

Title (en)
POWDERED METAL MULTI-LOBULAR TOOLING AND METHOD OF FABRICATION

Title (de)
MULTI-LOBULARES WERKZEUG AUS PULVERFÖRMIGEM METALL UND HERSTELLUNGSVERFAHREN

Title (fr)
OUTIL A LOBES MULTIPLES EN METAL FRITTE ET SON PROCEDE DE FABRICATION

Publication
EP 1735117 A2 20061227 (EN)

Application
EP 05724557 A 20050303

Priority

- US 2005007040 W 20050303
- US 56172804 P 20040413
- US 5243805 A 20050207

Abstract (en)
[origin: US2005227772A1] A tool made of powdered metal, such as a modified T15 HSS in powdered form, and having a multi-lobular end profile for punching multi-lobular recesses into workpieces, such as into the heads of fasteners. The tool is homogenous and contains only carbides which are relatively small, such as in the 1-4 micron range. Also provided is a method of fabricating such a tool. The method requires that a powdered metal bar is cut and then the cut piece is worked to provide the multi-lobular tool. The final part is theoretically 100% dense, as opposed to being only 95-98% dense as in metal injection molded parts. In use, the final part, due to how it is fabricated, has increased column strength and increased impact resistance.

IPC 8 full level
B21J 13/02 (2006.01); **B21K 1/44** (2006.01); **B21K 1/46** (2006.01); **B21K 5/20** (2006.01); **B22F 5/00** (2006.01); **B23P 13/04** (2006.01); **C21D 1/00** (2006.01)

CPC (source: EP KR US)
B21J 13/02 (2013.01 - EP US); **B21K 1/463** (2013.01 - EP US); **B21K 5/20** (2013.01 - EP US); **B22F 5/00** (2013.01 - EP KR US); **B23P 13/04** (2013.01 - KR); **B22F 2005/001** (2013.01 - EP US); **B22F 2998/10** (2013.01 - EP US)

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)
US 2005227772 A1 20051013; AR 048680 A1 20060517; AU 2005235543 A1 20051103; BR PI0509839 A 20071023; CA 2558010 A1 20051103; EP 1735117 A2 20061227; EP 1735117 A4 20100407; JP 2007532320 A 20071115; KR 100824175 B1 20080421; KR 20070005667 A 20070110; KR 20070118198 A 20071213; RU 2006138688 A 20080527; RU 2366528 C2 20090910; TW 200602138 A 20060116; TW I321502 B 20100311; US 2008236341 A1 20081002; WO 2005102559 A2 20051103; WO 2005102559 A3 20051222

DOCDB simple family (application)
US 5243805 A 20050207; AR P050101335 A 20050405; AU 2005235543 A 20050303; BR PI0509839 A 20050303; CA 2558010 A 20050303; EP 05724557 A 20050303; JP 2007508342 A 20050303; KR 20067021147 A 20061012; KR 20077027742 A 20071128; RU 2006138688 A 20050303; TW 94109645 A 20050328; US 13350708 A 20080605; US 2005007040 W 20050303