

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
11 March 2004 (11.03.2004)

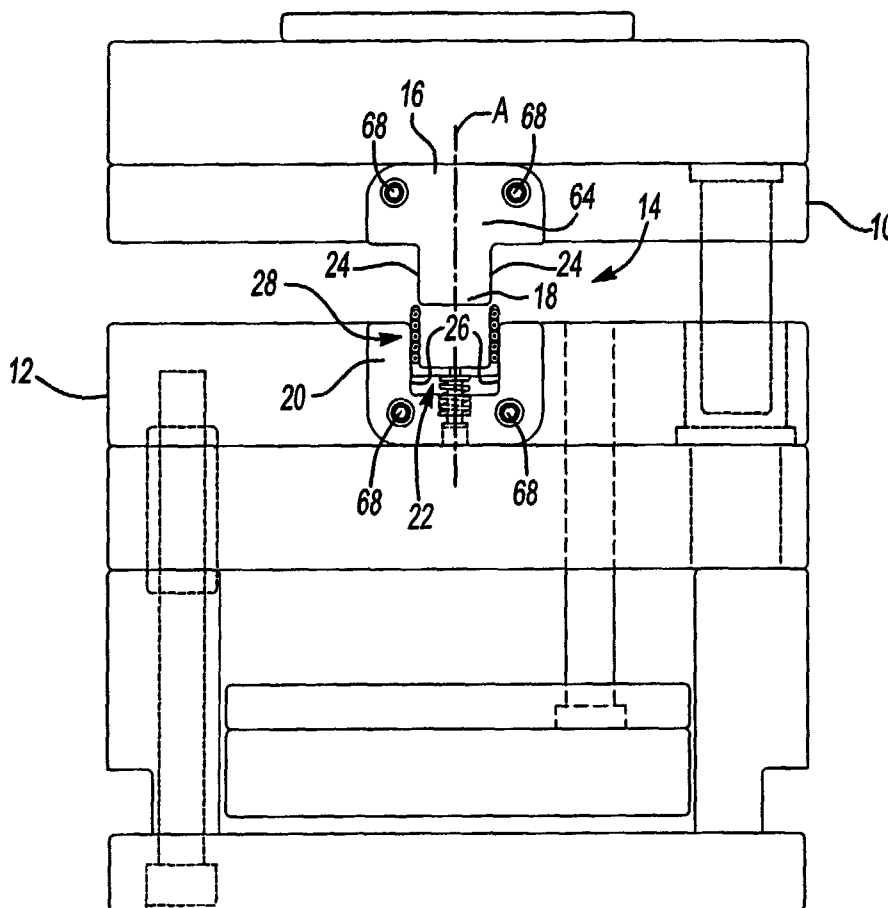
PCT

(10) International Publication Number
WO 2004/020169 A1

- (51) International Patent Classification⁷: **B29C 33/20**, 45/64
- (21) International Application Number: PCT/US2003/027073
- (22) International Filing Date: 29 August 2003 (29.08.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
60/407,324 30 August 2002 (30.08.2002) US
10/649,069 27 August 2003 (27.08.2003) US
- (71) Applicant and
(72) Inventor: **BOKICH, Michael, S.** [US/US]; 11504 Rebel Court, El Paso, TX 79936 (US).
- (74) Agents: **SADOWSKI, Jeffrey, A.** et al.; Howard & Howard Attorneys, P.C., 39400 Woodward Avenue, Suite 101, Bloomfield Hills, MI 48304 (US).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, 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, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: POSITIONING DEVICE WITH BEARING MECHANISM



(57) Abstract: A positioning device for aligning and guiding first and second mold halves together is provided. The positioning device includes a first member defining an alignment axis and having a male portion. The first member is mounted to the first mold half. A second member is separable from the first member and defines a female portion for mating with the male portion along the alignment axis to align the first and second mold halves together. The second member is mounted to the second mold half. The male portion presents a first bearing surface and the female portion presents a second bearing surface. A cage that rotatably supports a plurality of needle bearings reduces friction along the bearing surfaces when mating the members together along the alignment axis. A spring resiliently supports the cage.



Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.