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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
3 May 2001 (03.05.2001)

PCT

(10) International Publication Number
WO 01/30692 A2

(51) International Patent Classification[7]: C01B 17/04

(21) International Application Number: PCT/US00/29022

(22) International Filing Date: 20 October 2000 (20.10.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/160,974 22 October 1999 (22.10.1999) US

(71) Applicant: MONSANTO COMPANY [US/US]; 800 N. Lindbergh Boulevard, St. Louis, MO 63167 (US).

(72) Inventors: BURMASTER, Brian, M.; 800 North Lindbergh Boulevard, St. Louis, MO 63167 (US). GOAR, B., Gene; 800 North Lindbergh Boulevard, St. Louis, MO 63167 (US).

(74) Agents: ROEDEL, John, K., Jr. et al.; Senniger, Powers, Leavitt & Roedel, 16th Floor, One Metropolitan Square, St. Louis, MO 63102 (US).

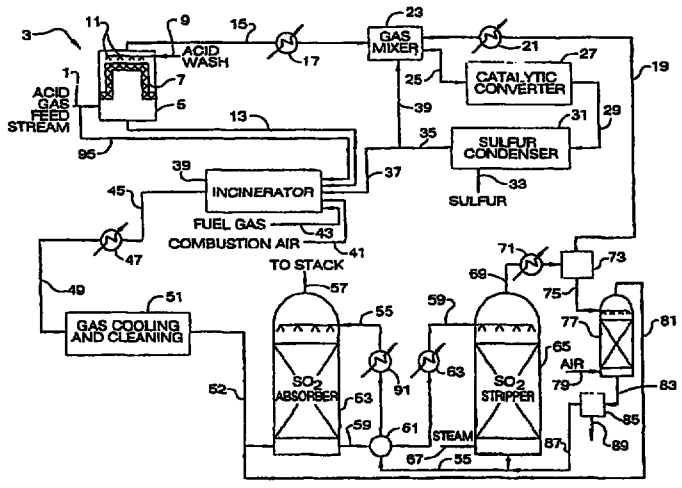
(81) Designated States *(national)*: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.

(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:
— *Without international search report and to be republished upon receipt of that report.*

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(54) Title: PROCESS FOR THE PRODUCTION OF SULFUR




(57) Abstract: A process is provided for producing elemental sulfur from hydrogen sulfide contained in an acid gas feed stream wherein hydrogen sulfide and sulfur dioxide are reacted in a catalytic only sulfur recovery unit comprising a single catalytic converter containing a Claus catalytic reaction zone. A sulfur dioxide-enriched gas recovered from tail gas treatment is recycled and introduced into the catalytic reaction zone as part of a feed gas mixture that also includes the acid gas feed stream. Temperatures within the catalytic reaction zone are effectively moderated by recycle of tail gas effluent to the converter so that high concentrations of hydrogen sulfide in the acid gas feed stream can be tolerated and improved process flexibility and capacity are realized. A pretreatment process including contacting the acid gas with an aqueous acid wash to reduce the concentration of unsaturated hydrocarbons in the acid gas and inhibit deactivation of the oxidation catalyst is also disclosed.

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