Title (en)

Explosion assisted hydromechanical deep drawing

Title (de)

Explosionsunterstütztes hydromechanisches Tiefziehen

Title (fr)

Emboutissage profond hydromécanique assisté par explosion

Publication

EP 0590262 B1 19960417 (DE)

Application

EP 93111956 A 19930727

Priority

DE 4232913 A 19921001

Abstract (en)

[origin: EP0590262A1] The invention relates to a method for the hydromechanical deep drawing of sheet metal (8) into a shape predetermined by a punch (7) by means of a press (1) which contains the punch and a die chamber (9) that can be supplied with pressurised fluid and is open towards the punch, one of the two parts being drivable in a reciprocating manner. The sheet is clamped fluid-tightly and with a sustained force at its outer rim, between a contact surface (5) at the front end of the punch and a correspondingly shaped counter-contact surface (5) at the front end of the die chamber. The die chamber is very largely filled with a fluid under rising pressure, the yielding sheet being drawn by the fluid pressure, the rim of the sheet sliding out of the rim clamping (5) as it is drawn, and being pressed exactly into the shape of the punch. In order to shorten the pressure build-up to the required final pressure and to relieve the press of the very high forces, a metered explosive charge, preferably in the form of a combustible gas (14) mixed with oxygen (15) is introduced into the die chamber and ignited at a defined instant shortly before the lower point of reversal is reached, i.e. before the completion of the drawing operation. The forces caused by the explosion of the explosive charge, which act for a brief time on the punch (7) and on the die chamber (9) in the direction (24) of motion of the die chamber, are isolated from the press structure (2) by means of an appropriate distribution of the mass of these parts. <IMAGE>

IPC 1-7

B21D 26/08; B21D 22/20

IPC 8 full level

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CPC (source: EP)

B21D 22/205 (2013.01)

Cited by

ES2103656A1; US9393606B2; US8047036B2; US8650921B2; US8875553B2; WO2004028719A1; US8250892B2; US8322175B2; US7093470B2; US8939743B2; US8252210B2; US8713982B2

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