

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
26 August 2004 (26.08.2004)

PCT

(10) International Publication Number
WO 2004/071936 A2

(51) International Patent Classification⁷: **B67D**

(21) International Application Number:
PCT/US2004/003589

(22) International Filing Date: 6 February 2004 (06.02.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/361,459 10 February 2003 (10.02.2003) US

(71) Applicants and

(72) Inventors: **WATTS, Edward, D.** [US/US]; 1332 East 3100 North, North Logan, UT 84341 (US). **HANSEN, Conly, L.** [US/US]; 1310 East 3100 North, North Logan, UT 84341 (US).

(74) Agents: **HOLLAND, Antonia, M.** et al.; Reinhart Boerner Van Deuren s.c., 1000 N. Water Str., Suite 2100, Milwaukee, WI 53202 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, 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, NA, 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, US, UZ, VC, VN, YU, ZA, ZM, ZW.

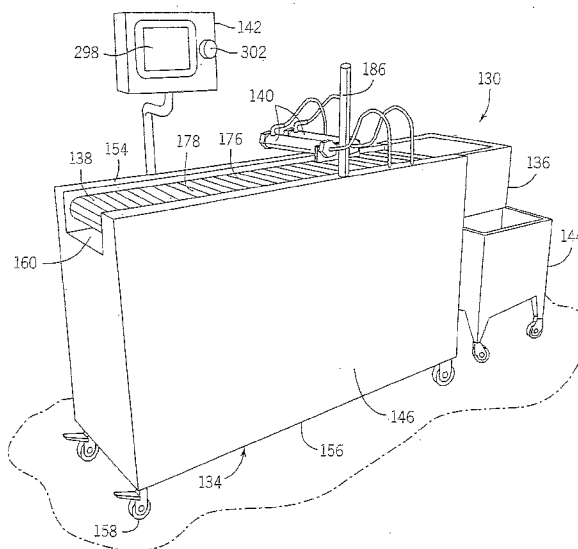
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, 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

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.

(54) Title: MACHINE FOR INJECTING LIQUIDS



(57) Abstract: A machine for injecting liquids is disclosed including use of at least one air pump in fluid communication with at least one injection head having apertures for nozzles. High-pressure injectate flows from the air pump into the head, preferably through a threadlessly mounted filter located within the injection head. To further minimize contamination, fluid that enters the injection head will not contact any threading present in either the head or the nozzles. An air pressure regulator is included to ensure a steady stream of injectate of a desired pressure is delivered to an injection subject via each injection head and also helping to eliminate hesitation in delivery of the fluid by the air pump. Cleaning of the machine is simplified by moving sensitive components into a sealed enclosure, removing them from a wet working environment.

WO 2004/071936 A2