



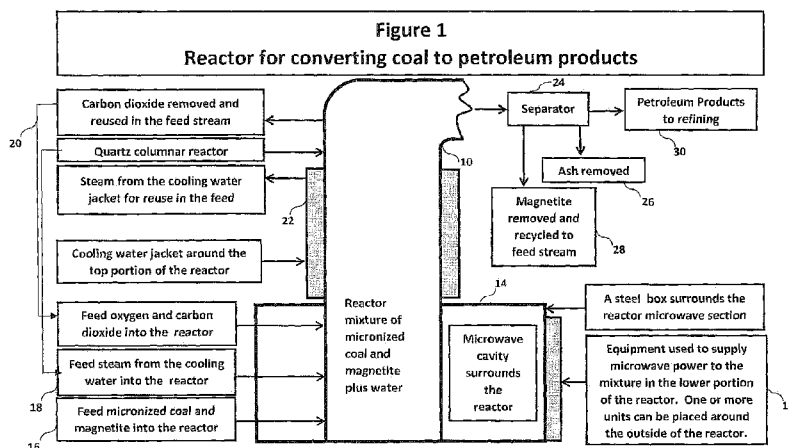
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- (74) Agents: **KRASS, Allen M.** et al.; Gifford, Krass, Sprinkle, Anderson & Citkowski, P.C., 2701 Troy Center Dr., Suite 330, Post Office Box 7021, Troy, MI 48007-7021 (US).
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CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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(54) Title: METHOD AND APPARATUS FOR PRODUCING LIQUID HYDROCARBON FUELS FROM COAL



(57) Abstract: A method of converting coal into a liquid hydrocarbon fuel utilizes a high pressure, high temperature reactor which operates upon a blend of micronized coal, a catalyst, and steam. Microwave power is directed into the reactor. The catalyst, preferably magnetite, will act as a heating media for the microwave power and the temperature of the reactor will rise to a level to efficiently convert the coal and steam into hydrogen and carbon monoxide.

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A. CLASSIFICATION OF SUBJECT MATTER*C10G 1/06(2006.01)i, C10G 2/00(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, C10L, C01B, C10J

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: coal, (magnetite, Fe₃O₄), microwave, (gasify, gasification, liquefy, liquefaction)**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 04108759 A (YOUNG) 22 August 1978 See figures 1-4; column 3, line 45 to column 8, line 35; claims	1-13
A	US 04886521 A (KHAN) 12 December 1989 See claims	1-13
A	US 04365975 A (WILLIAMS et al.) 28 December 1982 See claims	1-13
A	US 05198084 A (CHA et al.) 30 March 1993 See abstract; claims	1-13
A	US 04435374 A (HELM, JR.) 06 March 1984 See abstract; claims	1-13
A	US 04411766 A (GARG et al.) 25 October 1983 See abstract; claims	1-13

 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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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 04108759 A	22.08.1978	None	
US 04886521 A	12.12.1989	None	
US 04365975 A	28.12.1982	None	
US 05198084 A	30.03.1993	US 05164054 A US 05171406 A	17.11.1992 15.12.1992
US 04435374 A	06.03.1984	None	
US 04411766 A	25.10.1983	JP 58-157892 A	20.09.1983