

II. A. IN VITRO CONVERSION: OBTAINING LIQUID HYDROCARBONS  
I. PROCESSES

PATENTING UPDATE (1/79-8/79)

<u>Patent No.</u>	<u>Assignee &amp; Title</u>
4,132,627	<u>Arnold M. Leas, 309 E. Van Buren, Columbia City, ID 46725: Integrated Coal Conversion Process</u>
4,132,628	<u>Continental Oil Company: Method For Recovering Hydrocarbons From Molten Metal Halides</u>
4,133,381	<u>Occidental Oil Shale, Inc.: Contacting Treated Oil Shale With Carbon Dioxide To Inhibit Leaching</u>
4,133,646	<u>Electric Power Research Institute, Inc.: Phenolic Recycle Solvent In Two-Stage Coal Liquefaction Process</u>
4,133,718	<u>Dravo Corporation: Method For Agglomerating Finely Divided Agglomerative Materials In A Rotary Drum Assembly</u>
4,133,719	<u>Didier Engineering GmbH, Germany: Process and Apparatus For Charging Inclined Chamber Coke Oven</u>
4,133,739	<u>Chevron Research Company: Retorting Process</u>
4,133,740	<u>Gulf Research &amp; Development Company: Process For Increasing The Fuel Field Of Coal Liquefaction Products By Extraction Of Asphaltenes, Resins And Aromatic Compounds From Said Coal Liquefaction Products</u>
4,133,741	<u>The Superior Oil Company: Method For Recovery Of Hydrocarbon Fractions From Hydrocarbon-bearing Materials</u>
4,133,742	<u>William H. Hill, 38 Suzanne Ave., St. Paul, MN 55110: Separation Of Hydrocarbons From Oil Shales And Tar Sands</u>
4,133,867	<u>Occidental Petroleum Corporation: Counter-Current Process With A Hydrodesulfurization of Solid Carbonaceous Materials</u>
4,134,737	<u>Aluminum Company of America: Process For Producing High-Purity Coal</u>
4,134,794	<u>Firma Carl Still &amp; Rheinische Braunkohlenwerke Aktiengesellschaft, Germany: Method For Producing Non-Abrasive Coke Forms From Brown-coal Briquets</u>
4,134,821	<u>Continental Oil Company: Maintenance Of Solvent Balance In Coal Liquefaction Process</u>

- 4,134,822 University of Utah: Process For Minimizing Vaporizable Catalyst Requirements For Coal Hydrogenation-Liquefaction
- 4,134,826 Continental Oil Company: Method For Producing Hydrocarbon Fuels From Heavy Polynuclear Hydrocarbons By Use Of Molten Metal Halide Catalyst
- 4,135,579 Raytheon Company: In Situ Processing Of Organic Ore Bodies
- 4,135,885 Wormser Engineering, Inc.: Burning And Desulfurizing Coal
- 4,135,889 University of Utah: Single Stage Coal Gasification Reactor
- 4,135,948 Krupp-Koppers GmbH, Germany: Method And Apparatus For Scraping The Bottom Wall Of A Coke Oven Chamber
- 4,135,968 Weyerhaeuser Company: Spent Liquor Treatment
- 4,135,982 Occidental Petroleum Corporation: Method For Preventing Plugging In The Pyrolysis Of Agglomerative Coals
- 4,135,983 Kureha Kagaku Kogyo Kabushiki Kaisha and Sumikin Coke Co., Ltd.: Method For Improving Coking Property Of Coal For Use In Production of Cokes
- 4,135,987 Krupp-Koppers GmbH, Germany: Apparatus For Cleaning The Bottom Surface Of A Coke Oven Door Plug
- 4,136,013 The Dow Chemical Company: Emulsion Catalyst For Hydrogenation Processes
- 4,136,056 Continental Oil Company: Regeneration Of Zinc Chloride Hydrocracking Catalyst
- 4,137,050 Standard Oil Company: Coal Desulfurization
- 4,138,221 Continental Oil Company: Manufacture Of Pellets From Coal Conversion Products
- 4,138,222 Continental Oil Company: Pelletization Of Coal Conversion Products
- 4,138,223 Continental Oil Company: Manufacture Of Pellets From Coal Liquefaction Products
- 4,138,224 Continental Oil Company: Production Of Fixed Bed Gasifier Feedstock And Fuels From Coal
- 4,138,467 The Canadian Govt.: Method For Concentrating Heavy Minerals In The Solids Tailings From Hot Water Extraction Of Tar Sands

- 4,139,416 Centro Sperimentale Metallurgio SpA: Carbonaceous Material With High Characteristics Of Surface Area And Activity And Process For Producing The Same
- 4,139,419 Hutni Projekt Praha, Projekeni a Inzenyrska Organizace: Arrangement For Dosing A Coal Charge To A Coking Battery
- 4,139,451 Nalco Chemical Company: Method For Dewatering Coke Tar-Water Mixtures
- 4,140,181 Occidental Oil Shale, Inc.: Two-stage Removal Of Sulfur Dioxide From Process Gas Using Treated Oil Shale
- 4,140,583 Pioneer Corporation: Processing Of Lignite For Petrochemicals
- 4,140,623 Continental Oil Company: Inhibition Of Coke Puffing
- 4,141,793 Nissho-Iwai Co., Ltd.: Process For Preparation Of Coke And Carbonizer Therefor
- 4,141,794 Occidental Petroleum Corporation: Grid-Wall Pyrolysis Reactor
- 4,141,795 Nippon Kokan Kabushiki Kaisha: Dry Type Method For Quenching Coke
- 4,141,796 Bethlehem Steel Corporation: Coke Oven Emission Control Method And Apparatus
- 4,141,797 Dr. C. Otto & Company GmbH, Germany: Method Of Operating A Battery Of Coke Ovens
- 4,141,818 Jung B. An, No. 3-1 JungAng Dong, Busan, Korea: Method Of Collecting Oil From Crude Oil Residue
- 4,142,941 Firma Carl Still Recklinghausen, Germany: Method For Producing Blast Furnace Coke
- 4,142,942 Albert Calderon, 1065 Melrose Dr., Bowling Green, OH 43402: Method And Apparatus For Quenching Coke
- 4,144,033 Kobe Steel, Ltd.: Process For Manufacturing Metallurgical Carbonaceous Materials From Coals
- 4,145,189 Energy Conversion Systems Limited: Process For Preparing A Clear-burning, Low Sulphur Liquid Fuel From Coal
- 4,145,256 Georgia Tech Research Institute: Method And Apparatus For Producing A Carbonaceous Residue Product
- 4,145,274 Occidental Petroleum Corporation: Pyrolysis With Staged Recovery

- 4,146,359 Occidental Petroleum Corporation: Method For Reacting Nongaseous Material With A Gaseous Reactant
- 4,146,367 California Institute Of Technology: Coal Desulfurization
- 4,146,370 Shell Internationale Research Maatshappij B.V.: Process And Apparatus For The Partial Combustion Of Coal Powder
- 4,146,434 Standard Oil Company: Process For The Desulfurization Of Petroleum Coke
- 4,146,435 Mitsubishi Chemical Industries, Ltd., Ayogo & Kansai Netsukagaku Kabushiki Kaisha: Dust Collecting System For Coke Oven
- 4,146,459 Continental Oil Company: Treatment Of Coal Liquefaction Effluent
- 4,146,460 Delbert D. Thomas, 1522 Cameo Dr., Redlands, CA 92373: Oil Shale Retort Apparatus And Process
- 4,147,593 Occidental Petroleum Corporation: Flash Pyrolysis Of Organic Solid Waste Employing Ash Recycle
- 4,147,594 Koppers Company, Inc.: One-spot Cylindrical Coke Quenching Car And Quenching Method
- 4,147,615 Arnold M. Leas, 309 E. Van Buren, Columbia City, ID 46725: Hot Sand-Coal-Cracking To Hydrodistillate Fuels
- 4,148,614 Chalmer G. Kirkbride, 13 Elk Forest, R.D. No. 2, Elkton, MD 21921: Process For Removing Sulfur From Coal
- 4,148,692 Bethlehem Steel Corporation: Process For Producing Low Reactivity Calcined Coke Agglomerates
- 4,148,709 The Lummus Company: Hydroliquefaction Of Sub-Bituminous And Lignite Coals To Heavy Pitch
- 4,148,710 Occidental Oil Shale, Inc.: Fluidized Bed Process For Retorting Oil Shale
- 4,148,716 Gulf Research & Development Company: Process For Separating Tar And Solids From Coal Liquefaction Products Using A Halogenated Aliphatic Solvent
- 4,148,752 Bayer Aktiengesellschaft, Leverkusen: Production Of Activated Carbon In A Reactor Having A Lower Static Layer And An Upper Fluidized Layer
- 4,149,597 Texaco Exploration Canada Ltd.: Method For Generating Steam

