



(51) International Patent Classification:

C07C 5/48 (2006.01) *B01J 8/26* (2006.01)
C07C 11/04 (2006.01) *B01J 23/90* (2006.01)

(21) International Application Number:

PCT/US2023/073960

(22) International Filing Date:

12 September 2023 (12.09.2023)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/406,444 14 September 2022 (14.09.2022) US

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(54) Title: METHODS FOR DEHYDROGENATING HYDROCARBONS UTILIZING COUNTERCURRENT FLOW REGENERATORS

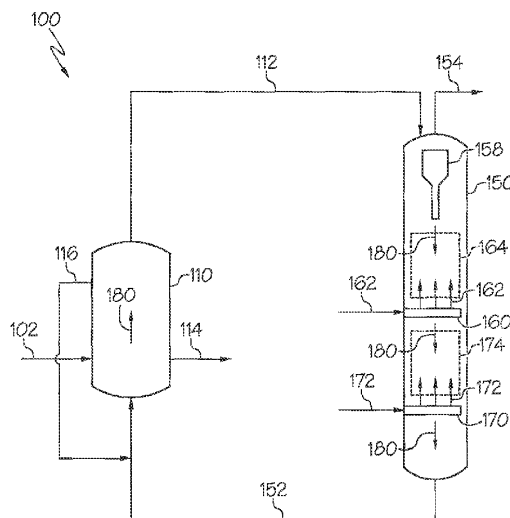


FIG. 1

(57) Abstract: According to one or more embodiments described herein, hydrocarbons may be dehydrogenated by a method including contacting a feed stream including one or more hydrocarbons with a particulate solid, which may include an oxygen-carrier material, to form hydrogen and one or more products. At least a portion of the hydrogen may be reacted with oxygen from the oxygen-carrier material. The particulate solid from the dehydrogenation reactor may be passed to a regeneration unit, which may include a first gas inlet and a second gas inlet that may be beneath the first gas inlet. An oxygen-containing gas may enter into the regeneration unit through the first gas inlet and a fuel may enter through the second gas inlet. In an area of the regeneration unit above the second gas inlet and beneath the first gas inlet, at least a portion of the fuel may be reacted with oxygen from the oxygen-carrier material.

[Continued on next page]

(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, MU, 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.

(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, SC, 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).

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))*
- *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))*