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| <p>(51) International Patent Classification:
 <i>G01N 35/10</i> (2006.01) <i>F03G 7/06</i> (2006.01)</p> <p>(21) International Application Number:
 PCT/US2021/058914</p> <p>(22) International Filing Date:
 11 November 2021 (11.11.2021)</p> <p>(25) Filing Language: English</p> <p>(26) Publication Language: English</p> <p>(30) Priority Data:
 63/116,765 20 November 2020 (20.11.2020) US</p> <p>(71) Applicant: ILLUMINA, INC. [US/US]; 5200 Illumina Way, San Diego, CA 92122 (US).</p> <p>(72) Inventors: SCHOCH, Reto; c/o Illumina, Inc., 5200 Illumina Way, San Diego, CA 92122 (US). ZHOU, Xuance; 5200 Illumina Way, San Diego, CA 92122 (US). KHURANA, Tarun; c/o Illumina, Inc., 5200 Illumina Way, San Diego, CA 92122 (US). JAIN, Chetanva; c/o Illumina, Inc., 5200 Illumina Way, San Diego, CA 92122 (US). SUE-MATSU, Gregory; c/o Illumina, Inc., 5200 Illumina Way, San Diego, CA 92122 (US).</p> | <p>(74) Agent: JORGE, Matthew, M.; Marshall, Gerstein & Borun LLP, 233 S. Wacker Drive, 6300 Willis Tower, Chicago, IL 60606-6357 (US).</p> <p>(81) Designated States (<i>unless otherwise indicated, for every kind of national protection available</i>): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.</p> <p>(84) Designated States (<i>unless otherwise indicated, for every kind of regional protection available</i>): ARIPO (BW, GH,</p> |
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(54) Title: ACTUATION SYSTEMS AND METHODS

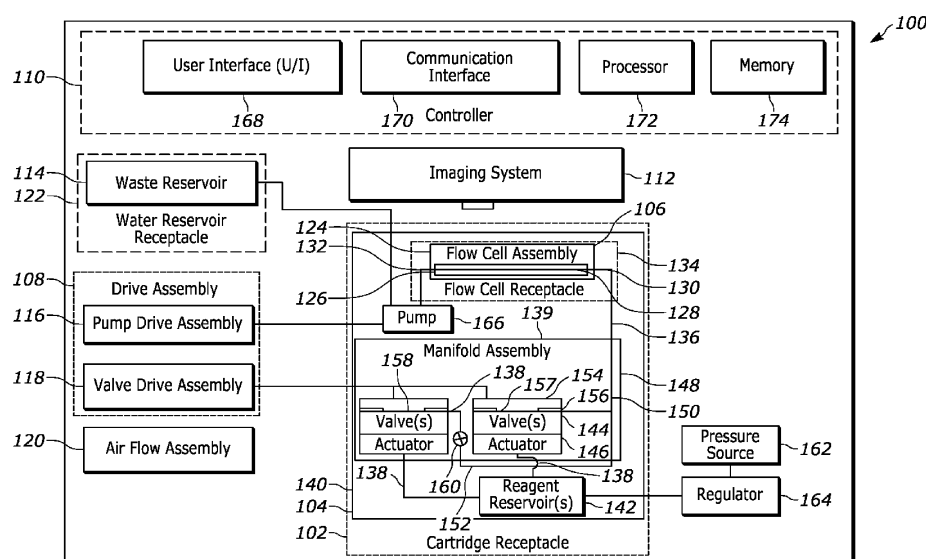


FIG. 1

(57) **Abstract:** Actuation systems and methods are disclosed. An apparatus includes a system including a flow cell receptacle and a valve drive assembly including a shape memory alloy actuator including a pair of shape memory alloy wires and a flow cell disposable within the flow cell receptacle and having a membrane valve. The system actuates the membrane valve, via the shape memory alloy actuator, by causing a voltage to be applied to a first one of the shape memory alloy wires and the system not applying the voltage to a second one of the shape memory alloy wires.

GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, 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, KM, ML, MR, NE, SN, TD, TG).

Published:

— with international search report (Art. 21(3))