

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
22 June 2023 (22.06.2023)



(10) International Publication Number
WO 2023/114072 A1

(51) International Patent Classification:

B01D 35/30 (2006.01) *B01D 69/12* (2006.01)
B01D 63/06 (2006.01)

(21) International Application Number:

PCT/US2022/052165

(22) International Filing Date:

07 December 2022 (07.12.2022)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/289,479 14 December 2021 (14.12.2021) US

(71) Applicant: **ENTEGRIS, INC.** [US/US]; 129 Concord Road, Billerica, Massachusetts 01821 (US).

(72) Inventors: **SAMPATH, Siddarth**; 87 Riley Rd., Tyngsboro, Massachusetts 01879 (US). **BARCK, Christopher**

Paul; 34 Hildreth St., Westford, Massachusetts 01886 (US). **BHABHE, Ashutosh Shrikant**; Hasenbuechweg 7, 6300 Zug (CH). **LINCICOME, Hayden**; 71 South Street, Unit 1, Waltham, Massachusetts 02453 (US).

(74) Agent: **LEVESQUE, Andrea**; ENTEGRIS, INC., 129 Concord Road, Billerica, Massachusetts 01821 (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, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, 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,

(54) Title: LIQUID FILTER UNIT WITH Laterally Arranged Filters, and Method of Operating Thereof

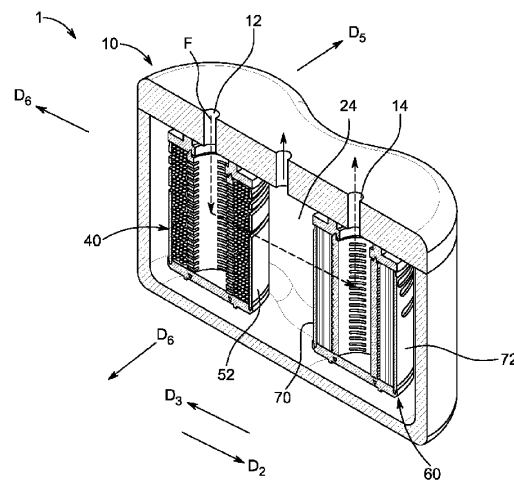


Figure 3

(57) Abstract: A filter unit includes a housing, a first filter and a second filter disposed in the housing, and a liquid flow path that extends through the first and second filters in series. The first filter includes a first axial end affixed to the housing and a first filter media. The second filter includes a first axial end affixed to the housing at the outlet and a second filter media. The liquid directed radially outward through the first filter media and radially inward through the second filter media. A method of filtering a liquid within a filter unit includes passing the liquid radially outward through a first filter media of a first filter, directing the liquid from the first filter to a second filter, and passing the liquid radially inward through a second filter element of the second filter.

[Continued on next page]

TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS,
ZA, ZM, ZW.

(84) Designated States (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, 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, ME, 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))*
- *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))*