREN ZUM KONTAKTLOSEN KÜHLEN VON STAHLBLECHEN UND VORRICHTUNG HIERFÜR

Title (fr)

PROCÉDÉ DE REFROIDISSEMENT SANS CONTACT DE TÔLES D'ACIER ET DISPOSITIF À CET EFFET

Publication

EP 3303642 A1 20180411 (DE)

Application

EP 16724376 A 20160518

Priority

- DE 102015108514 A 20150529
- DE 102015113056 A 20150807
- EP 2016061101 W 20160518

Abstract (en)

[origin: WO2016192992A1] The present invention relates to a device for cooling hot objects, in particular a device for the homogeneous, non-contact cooling of hot, primarily non-endless surfaces, wherein the device for cooling comprises at least a cooling blade or a cooling cylinder, the cooling blade or the cooling cylinder having a hollow design and a cooling blade nozzle edge or a plurality of serially arranged cooling cylinders. At least one nozzle is provided in the nozzle edge, which is directed to an object to be cooled, wherein at least seven cooling blades are arranged in such a manner that the flow image on the surface to be cooled forms a honeycomb-like structure. The invention also relates to a method therefor.

IPC 8 full level

C21D 9/00 (2006.01); **B21B 45/02** (2006.01); **C21D 1/613** (2006.01); **C21D 1/62** (2006.01); **C21D 1/667** (2006.01); **C21D 1/673** (2006.01); **F27D 7/00** (2006.01); **F27D 9/00** (2006.01)

CPC (source: EP KR US)

B21B 45/004 (2013.01 - KR); **B21B 45/0218** (2013.01 - US); **B21B 45/0233** (2013.01 - KR US); **C21D 1/613** (2013.01 - EP KR US); **C21D 1/62** (2013.01 - EP KR US); **C21D 1/667** (2013.01 - EP KR US); **C21D 1/673** (2013.01 - EP US); **C21D 6/002** (2013.01 - EP US); **C21D 6/005** (2013.01 - EP US); **C21D 6/008** (2013.01 - EP US); **C21D 9/0062** (2013.01 - EP KR US); **C21D 9/46** (2013.01 - EP US); **C22C 38/001** (2013.01 - EP US); **C22C 38/002** (2013.01 - EP US); **C22C 38/02** (2013.01 - EP US); **C22C 38/04** (2013.01 - EP US); **C22C 38/06** (2013.01 - EP US); **C22C 38/28** (2013.01 - EP US); **C22C 38/32** (2013.01 - EP US); **F27D 7/02** (2013.01 - EP US); **C21D 8/0247** (2013.01 - EP US); **C21D 2211/001** (2013.01 - EP US); **C21D 2211/008** (2013.01 - EP US); **C23C 2/06** (2013.01 - US); **C23C 2/40** (2013.01 - US); **F27D 2009/007** (2013.01 - EP US)

Citation (search report)

See references of WO 2016192993A1

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

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

WO 2016192992 A1 20161208; CA 2987500 A1 20161208; CA 2987500 C 20230919; CN 107922984 A 20180417; CN 107922984 B 20191231; CN 107922988 A 20180417; CN 107922988 B 20191217; CN 108136464 A 20180608; CN 108136464 B 20200828; EP 3302837 A1 20180411; EP 3302837 B1 20200311; EP 3303640 A1 20180411; EP 3303640 B1 20200715; EP 3303642 A1 20180411; EP 3303642 B1 20200311; ES 2781198 T3 20200831; ES 2781457 T3 20200902; ES 2808779 T3 20210301; JP 2018522138 A 20180809; JP 2018524535 A 20180830; JP 2018532877 A 20181108; JP 6908231 B2 20210721; JP 7028514 B2 20220302; JP 7141828 B2 20220926; KR 20180012328 A 20180205; KR 20180014069 A 20180207; KR 20180014070 A 20180207; MX 2017015330 A 20180828; US 10814367 B2 20201027; US 2018155803 A1 20180607; US 2018245173 A1 20180830; US 2019076899 A1 20190314; WO 2016192993 A1 20161208; WO 2016192994 A1 20161208

DOCDB simple family (application)

EP 2016061097 W 20160518; CA 2987500 A 20160518; CN 201680043934 A 20160518; CN 201680044378 A 20160518; CN 201680044446 A 20160518; EP 16724376 A 20160518; EP 16724621 A 20160518; EP 16727320 A 20160518; EP 2016061101 W 20160518; EP 2016061102 W 20160518; ES 16724376 T 20160518; ES 16724621 T 20160518; ES 16727320 T 20160518; JP 2017560766 A 20160518; JP 2017560768 A 20160518; JP 2017561763 A 20160518; KR 20177037654 A 20160518; KR 20177037655 A 20160518; KR 20177037656 A 20160518; MX 2017015330 A 20160518; US 201615577271 A 20160518; US 201615577281 A 20160518; US 201615577289 A 20160518