



(51) International Patent Classification:

F16L 21/00 (2006.01) *B21B 17/10* (2006.01)
F16L 9/02 (2006.01) *B21D 41/00* (2006.01)

(21) International Application Number:

PCT/US2011/062563

(22) International Filing Date:

30 November 2011 (30.11.2011)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/418,967 2 December 2010 (02.12.2010) US
61/530,771 2 September 2011 (02.09.2011) US

(71) Applicant (for all designated States except US):
VICTAULIC COMPANY [US/US]; 4901 Kesslersville
Road, Easton, PA 18040 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **NOVITSKY, Michael, R.** [US/US]; 3271 Mountain Road, Slatington, PA 18080 (US). **HAAS, Earl** [US/US]; 2155 McClain Drive, Franklin, IN 46131 (US). **WILK, Charles, E., Jr.** [US/US]; 6447 Woodbury Drive, Slatington, PA 18080 (US). **MADARA, Scott, D.** [US/US]; 309 Meyer Road, Nazareth, PA 18064 (US). **CUVO, Anthony, J.** [US/US]; 5624 Nina Circle, Coopersburg, PA 18036 (US). **DOLE, Douglas, R.** [US/US]; 9 Minsi Road, Whitehouse Station, NJ 08889 (US).

(74) Agents: **CHIONCHIO, John, A.** et al.; Ballard Spahr LLP, 999 Peachtree Street, Suite 1000, Atlanta, GA 30309 (US).

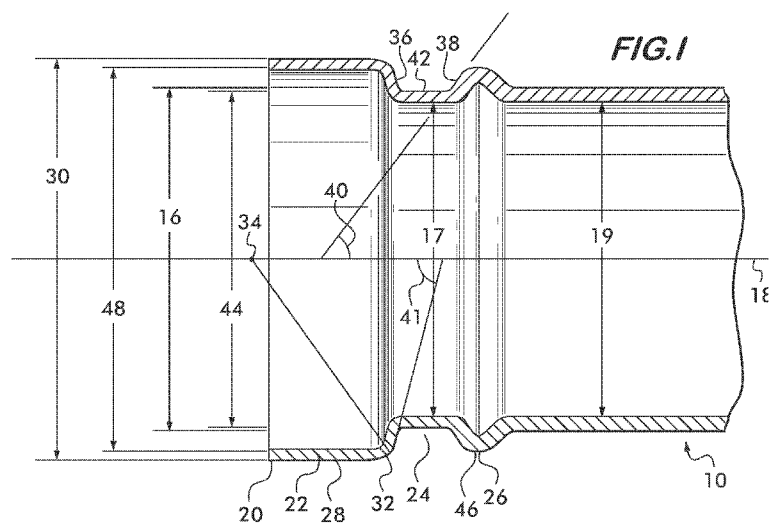
(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) Title: PIPE ELEMENT HAVING SHOULDER, GROOVE AND BEAD AND METHODS AND APPARATUS FOR MANUFACTURE THEREOF



(57) Abstract: A pipe element has a circumferential shoulder at one end. The shoulder has an outer diameter greater than the outer diameter of the pipe element. A groove is positioned adjacent to the shoulder. The groove has a floor surface with an outer diameter less than the outer diameter of the pipe element. A bead is positioned contiguous with the groove. The bead has an apex with an outer diameter greater than the outer diameter of the pipe element. A combination of roller tools is used to cold work pipe elements and impart a desired shape to the sidewall in one method of manufacture. In another method, a spin forming tool is revolved in an orbit of increasing diameter within the pipe element captured within a die.