- 4,149,939 Salem Corporation: Method And Apparatus For Feeding An Oxidant Within A Furnace Enclosure
- 4,149,959 Exxon Research & Engineering Co.: Coal Liquefaction Process
- 4,150,093 The Canadian Govt.: Method For Concentrating Heavy Minerals In The Solids Tailings From Hot Water Extraction Of Tar Sands
- 4,150,548 Kemp Reduction Corporation: Pollutant Removal From Pyrolytic Gases By Centrifuge And Molecular Sieves
- 4,150,958 Richard Jablin, P.O. Box 514, Winchester, VA 22601: Treatment Of Waste Liquor
- 4,151,044 Occidental Research Corporation: Process For The Pyrolysis Of Carbonaceous Materials In A Double Helix Cyclone
- 4,151,047 S.A. des Anciens Etablissements Paul Wurth, Luxembourg: Feed Installation For Apparatus For Extracting Hydrocarbons From Bituminous Schists
- 4,151,066 Mobil Oil Corporation: Coal Liquefaction Process
- 4,151,073 Hydrocarbon Research, Inc.: Process For Phase Separation
- 4,152,120 General Electric Company: Coal Desulfurization Using Alkali Metal or Alkaline Earth Compounds And Electromagnetic Irradiation
- 4,152,243 S.A. des Anciens Etablissements Paul Wurth, Luxembourg: Treatment Of Bituminous Schists
- 4,152,244 Ludwig Raichle, 12 Weinbietstrasse, 6703 Limburgerhof, & Walter Kroenig, 7 Mathildenstrasse, 6200 Wiesbaden, both of Germany: Manufacture of Hydrocarbon Oils By Hydrocracking Of Coal
- 4,152,245 Atlantic Richfield Company: Separation Of Rock Solids From Heat Carriers In An Oil Shale Retorting Process
- 4,153,420 Ra Shipping Ltd.: Process For Wet Carbonizing Of Peat
- 4,153,514 Occidental Petroleum Corporation: Pyrolysis Process For Solid Wastes
- 4,153,533 Chalmer G. Kirkbride, 13 Elk Forest, R.D. No. 2, Elkton, MD 21921: Shale Conversion Process
- 4,154,584 Dr. C. Otto & Comp. GmbH, Germany: Method For Cooling Gases Containing Naphthalene, Tar & Solids

- 4,155,715 Occidental Petroleum Corporation: Process For Reducing The Organic Sulfur Content Of Char
- 4,155,716 Atlantic Richfield Company: Process For Removing Sulfur From Coal
- 4,155,717 Atlantic Richfield Company: Process For Removing Sulfur From Coal Employing Aqueous Solutions Of Sulfites And Bisulfites
- 4,155,832 The U.S. of America as rep. by U.S. Dept. of Energy: Hydrogenation Process For Solid Carbonaceous Materials
- 4,156,595 Peabody Coal Company: Formcoke Process And Apparatus
- 4,157,245 Chevron Research Company: Countercurrent Plug-Like Flow Of Two Solids
- 4,157,246 Exxon Research & Engineering Co.: Hydrothermal Alkali Metal Catalyst Recovery Process
- 4,157,291 Gulf Research & Development Company: Process For Extending Life Of Coal Liquefaction Catalyst
- 4,157,305 Chemap AG: Method Of Filtering Molten Coal
- 4,157,940 Dr. C. Otto & Company GmbH: Method For Operating A Battery Of Horizontal Coke Ovens
- 4,158,548 Atlantic Richfield Company: Process For Removing Sulfur From Coal
- 4,158,610 Bethlehem Steel Corporation: Method And Apparatus For Determining And Controlling Amount of Carbon Deposited On A Surface By A Gas
- 4,158,620 Atlantic Richfield Company: Retorting Oil Shale With Iron Oxide Impregnated Porous Pellets
- 4,158,637 Westinghouse Electric Corporation: Conversion Of Coal Into Hydrocarbons
- 4,158,638 Gulf Research & Development Company: Conversion Of Coal Into Hydrocarbons
- 4,158,948 Texaco, Inc.: Conversion of Solid Fuels Into Fluid Fuels
- 4,159,195 Exxon Research & Engineering Co.: Hydrothermal Alkali Metal Recovery Process
- 4,159,236 Gulf Oil Corporation: Method For Combining Coal Liquefaction And Gasification Processes

- 4,159,237 Gulf Oil Corporation: Coal Liquefaction Process Employing Fuel From A Combined Gasifier
- 4,159,238 Gulf Oil Corporation: Integrated Coal Liquefaction - Gasification Process
- 4,159,240 John M. Malek, P.O. Box 71 Lomita, A 90717: Separating Liquid And Solid Products Of Liquefaction Of Coal Or Like Carbonaceous Materials
- 4,159,897 Fluid Coal Corporation: Producing Fluid Fuel From Coal
- 4,159,905 Bergwerksverband GmbH and Rheinstahl Huttenwerke AG: Method Of Manufacturing Green Hot Briquettes From Fine Coal For Use In Shaft Furnaces
- 4,160,479 Reginald D. Richardson, 53 Valecrest Dr., & Robert H. Shannon 59 Valecrest Dr., both of Islington, Ontario, Canada M9A 4P5: Heavy Oil Recovery Process
- 4,160,719 Phillips Petroleum Company: Iron-Containing Refractory Balls For Retorting Oil Shale
- 4,160,720 University of Utah: Process And Apparatus To Produce Synthetic Crude Oil From Tar Sands
- 4,160,814 Great Lakes Carbon Corporation: Thermal Desulfurization And Calcination Of Petroleum Coke
- 4,161,440 Exxon Research & Engineering Co.: Liquefaction Of Calcium-Containing Subbituminous Coals And Coals Of Lower Rank
- 4,161,441 Jacque C. Morrell, 4501 Conn. Ave., NW Wash., D.C. 20008: Process For The Production Of Distillate Fuels From Oil Shales And By-product Therefrom
- 4,161,442 Mobil Oil Corporation: Processing Of Tar Sands
- 4,162,898 The Standard Oil Company: Process For Removing Sulfur From Coal
- 4,162,943 Occidental Petroleum Corporation: Slot Pyrolysis Reactor And Method Of Pyrolysis
- 4,162,944 United States Steel Corporation: Spotting Method And Apparatus For Coke Oven Batteries
- 4,162,956 Kerr-McGee Corporation: Coal Deashing Process Having Improved Solvent Recovery Techniques
- 4,162,957 Kerr-McGee Corporation: Method Of Feeding Solids To A Process Unit

- 4,162,958 Kerr-McGee Corporation: Process For The Discharge Of Ash Concentrate From A Coal Deashing System
- 4,162,959 Occidental Petroleum Corporation: Production Of Hydrogenated Hydrocarbons
- 4,162,960 Union Oil Company of California: Shale Retorting Process And Apparatus
- 4,162,963 Continental Oil Company: Method For Producing Hydrocarbon Fuels And Fuel Gas From Heavy Polynuclear Hydrocarbons By The Use Of Molten Metal Halide Catalysts
- 4,162,964 Kerr-McGee Corporation: Method Of Handling Ash-Rich Material In A Coal Deashing Process
- 4,163,693 Occidental Petroleum Corporation: Fluidizing A Mixture Of Particulate Coal And Char
- 4,164,397 Herbert H. Hunt, 3608 Vine Maple, Eugene, Oreg. 97405, & Harold S. Worcester, 91040 Hill Rd., Springfield, Oreg., 97417: Fuel Gas Production
- 4,164,466 Kerr-McGee Corporation: Method Of Improving Yield In A Coal Liquefaction Product Deashing Process
- 4,165,216 Enerco, Inc.: Continuous Drying And/Or Heating Apparatus
- 4,165,220 Centro Sperimentale Metallurgia SpA.: Process For Producing Hardened Semicoke Briquettes
- 4,165,260 Inland Steel Company: Pipeline Charging Of Coal Into Coke Oven
- 4,166,022 Gulf Research & Development Company: Recovery Of Oil From Oil Shale
- 4,166,023 Sunoco Energy Development Company: Pour Point Depressant For Shale Oil



II. A. IN VITRO CONVERSION: OBTAINING LIQUID HYDROCARBONS

2. APPARATUS

This profile includes thermolytic distillation apparatus for the conversion of solid carbonaceous material to liquid hydrocarbons.

