

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]  
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• 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)  
**EP 3017888 A1 20160511; EP 3017888 B1 20190424**; BR 112017007858 A2 20180116; CN 107206442 A 20170926;  
CN 107206442 B 20200407; DE 102014016502 A1 20160512; JP 2017536237 A 20171207; KR 20170086519 A 20170726;  
RU 2017118964 A 20181207; RU 2017118964 A3 20181207; RU 2687321 C2 20190513; US 2017333964 A1 20171123;  
WO 2016071423 A1 20160512

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