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(21) International Application Number: PCT/CA99/00907 (22) International Filing Date: 4 October 1999 (04.10.99) (30) Priority Data: 2,250,599 16 October 1998 (16.10.98) CA (71)(72) Applicant and Inventor: GELLERT, Jobst, Ulrich [CA/CA]; 7A Prince Street, Georgetown, Ontario L7G 2X1 (CA). (74) Agent: MCKENZIE, R., Dale; Dalesman & Company, Suite 400, 1465 Ellis Street, Kelowna, British Columbia V1Y 2A3 (CA).	(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, 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, SL, SZ, TZ, 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, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>	

(54) Title: APPARATUS AND METHOD OF MAKING AN INJECTION MOLDING NOZZLE WITH TIP INSERT

(57) Abstract

A method of making a heated injection molding nozzle (10) with an integral tip insert (44). First, an inner portion (12), an outer collar portion (20), and an electrical heating element (32) are made and integrally brazed together in a vacuum furnace (80) using a first nickel alloy brazing material (76). Then a tip insert (44) is made having a desired configuration and seated in the front end (16) of the inner portion (12) and a second nickel alloy brazing material (82) is applied around it. The second brazing material (82) has a melting temperature which is substantially below that of the first brazing material (76). The tip insert (44) is then integrally brazed in place by heating them to a temperature above the melting temperature of the second brazing material (82) and below the melting temperature of the first brazing material (76). In addition to not affecting the metallurgical bonding between the other components, this allows the tip insert (44) to be easily removed for replacement by again heating the nozzle (10) to this same temperature.

