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(21) International Application Number: PCT/CA98/00328 (22) International Filing Date: 16 April 1998 (16.04.98) (30) Priority Data: 60/043,950 16 April 1997 (16.04.97) US (71) Applicant: COSMA INTERNATIONAL INC. [CA/CA]; 337 Magna Drive, Aurora, Ontario L4G 7K1 (CA). (72) Inventors: JACKEL, Fred, G.; 77 Coons Road, Richmond Hill, Ontario L4E 2R3 (CA). HORTON, Frank, A.; 1993 Chalmers Drive, Rochester Hills, MI 48309 (US). LEE, Arthur, L.; 38 Albery Crescent, Aurora, Ontario L4G 5R8 (CA). (74) Agent: IMAI, Jeffrey, T.; Magna International Inc., 337 Magna Drive, Aurora, Ontario L4G 7K1 (CA).		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.

(54) Title: HIGH PRESSURE HYDROFORMING PRESS

(57) Abstract

An apparatus for hydroforming a tubular metal blank has a die structure (12), a hydroforming fluid source, a hydraulically driven tube-end engaging structure (36), a hydraulically driven pressure intensifying structure (110), and a single hydraulic power source (22). The tube-end engaging structure (36) seals opposite ends of the tubular metal blank (T) in said die cavity and is movable to longitudinally compress the tubular metal blank (T). The tube-end engaging structure receives hydroforming fluid from said hydroforming fluid source and has a hydroforming fluid supplying outlet through which hydroforming fluid can be provided to the tubular metal blank. The hydraulically driven pressure intensifying structure (110) is movable to pressurize the hydroforming fluid provided to the interior of the tubular metal blank and thereby expand a diameter of the blank. A single hydraulic power source (22) provides the hydraulic fluid under pressure to said hydraulically driven pressure intensifying structure (110) in order to move the pressure intensifying structure (110) and thereby pressurize the hydroforming fluid provided to the interior of the tubular metal blank and expand the diameter of the tubular metal blank so that its exterior surface conforms to that of the internal die surface. The single hydraulic power source (22) also provides the hydraulic fluid under pressure to the hydraulically driven tube-end engaging structure to enable the tube-end engaging structure (36) to longitudinally compress the tubular metal blank and cause metal material of the diametrically expanded tubular blank to flow longitudinally inwardly in order to replenish a wall thickness of the diametrically expanded tubular metal blank and maintain the wall thickness thereof within a predetermined range.

