



(51) International Patent Classification:

A61M 5/142 (2006.01) *G01B 21/08* (2006.01)
G01B 3/20 (2006.01) *G01D 5/347* (2006.01)

(21) International Application Number:

PCT/US2011/042288

(22) International Filing Date:

29 June 2011 (29.06.2011)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

12/826,192 29 June 2010 (29.06.2010) US

(71) Applicants (for all designated States except US): **BAXTER INTERNATIONAL INC.** [US/US]; One Baxter Parkway, Deerfield, Illinois 60015 (US). **BAXTER HEALTHCARE S.A.** [CH/CH]; Thurgauerstrasse 130, CH-8152 Glattpark (Opfikon) (CH).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BOJAN, Peter M.** [US/US]; 753 Durham Lane, Grayslake, Illinois 60030 (US). **WANG, Zhengyan** [US/US]; 1121 Beachwood Ct., Antioch, Illinois 60002 (US). **RAI, Surya** [IN/US]; 30047 N. Waukegan Road, Apt. 109, Lake Bluff, Illinois 60044 (US). **OLCZAK, Paul** [US/US]; 2605 Prairie Avenue, Apt. 8, Evanston, Illinois 60201 (US).

(74) Agents: **K&L GATES LLP** et al.; c/o Foreign Patents, P.O. Box 1135, Chicago, Illinois 60690-1135 (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, RO, RS, RU, 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.

[Continued on next page]

(54) Title: INFUSION PUMP WITH TUBE MEASUREMENT TECHNIQUE USING LINEAR ACTUATOR AND PRESSURE SENSOR

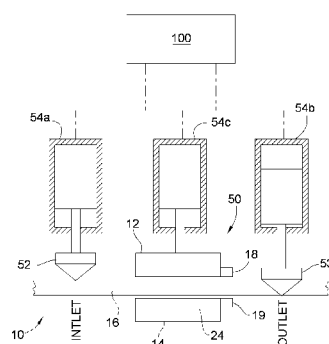


FIG. 2

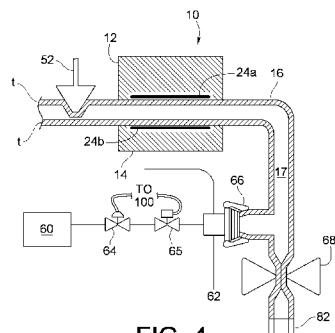


FIG. 4

(57) Abstract: An infusion pump uses sensors, movable members and a control unit to determine tubing thickness in a tube-loading section of the pump. The infusion pump utilizes sensors, such as a pressure sensor, to record forces imparted by a tube undergoing no pressure, a single pressure, or a pressure sweep, to determine thickness. Using these values, the tubing wall thickness can be determined. The infusion pump can also compress a tube using a movable member of the pump and records the distance traveled by the movable member to compress fully the tube. Using this distance, the tubing wall thickness can be determined.



(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, 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:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*