



(51) International Patent Classification:

C10G 9/36 (2006.01) B01D 3/42 (2006.01)
C10G 75/00 (2006.01) B01D 3/14 (2006.01)
C10G 7/00 (2006.01)

(21) International Application Number:

PCT/US2020/016703

(22) International Filing Date:

05 February 2020 (05.02.2020)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/802,371 07 February 2019 (07.02.2019) US
19179676.2 12 June 2019 (12.06.2019) EP

(71) Applicant: **EXXONMOBIL CHEMICAL PATENTS INC.** [US/US]; 5200 Bayway Drive, Baytown, TX 77520 (US).

(72) Inventors: **LAWRENCE, Selma, S.**; 601 E. 9th Street, Houston, TX 77007 (US). **MORAN, Michael**; 16902 Forked Lake Drive, Houston, TX 77044 (US). **COLE-**

MAN, John, S.; 13811 Brighton Park Drive, Houston, TX 77044 (US). **BARTEL, Robert, S.**; 16719 Bark Cabin Drive, Humble, TX 77346 (US). **SINGH, Vikram**; 924B West 20th Street, Houston, TX 77008 (US). **MALHOTRA, Monica**; 89 Bukit Drive, The Raintree, #06-19, Singapore 587846 (SG).

(74) Agent: **HUGHES, Gerard, J.**; ExxonMobil Chemical Company, Law Technology, P.O. Box 2149, Baytown, TX 77522-2149 (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, 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, 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.

(54) Title: PRIMARY FRACTIONATOR WITH REDUCED FOULING

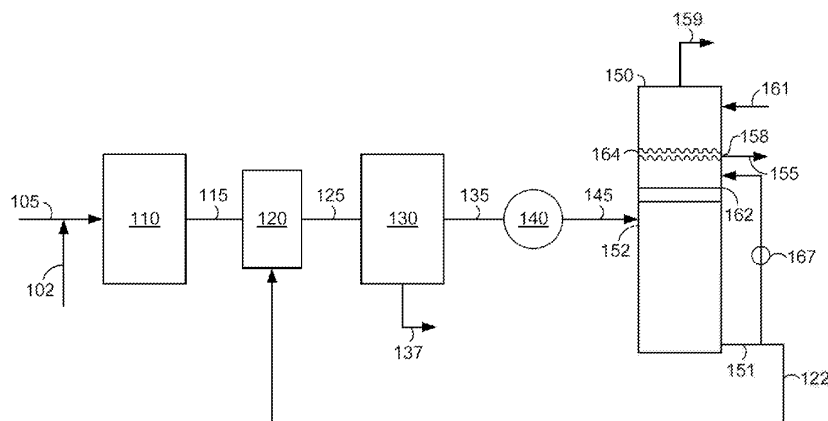


FIG. 1.

(57) Abstract: Systems and methods are provided for reducing or minimizing fouling within the primary fractionator of a pyrolysis reaction system. The reduced or minimized fouling can be achieved in part by providing one or more pump-around trays in the primary fractionator below the level of the fractionation trays for an intermediate product produced by the fractionator. Including a pump-around section below the fractionation trays can improve vapor distribution within the fractionation trays, which are believed to have an increased likelihood of accumulation of foulant deposits. Optionally, other vapor distribution devices can be included along with the pump-around section.

[Continued on next page]

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

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*