

Title (en)

Thermoforming tool

Title (de)

Warmumformungswerkzeug

Title (fr)

Outil de déformation à chaud

Publication

EP 3017888 B1 20190424 (DE)

Application

EP 14197507 A 20141211

Priority

DE 102014016502 A 20141107

Abstract (en)

[origin: WO2016071423A1] Disclosed is a hot forming tool (1) which consists of a main tool member (2) having an at least partial surface coating (4) and which can be obtained by providing the main tool member with a raised metal relief that is then entirely or partly oxidized and converted into a protective layer.

IPC 8 full level

B21B 25/00 (2006.01)

CPC (source: CN EP KR RU US)

B21B 19/04 (2013.01 - CN EP KR US); **B21B 25/00** (2013.01 - CN EP KR RU US)

Citation (opposition)

Opponent : SMS group GmbH

- EP 2404680 A1 20120111 - SUMITOMO METAL IND [JP]
- DE 102011010646 A1 20110908 - SMS MEER GMBH [DE]
- JP 2002224713 A 20020813 - KAWASAKI STEEL CO
- EP 0385439 A1 19900905 - NIPPON KOKAN KK [JP]
- WO 2014041787 A1 20140320 - JFE STEEL CORP [JP]
- EP 2873468 A1 20150520 - JFE STEEL CORP [JP]
- DE 3048691 A1 19810924 - NIPPON KOKAN KK [JP]
- WO 2014109180 A1 20140717 - NIPPON STEEL & SUMITOMO METAL CORP [JP]
- EP 2944387 A1 20151118 - NIPPON STEEL & SUMITOMO METAL CORP [JP]

Cited by

EP3590622A1; DE102018116238A1

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)

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DOCDB simple family (application)

EP 14197507 A 20141211; BR 112017007858 A 20151104; CN 201580060124 A 20151104; DE 102014016502 A 20141107; EP 2015075758 W 20151104; JP 2017522549 A 20151104; KR 20177013758 A 20151104; RU 2017118964 A 20151104; US 201515519988 A 20151104