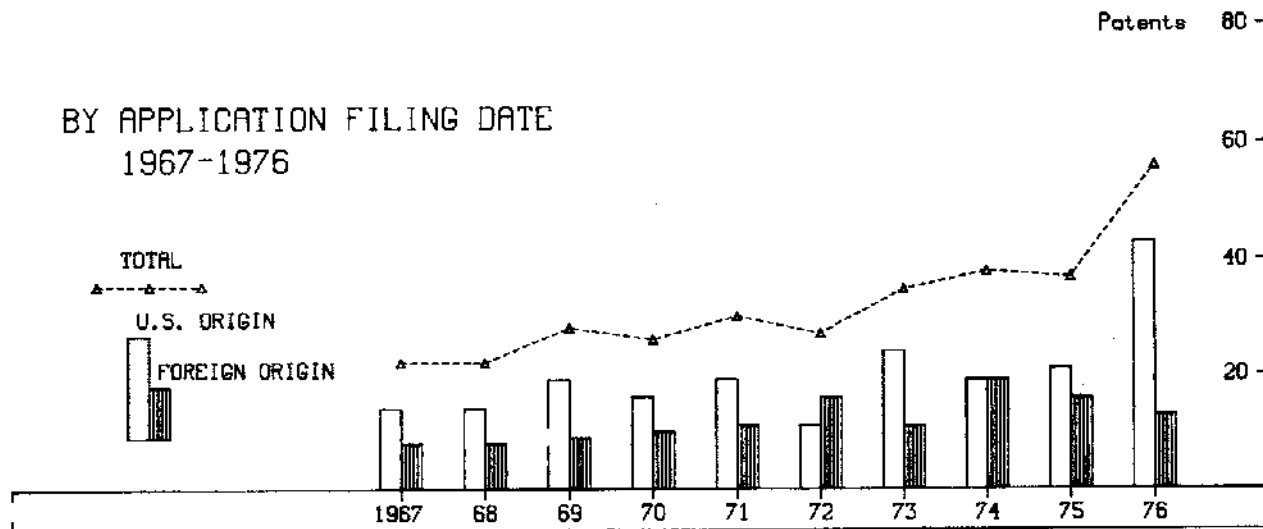
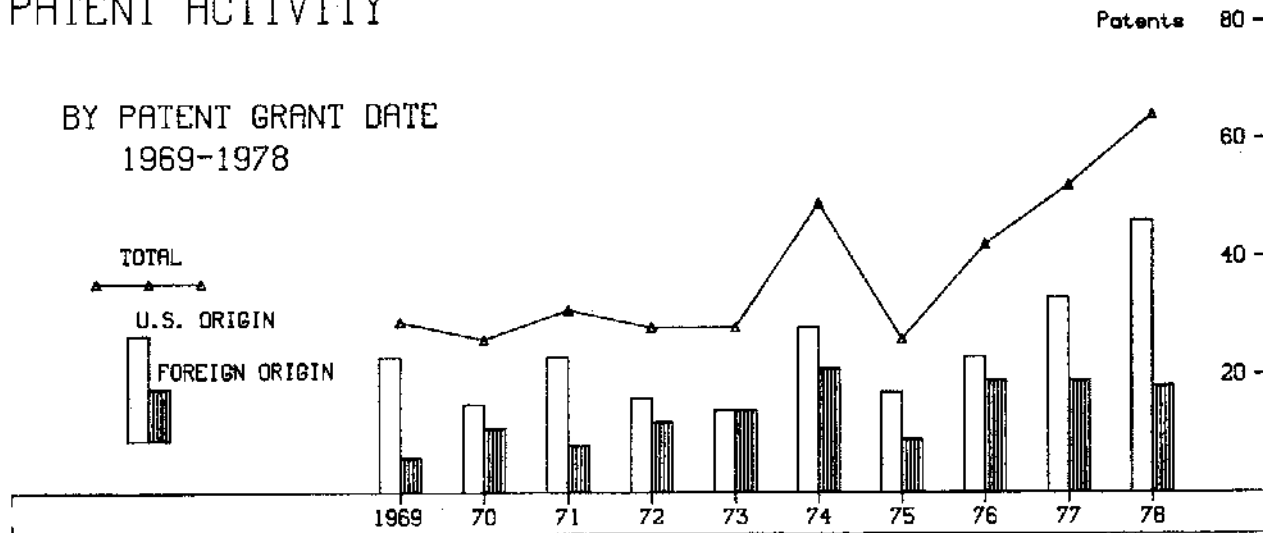
INCLUDED IN THIS PROFILE ARE ALL OF THE PATENTS FROM:

Class 202; Subclasses 81-151, and 207-230

ACTIVITY INDICES (1976-1978)

GROWTH	42.1%
FOREIGN SHARE	35.4%
CORPORATE OWNED	79.8%
GOVERNMENT OWNED	0.0%
U.S. OWNED OF FOREIGN	1.8%

PATENT ACTIVITY



SYNTHETIC FUELS III A 2- IN VITRO - OBTAINING LIQUID HYDROCARBONS - APPARATUS

PATENT ACTIVITY (1963-1978) BY DATE OF PATENT GRANT

PAGE A 2

	63-64	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	TOTAL
TOTAL	23	28	12	22	27	29	26	31	28	28	49	26	42	52	64	487
U.S. ORIGIN	21	23	8	18	23	23	15	23	16	14	28	17	23	33	46	331
FOREIGN ORIGIN	2	5	4	4	4	6	11	8	12	14	21	9	19	19	18	156
GERMANY		3	4	1	2	6	4	5	10	13	19	5	9	11	11	103
JAPAN				1	1		3		1			2	4	3	4	19
U.S.S.R.							3	1		1	1	1	1	1		8
UNITED KINGDOM				2	1								1		1	6
NETHERLANDS		1										1	1	1	1	4
CANADA													1		1	3
FRANCE	1										1					3
SWEDEN	1															2
PORTUGAL															1	1
CHINA(TAIWAN)																1
AUSTRALIA													1			1
ISRAEL								1								1
ITALY										1						1
BELGIUM							1									1
CZECHOSLOVAKIA																1
POLAND									1				1			1
U.S. ORIGIN	21	23	8	18	23	23	15	23	16	14	28	17	23	33	46	331
U.S. CORP. OWNED	18	20	7	10	16	16	11	19	12	13	22	13	14	24	37	252
U.S. GOVT. OWNED	3	3	1	8	6	6	4	4	3	1	6	4	9	8	8	74
U.S. INDIV. OWNED																3
FOREIGN OWNED																2
FOREIGN ORIGIN	2	5	4	4	4	6	11	8	12	14	21	9	19	19	18	156
U.S. OWNED		1	2	1	1	1	1	1	1	1	1	1	1	1	1	10
FOREIGN OWNED	2	4	2	3	3	6	10	7	11	14	20	9	19	19	17	146
FOREIGN CORP.	2	3	1	3	1	1	6	6	9	12	18	5	18	14	16	115
FOREIGN GOVT.																1
FOREIGN INDIV.	1	1	1		2	5	4	1	2	2	2	3	1	5	1	30

## SYNTHETIC FUELS

## II A 2- IN VITRO - OBTAINING LIQUID HYDROCARBONS - APPARATUS

## PATENT ACTIVITY (PATENTS GRANTED 1/67-12/78) BY DATE OF PATENT APPLICATION

PAGE A 4

	PRE 65	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	TOTAL
TOTAL	36	15	24	22	22	28	26	30	27	35	38	37	56	28		424
U.S. ORIGIN	30	12	18	14	14	19	16	19	11	24	19	21	43	19		279
FOREIGN ORIGIN	6	3	6	8	8	9	10	11	16	11	19	16	13	9		145
GERMANY	3	1	4	4	4	8	7	11	14	8	10	8	10	4		96
JAPAN	1	1	1	2	2	1	1	1	1	1	5	3	2	2		19
U.S.-S.R.				4			1					2				8
UNITED KINGDOM	2	1	1		1				1	1	1			1		6
NETHERLANDS											1	1				3
CANADA											1	1				3
FRANCE									1							2
SWEDEN																1
PORTUGAL														1		1
CHINA(TAIWAN)											1		1			1
AUSTRALIA						1										1
ISRAEL																1
ITALY																1
BELGIUM					1											1
CZECHOSLOVAKIA	1															1
POLAND												1				1
U.S. ORIGIN	30	12	18	14	14	19	16	19	11	24	19	21	43	19		279
U.S. CORP. OWNED	19	7	13	11	12	13	13	17	8	21	10	14	34	15		207
U.S. GOVT. OWNED	1	1	1			1	1	2	3	3	9	6	9	3		3
U.S. INDIV. OWNED	11	4	4	3	2	6	2	2	3	3		1		1		67
FOREIGN OWNED																2
FOREIGN ORIGIN	6	3	6	8	8	9	10	11	16	11	19	16	13	9		145
U.S. OWNED	2	2	2	1	1	2	1	1	1	1	1	1	1	1		7
FOREIGN OWNED	4	3	6	8	7	7	10	11	15	11	19	16	13	8		138
FOREIGN CORP.	3	2	1	3	7	6	8	9	14	8	18	12	10	8		109
FOREIGN GOVT.											1					1
FOREIGN INDIV.	1	1	5	5		1	2	2	1	3		4	3			28

II. A. IN VITRO CONVERSION - OBTAINING LIQUID HYDROCARBONS  
2. APPARATUS

ASSIGNEES WITH 2 OR MORE PATENTS (1/69-12/78)

KOPPERS COMPANY INC.	39
DR. C. OTTO COMP. G.M.B.H.	27
FIRMA CARL STILL	15*
HEINRICH KOPPERS GMBH	11*
OCCIDENTAL PETROLEUM CORPORATION	11
MARATHON OIL COMPANY	9
SALEM CORPORATION	7
AMERICAN WAAGNER-BIRO COMPANY, INC.	6
BERGWERKSVERBAND GMBH	5
UNITED STATES STEEL CORPORATION	5
SUN OIL COMPANY OF PENNSYLVANIA	4
ALLIS-CHALMERS CORPORATION	4
GREAT LAKES CARBON CORPORATION	4
NICHOLS ENGINEERING + RESEARCH CORPORATION	4
PEABODY COAL COMPANY	4
NIPPON KOKAN KABUSHIKI KAISHA	4
DRAVO CORPORATION	3
BETHLEHEM STEEL CORPORATION	3
CONTINENTAL OIL COMPANY	3
KOPPELMAN, EDWARD	3
INTERLAKE INC.	3
MOBIL OIL CORPORATION	3
PENNSYLVANIA COKE TECHNOLOGY, INC.	3
NIPPON STEEL CORPORATION	3
PHILLIPS PETROLEUM COMPANY	3
METALLGESELLSCHAFT AKTIENGESELLSCHAFT	3
AGENCE NATIONALE DE VALORISATION DE LA RECHERCHE (ANVAR)	3
WILPUTTE CORPORATION	3
TAKEDA CHEMICAL INDUSTRIES, LTD.	3
BARNEBEY-CHENEY CO.	2
NATIONAL STEEL CORPORATION	2
MONSANTO COMPANY	2
CHEVRON RESEARCH COMPANY	2
INGERSOLL-RAND RESEARCH INC.	2
OIL SHALE CORPORATION	2
EXXON RESEARCH + ENGINEERING CO.	2
HARTUNG, KUHN + CO. MASCHINENFABRIK GMBH	2
STANDARD OIL COMPANY	2
HOOGOSENS IJMUIDEN B.V.	2
WESTVACO CORPORATION	2
DIDIER ENGINEERING GMBH	2
LAMPL, HELMA	2
MANNESMANN AKTIENGESELLSCHAFT	2

\*Composite total, see Appendix A.

