



- (51) **International Patent Classification:**
B01D 59/44 (2006.01)
- (21) **International Application Number:**
PCT/US2010/049725
- (22) **International Filing Date:**
21 September 2010 (21.09.2010)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
12/565,598 23 September 2009 (23.09.2009) US
- (71) **Applicant (for all designated States except US):** **THERMO FINNIGAN LLC** [US/US]; 355 River Oaks Parkway, San Jose, CA 95134 (US).
- (72) **Inventors; and**
- (75) **Inventors/Applicants (for US only):** **WOUTERS, Eloy, R.** [US/US]; 109 South Morrison Avenue, San Jose, CA 95126 (US). **MULLEN, Christopher** [US/US]; 766 Live Oak Ave. #5, Menlo Park, CA 94025 (US). **SPLENDRE, Maurizio** [US/US]; 413 Kinross Drive, Walnut Creek, CA 94598 (US). **ATHERTON, R., Paul** [GB/US]; 5826 Cadiz Drive, San Jose, CA 95123 (US).
- (74) **Agent:** **STAGGS, Michael, C.**; Thermo Fisher Scientific Inc., 355 River Oaks Parkway, San Jose, CA 95134 (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.
- (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,

[Continued on next page]

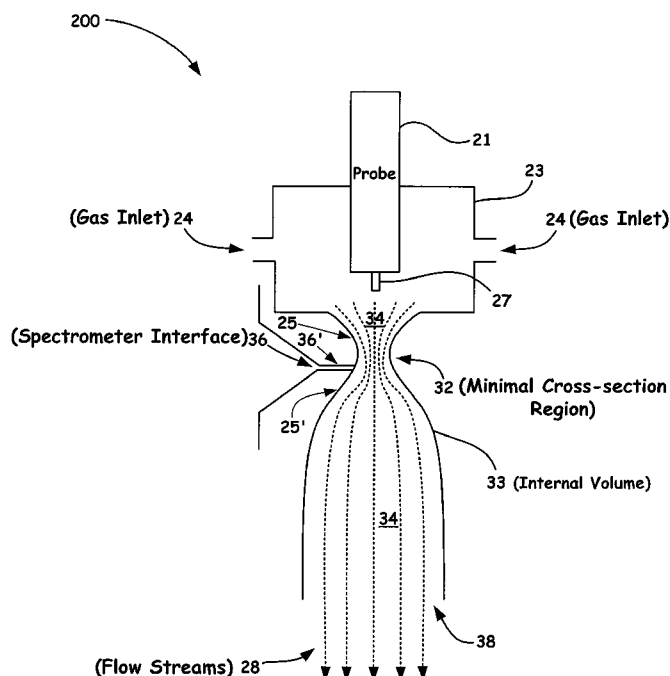
(54) **Title:** SYSTEM FOR PREVENTING BACKFLOW IN AN ION SOURCE

FIG. 2

(57) **Abstract:** A system for preventing backflow as part of an ion source arrangement is introduced. Such a system incorporates a novel continuous flow guide within a source, such as an API ion source. In the spray direction, the cross-sectional area that defines the first portion of the internal volume initially decreases in a convergent-like manner and thereafter increases in a divergent-like manner towards the exit opening of the source housing. Such a flow guide has been designed as an integral part of an ion source housing to provide for an optimal unidirectional flow past a sampling orifice of a mass spectrometer inlet. Accordingly, the novel design of the present invention prevents recirculation and thus minimizes carryover, chemical noise, and source turbulence and as an added benefit, enables a user to easily clean such a system during maintenance.



LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, **Published:**

SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, — *with international search report (Art. 21(3))*
GW, ML, MR, NE, SN, TD, TG).