

Title (en)  
PUNCHING DEVICE AND METHOD FOR PUNCHING A WORKPIECE

Title (de)  
STANZVORRICHTUNG UND VERFAHREN ZUM STANZEN EINES WERKSTÜCKS

Title (fr)  
DISPOSITIF DE POINÇONNAGE ET PROCÉDÉ DE POINÇONNAGE D'UNE PIÈCE

Publication  
**EP 3174650 A1 20170607 (DE)**

Application  
**EP 15747404 A 20150723**

Priority  
• DE 102014214739 A 20140728  
• EP 2015066928 W 20150723

Abstract (en)  
[origin: WO2016016102A1] The invention relates to a punching device (1) comprising: a punching tool (5) which is movable along a stroke axis (Z) towards a workpiece (2) to be punched during a punching stroke and is movable away from the punched workpiece (2) during a return stroke, wherein the punching tool (5) has a first component (6) and a second component (7) which are couplable hydraulically in order to move jointly along the stroke axis (Z), and also a punching drive (8) for moving the first component (6) along the stroke axis (Z), wherein the punching device (1) is configured to move the second component (7) at a first transmission ratio relative to the first component (6) during the punching stroke and, if a threshold value of a counter-force (F) is exceeded during the punching stroke, said counter-force (F) being exerted on the punching tool (5) by the workpiece to be punched (2), to move the second component (7) at a second transmission ratio, different from the first, relative to the first component (6). The punching device (1) is configured to maintain a relative position ( $\Delta P'$ ) of the two components (6, 7) to one another, at least along a section of the return stroke of the punching tool (5) along the stroke axis (Z), said relative position ( $\Delta P'$ ) being assumed immediately after the workpiece (2) has been punched through. The invention also relates to an associated method for punching a workpiece (2).

IPC 8 full level  
**B21D 28/20** (2006.01); **B30B 1/32** (2006.01); **B30B 15/16** (2006.01)

CPC (source: CN EP US)  
**B21D 28/002** (2013.01 - EP US); **B21D 28/20** (2013.01 - CN EP US); **B30B 1/323** (2013.01 - CN EP US); **B30B 15/161** (2013.01 - CN EP US); **F15B 11/0325** (2013.01 - EP US)

Citation (search report)  
See references of WO 2016016102A1

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)  
**DE 102014214739 B3 20151231**; CN 106536081 A 20170322; CN 106536081 B 20190322; EP 3174650 A1 20170607;  
EP 3174650 B1 20180620; PL 3174650 T3 20181130; US 10328478 B2 20190625; US 2017136519 A1 20170518; WO 2016016102 A1 20160204

DOCDB simple family (application)  
**DE 102014214739 A 20140728**; CN 201580041868 A 20150723; EP 15747404 A 20150723; EP 2015066928 W 20150723;  
PL 15747404 T 20150723; US 201715417775 A 20170127