SYNTHETIC FUELS II A 2- IN VITRO - OBTAINING LIQUID HYDROCARBONS - APPARATUS

ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

AGENCE NATIONALE DE VALORISATION DE LA RECHERE (ANVAR)

- 3910849 - METHOD FOR MANUFACTURE OF ACTIVATED CARBON AND APPARATUS THEREFOR
- 3945810 - APPARATUS FOR DISPOSAL OF PLASTICS
- 4082615 - THERMAL DECOMPOSITION PROCESS AND APPARATUS FOR ORGANIC SOLID MATERIALS

ALCAN RESEARCH AND DEVELOPMENT, LIMITED

- 4012202 - PYROSCRUBBER

ALLIS-CHALMERS CORPORATION

- 3560368 - TRAVELING GRATE METHOD FOR THE RECOVERY OF OIL FROM SHALE
- 3560369 - RETORING OIL SHALE INCLUDING AGGLOMERATED FINES
- 3644193 - PROCESS AND APPARATUS FOR THE RECOVERY OF OIL FROM SHALE BY INDIRECT HEATING
- 3990865 - PROCESS FOR COAL GASIFICATION UTILIZING A ROTARY KILN

AMERICAN MINECHEM CORPORATION

- 4082515 - COKE OVEN SYSTEM AND AGGLOMERATING CARRYOVER FINES THEREIN

AMERICAN WAAGNER-BIRO COMPANY, INC.

- 3728230 - INDIRECTLY HEAT EXCHANGING PLURAL GAS STREAMS FOR DRY QUENCHING HOT COKE AND DRYING COAL
- 3793743 - APPARATUS FOR DRYING COAL
- 3800427 - METHOD OF DRYING COAL
- 3843458 - COAL TREATING METHOD AND APPARATUS FOR COKE PLANTS
- 3848344 - BUNKER-BOILER INSTALLATIONS
- 3888742 - POLLUTION-FREE COAL-PREHEATING WITH WASTE HEAT FROM DRY COKE-QUENCHING

BARNEBY-CHENEY CO.

- 3525674 - SUBMERGED COMBUSTION CARBONIZATION
- 4038154 - PILE FURNACE

BERGWERKSVERBAND GMBH

- 3444048 - CONTINUOUS COKING APPARATUS
- 3661722 - APPARATUS FOR CARBONIZING CARBONACEOUS MATERIALS WITH DIRECT CONTACT HEAT EXCHANGE MATERIAL
- 3792769 - COKING OVEN
- 3800428 - PROCESS FOR COOLING HOT BRIQUETTES
- 4102751 - COKE OVEN BATTERY WITH CONTROL MEANS FOR CHANGING THE HEAT SUPPLY

BETHLEHEM STEEL CORPORATION

- 3431180 - IMMERSION QUENCHING APPARATUS
- 3953299 - COKE OVEN HAVING A LOW BURNER HEATING WALL AND A HIGH BURNER HEATING WALL
- 4039391 - COKE OVEN BATTERY AND METHOD FOR OPERATION ON A SLOW-DOWN BASIS

BRICMONT + ASSOCIATES, INC.

- 3734834 - APPARATUS AND METHOD FOR APPLYING A FOAM COATING TO EJECTED HOT COKE

BUDWINE, W. J.

- 3763012 - APPARATUS FOR REMOVING POLLUTANTS FROM GASEOUS EFFLUENT

BUTTNER-SCHILDE-HAAS AG

- 4053364 - DRYING AND PREHEATING OF MOIST COAL AND QUENCHING OF THE FORMED COKE

SYNTHETIC FUELS II A 2- IN VITRO - OBTAINING LIQUID HYDROCARBONS - APPARATUS

ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

CESKOSLOVENSKA AKADEMIE VED  
 3660245 - APPARATUS FOR CONTINUOUS MANUFACTURE OF FERFURAL AND ACETIC ACID

CHEVRON RESEARCH COMPANY

4056461 - RETORTING PROCESS UTILIZING A FLEXIBLE, HELICAL SHAPED CONVEYOR  
 4069133 - APPARATUS AND PROCESS FOR REDUCING PARTICULATES IN A VAPOROUS STREAM CONTAINING CONDENSABLE HYDROCARBONS

CITIES SERVICE RESEARCH AND DEVELOPMENT COMPANY

3784462 - PROCESS AND APPARATUS FOR OIL SHALE RETORTING

COAL INDUSTRY (PATENTS) LIMITED  
 4105419 - FLUIDIZED BED APPARATUS

COMPAGNIE INDUSTRIELLE DE PROCEDES + D APPLICATIONS S.A.  
 3840345 - SELF AGGLOMERATING FLUIDIZED BED REACTING APPARATUS

CONTINENTAL ENERGY CORPORATION, MESNE  
 3855071 - CARBONIZATION APPARATUS HAVING LOUVERS ON INTERNAL DUCT

CONTINENTAL OIL COMPANY

3565827 - PREPARATION OF ACTIVATED CARBON IN SERIALY DISPOSED FLUIDIZED ZONES  
 3619405 - GAS COMBUSTION OIL SHALE RETORTING WITH EXTERNAL INDIRECT GAS HEAT EXCHANGE  
 4100035 - APPARATUS FOR QUENCHING DELAYED COKE

CPC INTERNATIONAL INC.  
 3816338 - PROCESS FOR THE REACTIVATION OF POWERED CARBON

CREATIVE ENTERPRISES INTERNATIONAL  
 3562115 - FLUIDIZED BED RETORT SURROUNDED BY A FLUIDIZED SAND HEAT EXCHANGER

DECO INDUSTRIES  
 4030384 - SCRAP-TIRE FEEDING AND COKING PROCESS

DEVCO MANAGEMENT INC., MESNE  
 3836015 - METHOD AND APPARATUS FOR PYROLYTIC DECOMPOSITION OF TRASH

DIDIER ENGINEERING GMBH  
 4070251 - INCLINED CHAMBER COKE OVEN  
 4098289 - CHANGEDOVER DEVICE FOR CONTROLLING THE MOVEMENT OF DOSING FRAMES

DIDIER-KELDGG INDUSTRIEANLAGENBAU GMBH  
 3849258 - RECUPERATIVE COKE OVEN

DIDIER-WERKE A.G.  
 3567588 - REGENERATIVE COKE FURMACE WITH UPPER AND LOWER LOCATED BURNING POINTS IN THE HEATING FLUES

DUNNER-HANNA COKE CORPORATION  
 4113569 - COKE AIR POLLUTION CONTROL METHOD AND APPARATUS

DORR-OLIVER INCORPORATED  
 3904549 - FLUIDIZED BED REGENERATION OF POWDERED ACTIVATED CARBON

SYNTHETIC FUELS II A 2- IN VITRO - OBTAINING LIQUID HYDROCARBONS - APPARATUS  
 ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

DRAVO CORPORATION

3746626 - POLLUTION CONTROL SYSTEM FOR DISCHARGING OPERATIONS OF COKE OVEN  
 3959084 - PROCESS FOR COOLING OF COKE  
 4087334 - SEAL ARRANGEMENT FOR A ROTARY DRUM ASSEMBLY

DR. C. OTTO COMP. G.M.B.H.  
 3547782 - COKE CHARGE RECEIVING CARRIAGE, ESPECIALLY FOR USE IN CONNECTION WITH COKE OVEN BATTERIES  
 3715282 - COKE CAR WITH FUME-COLLECTING HOOD  
 3716457 - APPARATUS FOR PREVENTING AIR POLLUTION DURING COKE OVEN DISCHARGE  
 3721609 - POLLUTION FREE COKE QUENCHING CAR  
 3730847 - PLURAL GAS MAINS FOR INDEPENDENTLY OPERATING LOW AND HIGH BURNERS IN ALTERNATIVE FLUE  
 3748235 - POLLUTION FREE DISCHARGING AND QUENCHING SYSTEM  
 3766018 - COKE QUENCHING APPARATUS  
 3801473 - EXHAUST HOOD FOR COKE OVEN QUENCHING CAR  
 3806032 - COKE QUENCHING TOWER  
 3809619 - COMBINED WET AND DRY QUENCHING  
 3809620 - HORIZONTAL COKE OVEN  
 3838017 - REGENERATOR FOR COKE OVENS  
 3839161 - SMOKE HOOD FOR COKE OVENS  
 3843460 - APPARATUS FOR TRANSPORTING AND QUENCHING COKE PUSHED FROM HORIZONTAL COKING CHAMBERS  
 3875016 - METHOD AND APPARATUS FOR CONTROLLING THE OPERATION OF REGENERATIVELY HEATED COKE OVENS  
 3876143 - PROCESS FOR QUENCHING HOT COKE FROM COKE OVENS  
 3969191 - CONTROL FOR REGENERATORS OF A HORIZONTAL COKE OVEN  
 3969192 - PROCESS AND APPARATUS FOR QUENCHING HOT COKE  
 3994700 - APPARATUS FOR THE LOW TEMPERATURE CARBONIZATION OF FINE-GRAIN FUELS  
 3996109 - COKE OVEN BATTERY HAVING TWIN HEATING FLUES  
 4003803 - CONTROL SYSTEM FOR PREVENTING AN EXCESSIVE TEMPERATURE RISE IN A BATTERY OF COKE OVENS  
 4004983 - COKE OVEN BATTERY  
 4014750 - SUPPORT APPARATUS FOR A BATTERY OF COKE OVENS  
 4059885 - PROCESS FOR PARTIAL RESTORATION OF A COKE OVEN BATTERY  
 4093519 - DECARBONIZING APPARATUS FOR AN UNDERJET-TYPE OF COKE OVEN BATTERY  
 4111758 - APPARATUS FOR THE UNIFORM DISTRIBUTION OF COMBUSTION MEDIA IN A BATTERY OF COKE OVENS  
 4113570 - RICH-GAS BURNER ARRANGEMENT IN HEATING FLUES FOR COKE OVEN CHAMBERS

E/M LUBRICANTS, INC.

