

Title (en)

Method and apparatus for making an embossed part in a sheet metal plate and product obtained by this method.

Title (de)

Verfahren und Vorrichtung zum Herstellen eines gewölbten Teils in einem Blechgegenstand und nach diesem Verfahren hergestellter Gegenstand.

Title (fr)

Procédé et dispositif de formage d'une partie en relief sur un flanc de tôle et produit obtenu selon ce procédé.

Publication

**EP 0451013 A1 19911009 (FR)**

Application

**EP 91400795 A 19910325**

Priority

FR 9004264 A 19900403

Abstract (en)

The subject of the invention is a method for forming an embossed part on a metal sheet blank (10) with the aid of a die and a punch. A preforming operation and a shaping operation are carried out on at least one localised zone of the metal sheet blank (10), of greater dimensions than those of the said embossed part, thereby forming the said embossed part. During the preforming operation, a succession of tiered undulations are progressively produced on an intermediate zone of the said localised zone, located between the eventual high part of the said embossed part at the periphery of the said localised zone and, during the shaping operation, the tiered undulations of the said intermediate zone are progressively opened out and, simultaneously, the said embossed part is formed. <??>The subject of the invention is also an apparatus for implementing the method. <IMAGE>

IPC 1-7

**B21D 51/38**

IPC 8 full level

**B21D 22/20** (2006.01); **B21D 24/00** (2006.01); **B21D 51/38** (2006.01); **B21D 51/44** (2006.01); **B31F 1/07** (2006.01)

CPC (source: EP US)

**B21D 51/383** (2013.01 - EP US)

Citation (search report)

- [X] FR 2164703 A1 19730803 - VAW VER ALUMINIUM WERKE AG
- [A] FR 2083394 A1 19711217 - ALUMINUM CO OF AMERICA [US]
- [A] DE 2619553 A1 19771110 - WEHRSTEDT & SOEHNE
- [A] FR 2255115 A1 19750718 - WARNKE UMFORMTECH VEB K [DD]

Cited by

EP1441108A3; CN101972807A

Designated contracting state (EPC)

AT BE CH DE DK ES FR GB GR IT LI LU NL SE

DOCDB simple family (publication)

**EP 0451013 A1 19911009; EP 0451013 B1 19940518**; AT E105749 T1 19940615; CA 2038958 A1 19911004; CA 2038958 C 19990713; DE 69102004 D1 19940623; DE 69102004 T2 19941027; DK 0451013 T3 19940919; ES 2056595 T3 19941001; FI 112331 B 20031128; FI 911576 A0 19910402; FI 911576 A 19911004; FR 2660220 A1 19911004; FR 2660220 B1 19950224; JP H05305360 A 19931119; KR 100231074 B1 19991201; NO 176239 B 19941121; NO 176239 C 19950301; NO 911287 D0 19910402; NO 911287 L 19911004; PT 97213 A 19930531; PT 97213 B 19980731; US 5174146 A 19921229

DOCDB simple family (application)

**EP 91400795 A 19910325**; AT 91400795 T 19910325; CA 2038958 A 19910325; DE 69102004 T 19910325; DK 91400795 T 19910325; ES 91400795 T 19910325; FI 911576 A 19910402; FR 9004264 A 19900403; JP 9802291 A 19910403; KR 910005301 A 19910402; NO 911287 A 19910402; PT 9721391 A 19910401; US 67295791 A 19910321