

Title (en)

Process for arranging tabs and/or projections on a thin sheet and thin tube of rectangular cross section

Title (de)

Verfahren zum Anbringen von Laschen und/oder Vorsprüngen an einem Feinblech und Feinblech mit Laschen und/oder Vorrichtungen sowie Rechteckrohr aus Feinblechen

Title (fr)

Procédé pour la réalisation de languettes et/ou de saillies sur une tôle mince et tube en tôle mince à section rectangulaire

Publication

**EP 0851200 A3 19990512 (DE)**

Application

**EP 97120668 A 19971126**

Priority

DE 19654367 A 19961224

Abstract (en)

[origin: EP0851200A2] The lugs (13,14) or protrusions are at right angles to the metal surface and extend for further than the thickness of the latter. The method involves using a punch and die to loading the metal beyond the yield point. Part of the metal can be pressed into recesses in the punch and/or die, which forms the negative mould for the lugs or protrusions. Formation can be by punch and die at intervals, while the sheet-metal strip is indexed forward.

IPC 1-7

**F28F 1/04**; **F28F 1/40**; **B21D 53/04**

IPC 8 full level

**B23P 19/02** (2006.01); **B21C 37/15** (2006.01); **B21C 37/20** (2006.01); **B21D 22/02** (2006.01); **B21D 53/04** (2006.01); **B21D 53/84** (2006.01); **F01N 13/18** (2010.01); **F28F 1/02** (2006.01); **F28F 1/04** (2006.01); **F28F 1/40** (2006.01); **F28F 13/12** (2006.01)

CPC (source: EP US)

**B21C 37/20** (2013.01 - EP US); **B21D 22/02** (2013.01 - EP US); **B21D 53/04** (2013.01 - EP US); **F28F 1/04** (2013.01 - EP US); **F28F 13/12** (2013.01 - EP US); **F28D 21/0003** (2013.01 - EP US); **Y10S 138/04** (2013.01 - EP US); **Y10S 138/11** (2013.01 - EP US)

Citation (search report)

- [PDX] EP 0772018 A2 19970507 - BEHR GMBH & CO [DE]
- [XY] WO 9505571 A2 19950223 - INSILCO CORP [US]
- [Y] EP 0677715 A1 19951018 - BEHR GMBH & CO [DE]
- [X] US 5417097 A 19950523 - KOJIMA ICHIROU [JP], et al
- [X] US 4122700 A 19781031 - GRANZOW WAYNE G
- [X] GB 2088544 A 19820609 - LUMMUS CO
- [A] US 4206806 A 19800610 - TOGASHI AKIRA [JP]

Designated contracting state (EPC)

AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

DOCDB simple family (publication)

**DE 19654367 A1 19980625**; DE 59712183 D1 20050303; EP 0851200 A2 19980701; EP 0851200 A3 19990512; EP 0851200 B1 20050126; EP 0851200 B2 20100317; JP H10193017 A 19980728; US 6070616 A 20000606

DOCDB simple family (application)

**DE 19654367 A 19961224**; DE 59712183 T 19971126; EP 97120668 A 19971126; JP 32307097 A 19971125; US 99621097 A 19971222