3977885 - GLASS MANUFACTURING COMPOSITION

ENERGY RECOVERY RESEARCH GROUP, INC.

4123332 - PROCESS AND APPARATUS FOR CARBONIZING A COMMINUTED SOLID CARBONIZABLE MATERIAL

ESCHWEILER BERGWERKS VEREIN AKTIENGESELLSCHAFT

3959083 - METHOD AND APPARATUS FOR QUENCHING OF HEATED BULK MATERIALS

ETABLISSEMENT CAPITROP

4126518 - METHOD AND INCLINED CHAMBER FURNACE FOR CARBONIZING FLUENT CARBON-CONTAINING MATERIAL

EXXON RESEARCH + ENGINEERING CO.

3443908 - APPARATUS FOR THE PRODUCTION OF PETROLEUM COKE HAVING AN IMPROVED PRECOMBUSTOR  
 4007093 - FURNACE FOR THERMAL PROCESSING OF LUMP SOLID FUEL

ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING  
 FAWKHAM DEVELOPMENTS LIMITED

3595542 - PREHEATER USING DOWNWARDLY FLOWING, DIRECTLY CONTACTING, FLUIDIZING VAPORS FROM CALCINING STAGE OF CALCEROUS MATERIAL

## FIRMA CARL STILL

3461037 - INCLINED ROTARY FURNACE  
 3630852 - POLLUTION FREE DISCHARGING AND QUENCHING APPARATUS  
 3652403 - METHOD AND APPARATUS FOR THE EVACUATION OF COKE FROM A FURNACE CHAMBER  
 3684664 - QUENCH CHAMBER CONSTRUCTION FOR THE QUENCHING OF COKE  
 3772155 - APPARATUS FOR EJECTING COKE FROM A COKING FURNACE  
 3801470 - HEATING ARRANGEMENT FOR REGENERATIVE COKE OVEN BATTERIES HEATED WITH RICH GAS OR LEAN GAS  
 3809622 - APPARATUS FOR EMPTYING COKE FURNACE BATTERIES  
 3935078 - WASTE HEAT EXHAUST SYSTEM FOR SIDE BURNER REGENERATIVE COKE OVEN BATTERIES HAVING A DIVIDED HEATING SYSTEM  
 4008129 - INTERMEDIATE HEAD FOR COKE OVEN BATTERIES  
 4028192 - APPARATUS FOR RECEIVING INCANDESCENT COKE FROM RESPECTIVE COKE OVENS IN A BATTERY AND FOR REMOVING THE COKE IN A CLOSED CHAMBER AWAY FROM THE BATTERY  
 4050990 - METHOD AND APPARATUS FOR PRODUCING FORM COKE  
 4050992 - HOUSING CONSTRUCTION EXTENDING OVER THE COKE DISCHARGE AREA OF A HORIZONTAL COKE OVEN BATTERY  
 4105504 - APPARATUS FOR PRODUCING FORM COKE  
 4115202 - APPARATUS FOR PRODUCING NON-ABRASIVE COKE FORMS FROM BROWN-COAL BRIQUETS

## FIRMA HARTUNG, KUHN GO. GMBH

3970526 - CLOSED TANK COKE CAR CONSTRUCTION

## FMC CORPORATION

3721608 - FLUIDIZING DEVICES FOR FLUID BEDS, WITH IN-PROCESS CLEANING

## FOREST FUELS, INC.

4095958 - APPARATUS AND METHOD FOR PRODUCING COMBUSTIBLE GASES FROM BIOMASS MATERIAL

## FUJI KASUJI ENGINEERING CO., LTD.

3997407 - APPARATUS FOR DISPOSAL OF RUBBER WASTE

## GOSUDARSTVENNY VSESOJUZNY INSTITUT PO

3544429 - BATTERIES OF COKE OVENS

## GRAY MANUFACTURING COMPANY, INC.

3707355 - REACTOR APPARATUS

## GREAT CANADIAN OIL SANDS LIMITED

3936358 - METHOD OF CONTROLLING THE FEED RATE OF QUENCH WATER TO A COKING DRUM IN RESPONSE TO THE INTERNAL PRESSURE THEREIN

## GREAT LAKES CARBON CORPORATION

3844901 - COKE OVEN EMISSION CONTROL SYSTEM  
 3896356 - COOLING AND DE-DUSTING OF HOT PARTICULATE MATERIAL PARTICULARLY CALCINED PETROLEUM COKE  
 3953928 - COOLING OF HOT PARTICULATE MATERIAL PARTICULARLY CALCINED PETROLEUM COKE  
 4053365 - ROTARY CALCINER

## HARTUNG, KUHN + CO. MASCHINENFABRIK GMBH

3675400 - COLLECTING HOOD FOR COKE-QUENCHING CARS  
 3844900 - COKING INSTALLATION



## SYNTHETIC FUELS II A 2- IN VITRO - OBTAINING LIQUID HYDROCARBONS - APPARATUS

- ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING
- HEINRICH KOOPERS GMBH
- 3607660 - PROCESS FOR REGULATING THE TEMPERATURE OF A COKE OVEN CHAMBER
- 3619375 - PROCESS FOR MAINTAINING TEMPERATURE DIFFERENTIAL IN COKING CHAMBER OF HORIZONTAL COKING OVEN
- 3661720 - APPARATUS FOR CONTROLLING THE SIZE OF GAS FLOW OPENINGS IN THE HEATING WALLS OF A COKE OVEN
- 3676305 - DUST COLLECTOR FOR A BY-PRODUCT COKE OVEN
- 3700219 - APPARATUS FOR CONTROLLING THE FLOW OF GAS BETWEEN FLUES IN THE HEATING CHAMBERS OF A REGENERATIVE COKE OVEN
- 3780888 - MATERIAL TRANSFER APPARATUS FOR A ROTARY DRUM
- 3839156 - PROCESS AND APPARATUS FOR CONTROLLING THE HEATING OF A HORIZONTAL BY-PRODUCT COKE OVEN
- 3841975 - HORIZONTAL COKE OVEN WITH VARIABLE BURNERS ALONG THE FLUE LENGHT
- 3988211 - APPARATUS FOR QUENCHING COKE PUSHED FROM COKE OVENS
- HERCULES INCORPORATED
- 3736111 - PROCESS AND APPARATUS FOR THE COMPLETE RECLAMATION OF VALUABLE PRODUCTS FROM SOLID WASTE
- HODGOVENS IJMUIDEN B.V.
- 3959082 - METHOD OF OPERATING A BATTERY OF COKE OVENS
- 4021309 - AUTOMATIC COKE OVEN PLANT WITH MEANS TO INSURE SUFFICIENT COKING
- HOUILLERES DU BASSIN DE LORRAINE
- 403B153 - COKE MANUFACTURING PROCESS
- HYDRO CHEMICAL + MINERAL CORPORATION
- 3627646 - MULTISTAGE COLUMNAR FLASH EVAPORATORS AND CONDENSERS WITH INTERSPERSED STAGING
- INDUSTRIAL FILTER AND PUMP MFG. CO.
- 3760566 - EVAPORATOR AND ENTRAINMENT SEPARATOR
- INGERSOLL-RAND RESEARCH INC.
- 3976548 - APPARATUS FOR PROCESSING COAL AND LIKE MATERIAL
- 4106997 - METHODS FOR CONVERTING COAL TO A PLASTIC-LIKE CONDITION AND FEEDING SAME TO A RECEIVER
- INSTITUT NATIONAL DE L INDUSTRIE CHARBONNIERE
- 3535209 - METHOD AND APPARATUS FOR THE HIGH-SPEED CARBONISATION OF SOLID FUELS OF SMALL PARTICLE SIZE SUCH AS COAL
- INTERLAKE INC.
- 3843461 - COKE QUENCHING SYSTEM
- 3869352 - POLLUTION-FREE COKE QUENCHING SYSTEM
- 3966563 - COKE GUIDE SPRAY SYSTEM
- INTERNATIONAL OILS EXPLORATION N.L.
- 3966561 - APPARATUS FOR THE CARBONIZATION OF COAL
- KAHR; PHILLIP
- 4000705 - PROCESS FOR DISPOSING OF ANIMAL CARCASSES
- KAISER ALUMINUM + CHEMICAL CORPORATION
- 4016003 - BENEFICIATION OF METAL SCRAP
- KERR-MCGEE CORPORATION
- 4092237 - PROCESS FOR TREATING OIL SHALES

SYNTHETIC FUELS II A 2- IN VITRO - OBTAINING LIQUID HYDROCARBONS - APPARATUS

ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

KINGSFORD COMPANY  
3977947 - FLUIDIZED BED CARBONIZATION

KONINKLIJKE NEDERLANDSCHE HOOGOVENS EN STAALFABRIEKEN N.V.

