



(51) International Patent Classification:
C01B 3/50 (2006.01) C01B 17/04 (2006.01)
C01B 3/04 (2006.01)

(21) International Application Number:
PCT/EP2022/025031

(22) International Filing Date:
02 February 2022 (02.02.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
21020072.1 15 February 2021 (15.02.2021) EP

(71) Applicant: LINDE GMBH [DE/DE]; Dr.-Carl-von-Linde-Str. 6-14, 82049 Pullach (DE).

(72) Inventors: SELIGER, Andreas; c/o Linde GmbH, IP EMEA, Dr.-Carl-von-Linde-Str. 6-14, 82049 Pullach (DE).
JELL, Anton; c/o Linde GmbH, IP EMEA, Dr.-Carl-von-Linde-Str. 6-14, 82049 Pullach (DE).
GRAVILLE, Stephen Rhys; c/o Linde GmbH, IP EMEA, Dr.-Carl-von-Linde-Str. 6-14, 82049 Pullach (DE).

(74) Agent: FISCHER, Werner; Linde GmbH, Intellectual Property EMEA, Dr.-Carl-von-Linde-Str. 6-14, 82049 Pullach (DE).

(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, 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.

(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).

(54) Title: HYDROGEN PRODUCTION FROM REFINERY ACID GAS AND SOUR WATER STRIPPER

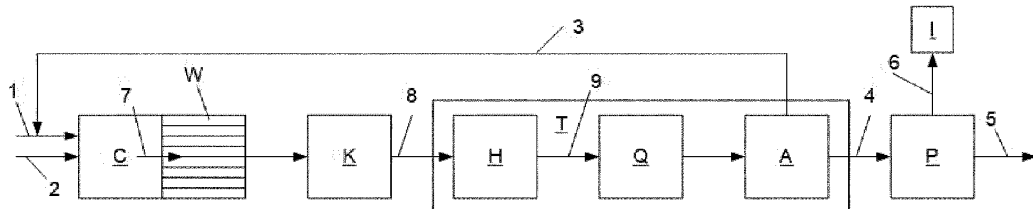


Fig. 1

(57) Abstract: This invention relates to the production of hydrogen (5) from a hydrogen sulphide an ammonia containing first feed stream (1), comprising: (a) oxidizing part of the hydrogen sulphide content of said first feed stream (1) in a flame region in a Claus furnace (C) to form sulphur dioxide, and reacting hydrogen sulphide and sulphur dioxide in the furnace (C) and in downstream catalytic reactors (K) to form sulphur; (b) introducing into the Claus furnace (C) as second feed stream (2) pure oxygen or oxygen enriched air to achieve a temperature to within a range of 1300-1500°C, and providing conditions for a high level of hydrogen sulphide dissociation into hydrogen and sulphur; (c) controlling the Claus furnace temperature, so not to cause refractory damage; (d) quenching the Claus reaction furnace exhaust gas (7) upstream the catalytic reactors (K) in less than 6 milliseconds to a temperature below 150°C; (e) extracting sulphur from the gas downstream the quench and downstream the catalytic reactors (K); (f) hydrotreating the sulphur depleted gas (8) in a hydrosulphurisation unit (H) to form a hydrotreated gas (9), and (g) separating off hydrogen (5) from the hydrotreated gas (9).

[Continued on next page]

Published:

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