

Title (en)

Method and apparatus for punching a metal sheet

Title (de)

Verfahren und Vorrichtung zum Lochen eines Bleches

Title (fr)

Procédé et dispositif de poinçonnage d'une tôle

Publication

**EP 1775042 A1 20070418 (DE)**

Application

**EP 05450173 A 20051014**

Priority

EP 05450173 A 20051014

Abstract (en)

In a process to perforate a sheet metal panel (1), the sheet metal is subjected to preliminary deformation. In the next stage the hole is punched and the punch then withdrawn. In a third stage, the metal rim around the hole is de-stressed by a small countersunk profile formed by the punch shoulder (7).

IPC 8 full level

**B21D 28/34** (2006.01); **B21D 28/26** (2006.01)

CPC (source: EP)

**B21D 28/26** (2013.01); **B21D 28/34** (2013.01)

Citation (search report)

- [YX] US 5992280 A 19991130 - OISHI HIROHIKO [JP], et al
- [YX] DE 231018 C
- [XA] FR 757203 A 19331222 - JOSEPH AMBERT
- [DA] US 4526077 A 19850702 - DEGUVERA EMMETT W [US]
- [A] DE 19707354 A1 19980827 - ALFRA WERKZEUG UND GERAETEBAU [DE]

Cited by

FR2940924A1; JP2011183453A; CN107971387A; CN103527916A; CN107983823A; CN109530535A; DE102021132006B3

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 LV MC NL PL PT RO SE SI SK TR

Designated extension state (EPC)

AL BA HR MK YU

DOCDB simple family (publication)

**EP 1775042 A1 20070418**; **EP 1775042 B1 20090401**; AT E427173 T1 20090415; DE 502005007009 D1 20090514

DOCDB simple family (application)

**EP 05450173 A 20051014**; AT 05450173 T 20051014; DE 502005007009 T 20051014