3862015 - QUENCHING TOWER FOR QUENCHING COKE AND SIMILAR MATERIALS, AND A QUENCHING DEVICE AS PART OF SUCH A TOWER

KOPPELMAN; EDWARD

4069107 - CONTINUOUS THERMAL REACTOR SYSTEM AND METHOD  
4106999 - CONTINUOUS THERMAL REACTOR  
4126519 - APPARATUS AND METHOD FOR THERMAL TREATMENT OF ORGANIC CARBONACEOUS MATERIAL

KOPPERS COMPANY INC.

3433714 - HIGH CHAMBERED COKE OVEN  
3433715 - HEATING HIGH CHAMBERED HORIZONTAL COKE OVENS  
3433716 - APPARATUS FOR REMOTELY SHIFTING REGENERATIVE COKE OVEN BATTERIES FROM RICH FUEL GAS HEATING TO LEAN FUEL GAS HEATING  
3494834 - COKE OVEN STRUCTURE WITH EXTERNAL FUEL LINE FOR LOW BURNERS  
3496067 - HORIZONTAL COKE OVEN HAVING PLURAL TYPES OF BRICK LININGS FOR HEATING WALLS  
3519539 - APPARATUS FOR RETORTING OIL SHALE HAVING A CENTRAL AXIAL HOLLOW COLUMN  
3519541 - HORIZONTAL COKE OVEN HAVING PLURAL ADJUSTABLE OPENING IN HEATING WALL  
3546092 - OIL SHALE RETORTING METHOD AND  
3553083 - DOOR JAMB STRUCTURE FOR COKE OVEN BATTERY  
3556947 - METHOD FOR REGULATING THE HEATING OF COKE OVENS  
3577784 - METHOD AND APPARATUS FOR MEASURING COKE OVEN FLUE WALL TEMPERATURES  
3580813 - CONDITION RESPONSIVE WATER QUENCH IN A CLOSED COKE COOLING SYSTEM  
3591462 - METHOD AND APPARATUS FOR THE CONTINUOUS CARBONIZATION OF COAL  
3629094 - COKE OVEN DOOR  
3630222 - APPARATUS FOR SWITCHING FROM LEAN GAS TO RICH GAS BURNING IN A COKE OVEN BATTERY  
3751342 - REVERSING MECHANISM FOR COKE OVEN BATTERY  
3785933 - APPARATUS FOR COLLECTING AND REMOVING EFFLUENT EMITTED WHILE PUSHING COKE  
3788236 - COKE QUENCHING CAR  
3806426 - GAS FLOW THROUGH HORIZONTAL COKE OVEN REGENERATOR SECTIONS  
3812018 - MULTI-STAGE COKE COOLER  
3833478 - REVERSING MECHANISM FOR COKE OVEN BATTERY  
3834993 - COMBUSTION SYSTEM FOR COKE OVEN  
3839158 - COKE OVEN HEATING SYSTEM  
3846252 - COKE DISCHARGING SYSTEM  
3852159 - COKE QUENCHING CAR ALIGNMENT INDICATING SYSTEM  
3878053 - REFRACTORY SHAPES AND JAMB STRUCTURE OF COKE OVEN BATTERY HEATING WALL  
3895448 - DRY COKE COOLER  
3897311 - PUSHER RAM AND QUENCH CAR TRAVEL SYNCHRONIZATION SYSTEM  
3914159 - REVERSING CLUTCH  
3930961 - HOODED QUENCHING WHARF FOR COKE SIDE EMISSION CONTROL  
3963582 - METHOD AND APPARATUS FOR SUPPRESSING THE DEPOSITION OF CARBONACEOUS MATERIAL IN A COKE OVEN BATTERY  
3984289 - COKE QUENCHER CAR APPARATUS  
4004985 - SYSTEM FOR QUENCHING HOT COKE  
4024023 - APPARATUS AND METHOD FOR TRANSFERRING HOT COKE TO A DRY COKE COOLER  
4049501 - DEVICE FOR SPOTTING WITHIN TOLERANCE APPARATUS ASSOCIATED WITH THE COKE OVEN CHAMBERS OF A BATTERY  
4061544 - APPARATUS FOR PROVIDING WASTE GAS RECIRCULATION IN COKE OVEN BATTERIES  
4083753 - ONE-SPOT COKE QUENCHER CAR  
4085008 - REVERSING METHOD AND APPARATUS FOR THE AUTOMATIC HEATING CHANGE-OVER OF A COKE OVEN BATTERY  
4108733 - HIGH EFFICIENCY COKE OVEN REGENERATOR CHECKER BRICK

SYNTHETIC FUELS II A 2- IN VITRO - OBTAINING LIQUID HYDROCARBONS - APPARATUS  
 ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

KOPPERS, HEINRICH, GESELLSCHAFT MIT BESCHRANKTER HAFTUNG  
 3723054 - INDUSTRIAL FURNACE  
 3840436 - APPARATUS FOR RECEIVING COKE PUSHED FROM HORIZONTAL COKE OVENS

KRUPP KOPPERS GMBH  
 4111756 - METHOD OF AND APPARATUS FOR HEATING UP A CHAMBER OF A COKING BATTERY

LAMPL; HELMA  
 4062304 - APPARATUS FOR THE PYROLYSIS OF WASTE PRODUCTS  
 4084521 - METHOD AND APPARATUS FOR THE PYROLYSIS OF WASTE PRODUCTS

LINDE AKTIENGESELLSCHAFT  
 3917516 - COKE-COOLING APPARATUS

MANNESMANN AKTIENGESELLSCHAFT  
 3890908 - METHOD AND APPARATUS FOR PYROLYTICALLY REDUCING WASTE  
 3971704 - METHOD AND APPARATUS FOR POLLUTION FREE, DESTRUCTIVELY PROCESSING WASTE

MARATHON OIL COMPANY  
 3448012 - ROTARY CONCENTRIC PARTITION IN A COKE OVEN HEARTH  
 3594287 - APPARATUS FOR COOLING SOLIDS BY DIRECT CONTACT WITH LIQUIDS  
 3612497 - CENTER FEED ROTARY HEARTH CALCINER  
 3652404 - DEVOLATILIZING PROCESS USING RABBLERS AND FORMING DEVICES FOR CONVEYING MATERIALS  
 3652426 - PROCESS AND APPARATUS FOR REMOVAL OF VOLATILE MATTER BY ELECTRICAL RESISTANCE HEATING  
 3730849 - INTEGRAL CALCINED COKE COLLER  
 3745110 - THERMAL DECOKING OF DELAYED COKING DRUMS  
 3763011 - ROTARY HEARTH CALCINER HAVING STATIONARY SOAKING PIT  
 3763013 - NON CONCENTRIC DISCHARGE TABLE FOR ROTARY HEARTH CALCINER

MCDOWELL-WELLMAN ENGINEERING COMPANY  
 4013517 - CIRCULAR TRAVELING GRATE SINTERING MACHINE

METALLGESELLSCHAFT AKTIENGESELLSCHAFT  
 3655518 - RETORT SYSTEM FOR OIL SHALES AND THE LIKE  
 3756922 - MIXING NOZZLES FOR CARBONIZING FINE GRAIN FUELS IN A FLUIDIZED BED  
 3774915 - PROCESS AND APPARATUS FOR COOLING HOT BRIQUETTES

MICHIGAN OVEN COMPANY  
 3502846 - SMOKE GENERATOR

MINERAL CONCENTRATES + CHEMICAL COMPANY, INC.  
 4094769 - METHOD AND APPARATUS FOR RETORTING OIL SHALE

MOBIL OIL CORPORATION  
 3501394 - GAS LIFT RETORTING PROCESS FOR OBTAINING OIL FROM FINE PARTICLES CONTAINING HYDROCARBONACEOUS MATERIAL  
 3562143 - LIQUID DISENGAGING SYSTEM  
 3574087 - METHOD AND APPARATUS FOR RETORTING OIL SHALES

MONSANTO COMPANY  
 4083752 - ROTARY RETORT  
 4092098 - METHOD AND APPARATUS FOR IMPROVED IN SITU COMBUSTION OF PYROLYSIS GASES IN A KILN

SYNTHETIC FUELS I1 A 2- IN VITRO - OBTAINING LIQUID HYDROCARBONS - APPARATUS  
ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

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NATIONAL RESEARCH DEVELOPMENT CORPORATION

3962045 - APPARATUS FOR PYROLYSIS OF DOMESTIC AND OTHER WASTE MATERIALS

NATIONAL STEEL CORPORATION

4010081 - APPARATUS FOR QUENCHING AND COOLING COKE  
4113572 - POLLUTION CONTROL SYSTEM INCLUDING A ONE-SPOT QUENCH-CAR FOR COKE PRODUCING INSTALLATIONS

NICHOLS ENGINEERING + RESEARCH CORPORATION

4046085 - METHOD AND APPARATUS FOR TREATING WASTE MATERIAL IN A COUNTER-CURRENT INCINERATOR  
4046086 - TREATMENT OF WASTE MATERIAL CONTAINING ALKALI METALS IN A CONTROLLED ATMOSPHERE FURNACE  
4050389 - METHOD AND APPARATUS FOR INCINERATING WASTE MATERIAL  
4115317 - METHOD AND APPARATUS FOR REGENERATING AND MANUFACTURING ACTIVATED CARBON

NIPPON KOKAN KABUSHIKI KAISHA

4009081 - DUST ARRESTING APPARATUS FOR A COKE DRY QUENCHING STATION  
4045292 - METHOD FOR CONTROLLING COMBUSTION IN COKE OVEN BATTERY  
4076593 - METHOD AND APPARATUS FOR CONTROLLING HEAT INPUT TO A WASTE HEAT BOILER BY USE OF BLEEDER GAS FROM A COKE DRY QUENCHING STATION  
4106998 - METHOD OF RESTRAINING EMISSION FROM COKE QUENCHING EQUIPMENT

NIPPON STEEL CORPORATION

3536590 - ANNULAR COKE OVEN CHAMBER WITH ROTATABLE TOP CHARGING HOOD AND ROTATABLE AND MOVABLE COKE DISCHARGE CONVEYOR MEANS  
3541603 - APPARATUS FOR CONTINUOUS BAKING OF POWDERED OR GRANULAR RAW MATERIALS FOR PRODUCING IRON AND FOR PRODUCING COKE  
4092222 - TOP DUST COLLECTING APPARATUS IN COKE QUENCHING SYSTEM

NORMAC, INC.

