

Title (en)  
RELIEF FORMING APPARATUS

Title (de)  
RELIEFFORMUNGSVORRICHTUNG

Title (fr)  
APPAREIL DE FORMATION DE RELIEF

Publication  
**EP 2801417 A1 20141112 (EN)**

Application  
**EP 12864189 A 20121227**

Priority  
• KR 20120000980 A 20120104  
• KR 2012011586 W 20121227

Abstract (en)  
Disclosed is a relief forming apparatus. In the relief forming apparatus, a relief die block and a main die block cooperating with a panel supporting pad fixed to a lower end of an upper mold vertically moved down through a press operation are separated from each other in opposition to the panel supporting pad. When the panel supporting pad and the cam slide are returned to the original positions thereof as the upper mold is moved up, the die fixing block coupled with upper and lower ends of the spring and fixedly supporting a lower end of the main die block and the slide block fixedly installed at the lower end of the relief die block are mutually slidably coupled with each other, and relief die driving blocks are installed at the lower end of the slide block to support the relief die block and the slide block and to control a lifting operation of the slide block according to variation in a length of an air cylinder, so that, as the length of the rod of the air cylinder is extended, the locking of relief die driving blocks is released and both of a slide block and the relief die block are moved in such a manner that the slide block and the relief die block are inclined downward due to the elastic force of the spring, thereby more simply taking up the panel, which is subject to the relief forming work, from the relief die block. When comparing with conventional relief forming cam schemes including a rotary cam scheme of rotating a rotary cam corresponding to a cam slide in one direction, or a swing cam scheme in which a swing cam corresponding to the cam slide is rotatably swung in one direction about a cam axis, which is coupled eccentrically from one side of a center and serves as a support point, through an actuating cylinder, in order to separate a bent panel from a die after performing the relief forming work of bending the end of the panel according to a punching work of the cam slide in a cam housing of a cam base, as the length of an air cylinder is extended, the locking of relief die driving blocks is released and both of a slide block and the relief die block are moved from the main die block and the die fixing block, respectively, due to the elastic force of the spring in such a manner that the slide block and the relief die block are inclined downward. Accordingly, a worker can more simply take out the primarily molded panel, which is subject to the relief forming work, from the relief die block.

IPC 8 full level  
**B21D 19/08** (2006.01); **B21D 28/32** (2006.01)

CPC (source: EP KR)  
**B21D 5/01** (2013.01 - KR); **B21D 19/08** (2013.01 - KR); **B21D 19/082** (2013.01 - EP); **B21D 19/084** (2013.01 - EP); **B21D 19/086** (2013.01 - EP); **B21D 24/00** (2013.01 - KR); **B21D 28/325** (2013.01 - EP); **B30B 15/00** (2013.01 - KR)

Cited by  
CN104759524A; CN104624800A; CN108356151A; CN113441647A; CN109513821A; EP3100795A1; FR3036987A1

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 2801417 A1 20141112**; **EP 2801417 A4 20151021**; JP 2015504006 A 20150205; JP 5895304 B2 20160330; KR 101167042 B1 20120731; WO 2013103212 A1 20130711

DOCDB simple family (application)  
**EP 12864189 A 20121227**; JP 2014550012 A 20121227; KR 20120000980 A 20120104; KR 2012011586 W 20121227