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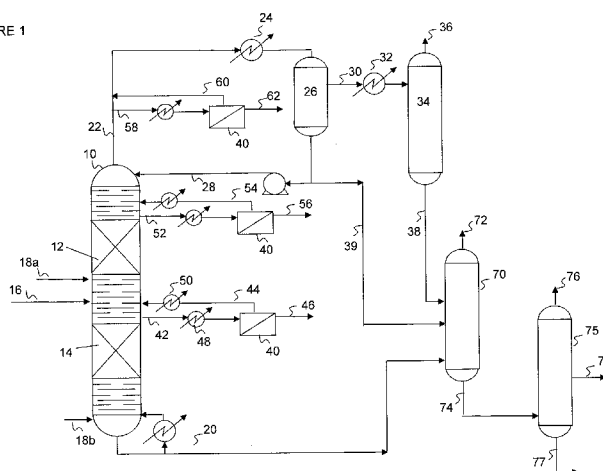
Declarations under Rule 4.17:

- 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))

[Continued on next page]

(54) Title: GASOLINE HYDRODESULFURIZATION AND MEMBRANE UNIT TO REDUCE MERCAPTAN TYPE SULFUR

FIGURE 1



(57) Abstract: A process for the hydrodesulfurization of gasoline is disclosed, the process including: feeding (1) a cracked naphtha containing mercaptans and other organic sulfur compounds and (2) hydrogen to a first hydrodesulfurization reactor containing one or more beds of a hydrodesulfurization catalyst; contacting sulfur compounds comprising the other organic sulfur compounds in the cracked naphtha with hydrogen in the presence of a hydrodesulfurization catalyst to convert a portion of the other organic sulfur compounds to hydrogen sulfide; withdrawing from the hydrodesulfurization reactor an effluent comprising hydrocarbons and hydrogen sulfide. The effluent from the hydrodesulfurization reactor is fed to a membrane separation system containing a membrane for partitioning the hydrocarbons from the hydrogen sulfide. For example, the membrane may be selective to hydrogen sulfide, to separate a permeate fraction comprising hydrogen sulfide from a residue fraction comprising the hydrocarbons.

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A. CLASSIFICATION OF SUBJECT MATTER*C10G 67/02(2006.01)i, C10G 35/04(2006.01)i, B01D 61/00(2006.01)i, C10G 45/00(2006.01)i*

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C10G 67/02; C10G 31/00; C10G 25/00; C10G 45/00; C10G 17/00; B01D 61/36; C10G 67/16

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: process, hydrodesulfurization, gasoline, cracked naphtha, sulfur compounds, H₂, hydrodesulfurization reactor, catalyst, Group VIII metal, H₂S, effluent, membrane, separation system**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 05837130A A (CROSSLAND; CLIFFORD S.) 17 November 1998 See abstract, columns 1~8, and claims 1~22	1-27
Y	US 2005-0067323 A1 (JEFFREY, WILLIAM BALKO) 31 March 2005 See abstract, columns 1~7, and claims 1~26	1-27
Y A	WO 2009-082493 A1 (SAUDI ARABIAN OIL COMPANY et al.) 02 July 2009 See abstract, pages 1~14, and claims 1~14	13-15, 22-24 1-12, 16-21, 25-27
A	JP 2004-517174 A (MINHAS et al.) 10 June 2004 See abstract, pages 1~10, and claims 1~15	1-27

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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