4050897 - REACTOR APPARATUS

OCCIDENTAL PETROLEUM CORPORATION

4039390 - FEED SYSTEM FOR PYROLYSIS REACTORS  
4064018 - INTERNALLY CIRCULATING FAST FLUIDIZED BED FLASH PYROLYSIS REACTOR  
4070250 - PYROLYSIS OF CARBONACEOUS MATERIALS IN A DOUBLE HELIX CYCLONE  
4077847 - SOLID WASTE DISPOSAL SYSTEM  
4078973 - LOOP PYROLYSIS PROCESS FOR ORGANIC SOLID WASTES  
4083751 - CONTINUOUS FEED PYROLYSIS CHAMBER FOR DECOMPOSING SOLID WASTE  
4088541 - APPARATUS FOR PYROLYZING ORGANIC SOLID WASTE  
4101412 - PROCESS AND APPARATUS FOR RAPID PYROLYSIS OF CARBONACEOUS MATERIALS  
4102773 - PYROLYSIS WITH CYCLONE BURNER  
4105502 - SIMPLIFIED LIQUEFACTION PYROLYSIS PROCESS AND APPARATUS THEREFOR  
4116823 - VESSEL FOR STRIPPING OIL FROM FLUIDIZED ASH AND CHAR PARTICLES

OIL SHALE CORPORATION

3496094 - APPARATUS AND METHOD FOR RETORTING SOLIDS  
3616266 - HORIZONTAL RETORT WITH SOLID HEAT TRANSFER MEDIUM

PARAHO CORPORATION

4090945 - METHOD OF OPERATING AN OIL SHALE KILN

PEABODY COAL COMPANY

3434931 - COKE, TAR, AND CLEAN COAL GAS PRODUCING METHOD AND APPARATUS  
3434933 - METHOD FOR PRODUCING HIGH YIELD COKE BY DOWNDRAFTING OF HOT GASES  
3839157 - WATER SPRAY OVER TRANSFER MECHANISM FOR COOLING CHAR

SYNTHETIC FUELS II A 2- IN VITRO - OBTAINING LIQUID HYDROCARBONS - APPARATUS

ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING (CONTINUED)

PEABODY COAL COMPANY

4100034 - QUENCHING METHOD

PENNSYLVANIA COKE TECHNOLOGY, INC.

4045299 - SMOKELESS NON-RECOVERY TYPE COKE OVEN  
 4111757 - SMOKELESS AND NON-RECOVERY TYPE COKE OVEN BATTERY  
 4124450 - METHOD FOR PRODUCING COKE

PHILLIPS PETROLEUM COMPANY

3480512 - APPARATUS FOR EDUCING AND RECOVERING OIL FROM OIL-BEARING SOLIDS  
 3487001 - METHOD AND APPARATUS FOR REMOVING OIL FROM OIL-YIELDING SOLIDS  
 3491016 - PROCESS FOR TREATING CRUSHED OIL SHALE

POLITECHNIKA SLASKA IM WINCENTEGO PSTROWSKIEGO

3988210 - FURNACE FOR MANUFACTURING HIGH CALORIFIC GAS AND COKE FROM COAL

PROCTER + GAMBLE COMPANY

3507937 - REVERSED ZWITTERIONIC PHOSPHORUS COMPOUNDS

PULLMAN, INCORPORATED

3887437 - TUNNEL KILN FIRING OF CARBON PRODUCTS

RECKLINGHAUSEN, CARL STILL, FIRMA

3846250 - COKE QUENCHING METHOD AND DEVICE

REDKER-YOUNG PROCESSES, INC.

4098649 - CONVERSION OF ORGANIC WASTE MATERIAL

RIEDHAMMER, LUDWIG, GMBH

3822190 - CALCINING OF CARBON SUBSTANCES AND CARBONACEOUS ROCKS IN A TUNNEL KILN

SALEM CORPORATION

3470068 - METHODS AND APPARATUS FOR THE CONTINUOUS TREATMENT OF NON-CAKING COAL AND OTHER DISCRETE MATERIALS  
 3475286 - ROTARY HEAT TREATING OVEN  
 3536592 - ROTARY COKE QUENCHING APPARATUS  
 3859172 - MULTIPLE RABBLED ROTARY HEARTH  
 3867261 - FUEL INCINERATION SYSTEM FOR CALCINER  
 3870604 - MOBILE ROTARY TYPE CONTINUOUS COKE QUENCHER  
 3998703 - METHOD OF TREATING MATERIALS ON A ROTARY HEARTH

SALEM FURNACE CO.

4096038 - METHOD AND APPARATUS FOR OPERATING A CALCINER UNDER A PRESSURE DIFFERENTIAL

SANYO KOKUSAKU PULP CO., LTD.

3971705 - METHOD OF PRODUCING CHAR FROM PULP MANUFACTURING WASTE LIQUOR

SCIENTIFIC RESEARCH INSTRUMENTS CORPORATION

3801469 - METHOD FOR EFFECTING CHEMICAL REACTIONS BETWEEN CASCADING SOLIDS AND COUNTERFLOWING GASES OR FLUIDS

SHELL OIL COMPANY

3640849 - SPENT SHALE RETORT WITH SONIC OSCILLATOR CLINKER CUTTER

ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

SOCIETA ITALIANA RESINE S.I.R. S.P.A.

3720586 - MULTIPLE EXPANSION FLASH EVAPORATOR COMPRISING A CONTINUOUS CASING WITH A CENTRAL EVAPORATION CHAMBER

SOUTHWIRE COMPANY

4021905 - METHOD OF STRAIGHTENING FLUE WALLS IN A CARBON ANODE RING FURNACE

STANDARD OIL COMPANY

3658654 - SCREW-CONVEYING RETORTING APPARATUS WITH HYDROGENATION MEANS

3994829 - PROCESS FOR PRODUCTION OF ACTIVATED CARBON

STEAG AG

4111665 - APPARATUS FOR THE GASIFICATION UNDER PRESSURE OF BITUMINOUS COAL, ESPECIALLY OF FINE COAL IN A GENERATOR

SUBURBAN MECHANICAL CONTRACTORS, INC.

3471369 - PRODUCTION OF CHAR

SUMITOMO ELECTRIC INDUSTRIES, LTD.

3984288 - METHOD FOR TREATMENT OF RUBBER AND PLASTIC WASTES

SUN OIL COMPANY OF PENNSYLVANIA

3449211 - APPARATUS FOR PYROLYSIS OF SOLIDS

3464892 - TUNNEL OVEN WITH A SERIES OF MOVING BARGES AND SEPARATE COMPARTMENTS

3623972 - TAR SAND RETORTING

3663421 - CONTINUOUS, FLUIDIZED PROCESS AND SYSTEM FOR THERMAL RECOVERY OF HYDROCARBONACEOUS

TAKEDA CHEMICAL INDUSTRIES LTD.

3541025 - PROCESS FOR PRODUCING ACTIVATED CARBON IN AN ASCENDING TURNING CURRENT OF ACTIVATING GAS

3676365 - METHOD FOR MANUFACTURING ACTIVATED CARBON AND APPARATUS THEREFOR

4007014 - ACTIVATED CARBON REVIVIFICATION EQUIPMENT

THAGARD TECHNOLOGY COMPANY

4067396 - FLUID-WALL REACTOR FOR HIGH TEMPERATURE CHEMICAL REACTION PROCESSES

TOLEDO PICKLING + STEEL SERVICE, INC.

4083693 - APPARATUS FOR TREATING WASTE ACIDS

TORRAX SYSTEMS, INC.

