

Title (en)
DRAWING APPARATUS FOR SHAPING SHEET METAL BLANKS

Publication
EP 0333052 A3 19900926 (DE)

Application
EP 89104248 A 19890310

Priority
DE 3808262 A 19880312

Abstract (en)
[origin: EP0333052A2] The motion of the blank holder (15) can be converted by a hydraulic unit of the drawing apparatus into a simultaneous but opposite motion of the drawing punch (17). The hydraulic unit has a central working piston (12), an annular piston (13) surrounding the latter, and a cylinder (10d) surrounding the annular piston. The working piston (12) and the annular piston (17) can be pressurised from hydraulically separated cylinder spaces (51, 52; 48) which communicate with one another via at least two alternative flow paths (lines 20; 20a; 20b). Due to their different hydraulic design, the flow paths entail a pressure variation on a different pressure level in the intercommunicating cylinder spaces (51, 52; 48). A pressure transducer (21) detecting the pressure of the hydraulic fluid in the cylinder spaces (51, 52; 48) connects up the alternative flow paths when limiting pressures are exceeded. It is thereby possible to manufacture even drawn components which are extremely difficult as regards deformation profile and/or material and/or drawing depth without the necessity to sacrifice the cost- and space-saving construction of the drawing apparatus.
<IMAGE>

IPC 1-7
B21D 24/14

IPC 8 full level
B21D 24/00 (2006.01); **B21D 24/04** (2006.01); **B21D 24/08** (2006.01); **B21D 24/10** (2006.01); **B21D 24/14** (2006.01); **B30B 1/34** (2006.01); **B30B 15/18** (2006.01)

CPC (source: EP US)
B21D 24/14 (2013.01 - EP US)

Citation (search report)
• [AD] DE 3603107 A1 19870806 - UNIPLANUNG REITTER BLECHFORMSY [DE]
• [AD] EP 0251024 A2 19880107 - HEHL KARL [DE]
• [A] DE 3333687 A1 19850328 - UNIPLANUNG GMBH & CO KG [DE]
• [A] DE 3424262 A1 19860109 - UNIPLANUNG GMBH & CO KG [DE]
• [A] US 3751962 A 19730814 - CVACHO D, et al
• [A] PATENT ABSTRACTS OF JAPAN vol. 9, no. 242 (M-417)(1965) 28 Oktober 1985, & JP-A-60 96332 (AIDA ENGINEERING KK) 29 Mai 1985,

Cited by
CN111941773A; EP0747685A3; EP0551624A1; CN111322282A

Designated contracting state (EPC)
AT CH DE ES FR GB IT LI NL

DOCDB simple family (publication)
EP 0333052 A2 19890920; EP 0333052 A3 19900926; EP 0333052 B1 19930721; AT E91653 T1 19930815; DE 58904930 D1 19930826; ES 2043917 T3 19940101; JP H01309798 A 19891214; US 4909061 A 19900320

DOCDB simple family (application)
EP 89104248 A 19890310; AT 89104248 T 19890310; DE 58904930 T 19890310; ES 89104248 T 19890310; JP 5804289 A 19890313; US 32177389 A 19890310