Title (en)
  Die for self-piercing rivet

Title (de)
  Matrize zum Setzen von Stanznieten

Title (fr)
  Matrice pour la pose de rivets autoperforants

Publication
  EP 2606993 B1 20140730 (EN)

Application
  EP 12198014 A 20121219

Priority
  JP 2011281060 A 20111222

Abstract (en)
  [origin: EP2606993A1] To provide a die for a self-piercing rivet fastening device (1) which uses a self-piercing rivet (10) to fasten fastened members (41, 42) with poor malleability formed using a die cast or the like so that the members do not rupture. The present invention is a die (30; 35) for a self-piercing rivet fastening device (1) having a die (30; 35) and a punch (4) for driving a self-piercing rivet (10) having a large-diameter head (11) and hollow cylindrical legs (12) extending down from the head, and configured so the punch drives the self-piercing rivet (10) into fastened members (41, 42) arranged on top of the die (30; 35), wherein a cavity (31; 36) is formed in the upper surface of the die (30; 35) for receiving portions of the fastened members (41, 42) thrust out by the self-piercing rivet (10) driven by the punch (4), and wherein the cavity (31; 36) is formed as a concave spherical surface having a single radius (R) centered on the central axis (I) of the cavity. Alternatively, the cavity (36) is formed with a bottom surface (37) and a surrounding inclined surface (38), and the angle between the bottom surface and the inclined surface is from 165 to 175°.

IPC 8 full level
  B21J 15/02 (2006.01); **B21J 15/28** (2006.01); **B21J 15/36** (2006.01)

CPC (source: EP US)
  B21J 15/025 (2013.01 - EP US); **B21J 15/285** (2013.01 - EP US); **B21J 15/36** (2013.01 - EP US); Y10T 29/5377 (2015.01 - EP US)

Cited by
  CN111581786A; FR3098557A1; US10702913B2; WO2015078794A3; DE102016103999A1; WO2017148684A1; US10632523B2

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 2606993 A1 20130626; **EP 2606993 B1 20140730**; JP 2013128964 A 20130704; JP 5821121 B2 20151124; US 2013160262 A1 20130627

DOCDB simple family (application)
  EP 12198014 A 20121219; JP 2011281060 A 20111222; US 201213724025 A 20121221