

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
10 April 2008 (10.04.2008)

PCT

(10) International Publication Number
WO 2008/043003 A3

(51) International Patent Classification:
B28B 3/06 (2006.01)

(21) International Application Number:
PCT/US2007/080381

(22) International Filing Date: 4 October 2007 (04.10.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
11/538,953 5 October 2006 (05.10.2006) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, 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, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, 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 receipt of amendments

(88) Date of publication of the international search report:
5 June 2008

(54) Title: HIGH CAVITATION, LOW TONNAGE RUBBER MOLD MACHINE AND METHOD

(57) Abstract: A rubber injection molding apparatus and method for simultaneously molding a plurality of work parts (40) in separate molds (30) using a single, vertically oriented press machine (22). A clamping mechanism (52) is responsive to the vertical, reciprocating motion of the press ram (26) for converting the generally vertical motion of the press ram (26) into a horizontal clamping force to squeeze and hold the molds while rubber is injected into their cavities (38). The molds (30) each have two mold halves (32, 34) joining one another along a parting line interface (36) with the mold cavity (38) in between. The mold halves (32, 34) are received in universal carriers (62), which in turn are suspended between and slideable long spaced-apart first (58) and second (60) rails.



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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 07/80381

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - B28B 3/06, 5/00 (2008.01)

USPC - 264/297.2

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC(8): B28B 3/06, 5/00 (2008.01)

USPC: 264/297.2

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC: 264/328.1; 425/190, 451.7, 588, 595 (text search - see terms below)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

PubWEST(USPT,PGPB,EPAB,JPAB); Google Scholar; Google Patents

Search Terms: injection, mold, press, rail, guide, bar, rubber, simultaneous, concurrent, fill, vertical, press, second, wedge, gate

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4,708,633 A (Hayashi et al.) 24 November 1987 (24.11.1987), Fig 1, col 2, ln 65-68, col 3, ln 68 to col 4, ln 1-2, col 4, ln 22-25, col 6, ln 1-5	1-17
Y	US 6,343,926 B1 (Lin) 05 February 2002 (05.02.2002), Fig 1, col 2, ln 46-49	1-17
Y	US 5,112,556 A (Miller) 12 May 1992 (12.05.1992), Fig 1, col 1, ln 17-20 and 29-32	1-17
Y	US 6,413,074 B1 (Hays) 02 July 2002 (02.07.2002), Fig 2 and 3, col 2, ln 62-27 to col 3, ln 1-3, col 3, ln 17-25	1-17
Y	US 6,481,996 B1 (Graham) 19 November 2002 (19.11.2002), col 2, ln 47-51	6-7
Y	US 4,981,634 A (Maus et al.) 01 January 1991 (01.01.1991), col 4, ln 12-19	16
Y	US 5,503,885 A (Anderson) 02 April 1996 (02.04.1996), col 3, ln 44-46	17
Y	US 5,002,478 A (Lupke) 26 March 1991 (26.03.1991), Fig 2	7

☐ Further documents are listed in the continuation of Box C.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

19 March 2008 (19.03.2008)

Date of mailing of the international search report

16 APR 2008

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US, Commissioner for Patents

P.O. Box 1450, Alexandria, Virginia 22313-1450

Facsimile No. 571-273-3201

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PCT OSP: 571-272-7774