

Title (en)
Apparatus for performing a hydroforming operation

Title (de)
Vorrichtung zum Innenhochdruckumformen

Title (fr)
Dispositif pour le formage à haute pression interne

Publication
EP 1138410 A2 20011004 (EN)

Application
EP 01302975 A 20010329

Priority
US 53936400 A 20000331

Abstract (en)
A hydroforming apparatus (10) is capable of deforming relatively large and thick-walled workpieces, yet is relatively small, simple, and inexpensive in construction and operation. The hydroforming apparatus includes an upper platen (20) and a lower platen (30) that are connected together by tie rods (43) extending through respective compression tubes (40, 41). An upper die section (83) is supported on the upper platen (20), while a lower die section (84) is supported on the lower platen (30) for vertical movement relative to the upper die (83) section. The upper and lower die sections (83, 84) have respective recessed areas (83a, 84a) formed therein that define a hydroforming die cavity. When the lower die section (84) is moved to a lowered position, a workpiece (93) can be disposed in the recessed area formed therein. Then, the lower die section (84) and the workpiece (93) are elevated by cylinders (72) such that the workpiece (93) is enclosed within the hydroforming cavity and mechanically deformed by the cooperated upper (83) and lower (84) die sections. A hydroforming support block (90) is then moved between the hydroforming die and the lower platen (30). A cylinder array containing a plurality of pistons (56) is next hydraulically actuated so as to securely clamp the hydroforming die between the cylinder array and the lower platen (30). While the cylinder array is actuated, pressurized fluid is supplied within the workpiece (93), causing it to deform into conformance with the hydroforming die cavity. <IMAGE>

IPC 1-7
B21D 26/02

IPC 8 full level
B21D 26/025 (2011.01); **B21D 26/039** (2011.01)

CPC (source: EP)
B21D 26/025 (2013.01); **B21D 26/039** (2013.01); **B21D 37/12** (2013.01); **B21D 37/14** (2013.01)

Cited by
CN104339185A

Designated contracting state (EPC)
DE GB IT

DOCDB simple family (publication)
EP 1138410 A2 20011004; **EP 1138410 A3 20020508**; **EP 1138410 B1 20041110**; AR 034846 A1 20040324; BR 0101259 A 20011030; DE 60106999 D1 20041216; DE 60106999 T2 20050407; MX PA01003415 A 20101119

DOCDB simple family (application)
EP 01302975 A 20010329; AR P010101571 A 20010330; BR 0101259 A 20010330; DE 60106999 T 20010329; MX PA01003415 A 20010402