

Title (en)
FORMING TOOL AND METHOD FOR HOT FORMING AND PARTIALLY PRESS HARDENING A WORKPIECE MADE OF SHEET STEEL

Title (de)
UMFORMWERKZEUG UND VERFAHREN ZUM WARMUMFORMEN UND PARTIELLEN PRESSHÄRTEN EINES WERKSTÜCKES AUS STAHLBLECH

Title (fr)
OUTIL DE FORMAGE ET PROCÉDÉ DE FORMAGE À CHAUD ET DE TREMPÉ À LA PRESSE PARTIELLE D'UNE PIÈCE EN TÔLE D'ACIER

Publication
EP 2595770 A1 20130529 (DE)

Application
EP 11729634 A 20110706

Priority
• DE 102010027554 A 20100719
• EP 2011061399 W 20110706

Abstract (en)
[origin: WO2012010418A1] The invention relates to a forming tool and to a method for hot forming and partially press hardening a workpiece made of sheet steel, wherein the workpiece is heated prior to forming and is subsequently hot formed in a forming tool comprising a die (3) and a punch (5), wherein the forming tool comprises a cooling device (8). The method is characterized in that, in the closed state of the forming tool (1, 1'), the contact between the workpiece (2) and the contact surfaces of the die (3) and the punch (5) of the forming tool is interrupted in regions by moving apart a movable die section (3.2) and a movable punch section (5.2) from a closed position to an opened position. The die (3) is made of a first die part (3.1) and at least one second die part (3.2) movable relative to the first die part, while the punch (5) is made of a first punch part (5.1) and at least one second punch part (5.2) movable relative to the first punch part, wherein the at least one movable second die part (3.2) and the at least one movable second punch part (5.2) interact with an opening device (17, 18) causing the at least one second die part (3.2) and the at least one second punch part (5.2) to contact the workpiece for a shorter closing time than the first die part (3.1) and the first punch part (5.1).

IPC 8 full level
B21D 22/06 (2006.01); **B21D 22/22** (2006.01); **B21D 37/08** (2006.01); **B21D 37/16** (2006.01); **C21D 1/673** (2006.01)

CPC (source: EP KR US)
B21D 22/022 (2013.01 - US); **B21D 22/06** (2013.01 - EP KR US); **B21D 22/208** (2013.01 - EP US); **B21D 22/22** (2013.01 - EP KR US); **B21D 37/08** (2013.01 - EP KR US); **B21D 37/16** (2013.01 - EP KR US); **C21D 1/673** (2013.01 - EP US); **C21D 9/0062** (2013.01 - EP US); **C21D 9/48** (2013.01 - EP US); **C21D 2221/00** (2013.01 - EP US)

Citation (search report)
See references of WO 2012010418A1

Cited by
US10618094B2; EP3067128B1; EP3266531B1

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)
DE 102010027554 A1 20120119; CN 103003003 A 20130327; CN 103003003 B 20141217; EP 2595770 A1 20130529; EP 2595770 B1 20140604; ES 2495997 T3 20140918; KR 101530367 B1 20150619; KR 20130054994 A 20130527; PL 2595770 T3 20141128; US 10166589 B2 20190101; US 2013205863 A1 20130815; US 2017252791 A1 20170907; US 9687898 B2 20170627; WO 2012010418 A1 20120126; WO 2012010418 A9 20130228

DOCDB simple family (application)
DE 102010027554 A 20100719; CN 201180036260 A 20110706; EP 11729634 A 20110706; EP 2011061399 W 20110706; ES 11729634 T 20110706; KR 20137004199 A 20110706; PL 11729634 T 20110706; US 201113810992 A 20110706; US 201715601189 A 20170522