3702039 - PRODUCTION OF USABLE PRODUCTS FROM WASTE MATERIAL

UNION OIL COMPANY OF CALIFORNIA

3759795 - CALCINER-PREHEATER

UNITED STATES BORAX + CHEMICAL CORPORATION

3481878 - LAUNDRY COMPOSITIONS AND METHOD FOR MAKING SAME

UNITED STATES OF AMERICA; AGRICULTURE

3436313 - SURVIVAL STILL FOR OBTAINING POTABLE WATER

UNITED STATES OF AMERICA, ARMY

3694321 - PORTABLE DISTILLATION UNIT

SYNTHETIC FUELS II A 2- IN VITRO - OBTAINING LIQUID HYDROCARBONS - APPARATUS

ASSIGNED PATENTING(1/69 - 12/78) - - ALPHA LISTING

UNITED STATES STEEL CORPORATION

- 3806425 - QUENCHING COKE WITH SOLID STREAMS AND AVOIDING FLOODING
- 4025395 - METHOD FOR QUENCHING COKE
- 4039394 - SLATTED TOP QUENCH CAR
- 4096040 - TRIPPER BEAM
- 4096041 - SINGLE-SPOT QUENCH CAR

UNIVERSITY OF CALIFORNIA, THE REGENTS OF

- 3639111 - METHOD AND APPARATUS FOR PREVENTING FORMATION OF ATMOSPHERIC POLLUTANTS IN THE COMBUSTION OF ORGANIC MATERIAL

URBAN RESEARCH DEVELOPMENT CORPORATION

- 3926582 - METHOD AND APPARATUS FOR PYROLYTIC TREATMENT OF SOLID WASTE MATERIALS

WALLACE-ATKINS OIL CORPORATION

- 4038152 - PROCESS AND APPARATUS FOR THE DESTRUCTIVE DISTILLATION OF WASTE MATERIAL

WALLACE ENERGY CONVERSION, INC.

- 4118282 - PROCESS AND APPARATUS FOR THE DESTRUCTIVE DISTILLATION OF HIGH MOLECULAR WEIGHT ORGANIC MATERIALS

WATERFRONT N.V.

- 4122036 - METHOD OF PYROLYZING SEWAGE SLUDGE TO PRODUCE ACTIVATED CARBON

WESTVACO CORPORATION

- 3647716 - TRANSPORT REACTOR WITH A VENTURI/TUBE CONNECTION TO A COMBUSTION CHAMBER FOR PRODUCING ACTIVATED CARBON
- 3962128 - COAL DUST FUEL DISTRIBUTION SYSTEM AND METHOD OF MANUFACTURING ACTIVATED CARBON

WILPUTTE CORPORATION

- 3627668 - COKE BREEZE RECLAIMING SYSTEM
- 4087333 - TRAVELING HOOD FOR COKE OVEN EMISSION CONTROL
- 4104128 - APPARATUS AND METHOD FOR RECOVERY OF COAL FINES

WISE COAL + COKE COMPANY

- 3594286 - CARBONIZING MULTIPLE LAYERS OF MATERIAL BY MAINTAINING REDUCING ATMOSPHERE IN BED AND OXIDIZING ATMOSPHERE ABOVE BED

INVENTOR NAME	INVENTION TITLE	STREET	CITY	ST	ZIP/CNTRY
ANANIEV	3993546 - LEONID SEMENOVIC SHAFT FURNACE FOR THERMOLYTIC DISTILLATION OF HYDROCARBON FUEL	ULITSA KOMSOMOLI, 15, KV. 12 P.O. BOX 846	ESTONSKAYA SSR, KOKH		SU
ANGELO	4037543 - JAMES F. POLLUTION FREE COMBINATION CARBONIZATION APPARATUS AND FURNACE	2960 HANNAH AVE.	JONESBORO	AR	72401
BACON	4125437 - CONRAD G. DISTILLATION SYSTEM		NORRISTOWN	PA	19403
BATORA	3879267 - GUNTER SHED FOR THE DISCHARGE SIDE OF A COKE OVEN BATTERY	4, LANSTROPER STRASSE ROSASTR. 61	4628 LUNEN		DT
BAUER	4057400 - JOCHEN APPARATUS FOR THE GASIFICATION UNDER PRESSURE OF BITUMINOUS COAL ESPECIALLY OF FINE COAL IN A GENERATOR		D-4300 ESSEN		DT
CALDERON	4104130 - ALBERT COKE QUENCHING CAR	1065 MELROSE DR.	BOWLING GREEN	OH	43402
CALDERON	3972780 - ALBERT POLLUTION CONTROL OF COKE OVENS	1065 MELROSE DRIVE	BOWLING GREEN	OH	43402
CAUGHEY	3984310 - ROBERT A. APPARATUS AND METHOD FOR MINIMIZING ACCUMULATION OF DEPOSITS BETWEEN THE DOOR AND JAMB OF A COKE OVEN AND HEATING THE ENDS OF THE COKE OVEN				
DENNISON	4030895 - ROBERT A. APPARATUS FOR PRODUCING COMBUSTIBLE GASES FROM CARBONACEOUS MATERIALS	CLINTON ROAD 440 CENTENARY AVE.	ANTRIM	NH	03440
DORFMAN	3935077 - GERSH ABRAMOVIC AUTOMATIC WATER DISTILLER		CLEVELAND	TN	37311
EFIMOV	3887438 - VIKTOR MIKHAILOV PLANT FOR DISCHARGING COKE FROM HORIZONTAL-FLUE COKE OVEN	ULITSA DMITRIEVSKAYA 20, KV. 1	KHARKOV		SU
HALL	3993546 - ROBERT N. SHAFT FURNACE FOR THERMOLYTIC DISTILLATION OF HYDROCARBON FUEL	ULITSA VYIDU, 4, KV. 5 3578 PERADA DRIVE	ESTONSKAYA SSR, KOKH		SU
HANSON	3976558 - LESTER HEINZ METHOD AND APPARATUS FOR PYROLYZING OIL SHALE	1903 PRINCETON AVE. 39-41 BEISENSTRASSE	WALNUT CREEK	CA	94598
HOLTER	4065361 - RICHARD WALTER APPARATUS AND SYSTEM FOR PROCESSING OIL SHALE		SALT LAKE CITY	UT	84108
JABLIN	4053366 - RICHARD WALTER COKE-OVEN PLANTS	1438 MANOR LANE	GLABECK 439		DT
KAIMANN	4066513 - RICHARD WALTER COKE QUENCHING STEAM GENERATOR		BLUE BELL	PA	19422
KAUTZ	4057400 - WALTER C. JR. APPARATUS FOR THE GASIFICATION UNDER PRESSURE OF BITUMINOUS COAL ESPECIALLY OF FINE COAL IN A GENERATOR		D-4300 ESSEN		DT
	4050981 - WALTER C. JR. PYROLYTIC REDUCER AND CONDENSER APPARATUS	21707 NW, 51ST AVE.	RIDGEFIELD	WA	98646



KEMP	3945890 - KLAUS M. CONVERTER SYSTEM	2410 ANACAPA ST.	SANTA BARBARA	CA	93105
KIRSCHMANN	3980526 - JOHN D. LIQUID DISTILLATION APPARATUS	933 ANDERSON ST.	BISMARCK	ND	58501
KULAKOV	3887438 - NIKOLAI KONSTANTI PLANT FOR DISCHARGING COKE FROM HORIZONTAL-FLUE COKE OVEN	ULITSA DANILEVSKOGD 14, KV. 21	KHARKOV	SU	SU
LIKHOGBUB	3887438 - EVGENY PETROVICH PLANT FOR DISCHARGING COKE FROM HORIZONTAL-FLUE COKE OVEN	ULITSA KOMMUNAINAYA 43, KV. 97	KHARKOV	SU	SU
LIN	4010080 - KUO-CHUAN SOLAR POWERED DISTILLING DEVICE	ND. 10, LANE 177, PEI HSING ST	CHIA I, TAIWAN	CT	CT
MACDONALD	JAMES E. R.D. 4, BOX 93		LATROBE	PA	15650
MCREE	3912597 - RICHARD SMOKELESS NON-RECOVERY TYPE COKE OVEN	852 DSTROM AVE.	SYRACUSE	NY	13210
MORRELL	4052267 - JACQUE C. WATER DISTILLER	4501 CONNECTICUT AVE., NW., AP	WASHINGTON	DC	20008
NASHAN	4105536 - GERD PROCESSES INCLUDING THE PRODUCTION OF NON-CONGEALING SHALE OIL FROM OIL SHALES	24 HIRSCHKAMPSTRASSE	42 OBERHAUSEN	DT	DT
MAZININ	3879267 - NIKOLAI ANDREEVIC SHED FOR THE DISCHARGE SIDE OF A COKE OVEN BATTERY	ULITSA VYIDU, 12, KV. 30	ESTONSKAYA SSR, KOKH	SU	SU
NEAL	3993546 - DAVID A. SHAFT FURNACE FOR THERMOLYTIC DISTILLATION OF HYDROCARBON FUEL	11424 FREEMAN PL., NE.	ALBUQUERQUE	NM	87123
PAINTER	3983009 - OLIVER K. METHOD AND APPARATUS FOR DESTRUCTIVE DISTILLATION OF SOLID WASTES AND RECOVERY OF DISTILLED PRODUCTS	101 N. CHURCH ST.	MOUNT PLEASANT	PA	15666
PASTERNAK	3912597 - RUDOLF SMOKELESS NON-RECOVERY TYPE COKE OVEN	LUBECKER STR. 15	D-4390 GLADBECK	DT	DT
PETER	4057400 - HELMUT APPARATUS FOR THE GASIFICATION UNDER PRESSURE OF BITUMINOUS COAL ESPECIALLY OF FINE COAL IN A GENERATOR	20, AM HAGEN	4619 OBERADEN	DT	DT
REED	3879267 - THOMAS G. JR. SHED FOR THE DISCHARGE SIDE OF A COKE OVEN BATTERY	818 HEATHER COURT	HOUSTON	TX	77024
ROOX	4058205 - IVAR KHARALDOV APPARATUS FOR TREATING OIL SHALE	ULITSA KOMSOMOLI, 27, KV. 24	ESTONSKAYA SSR, KOKH	SU	SU
SAKAMOTO	3993546 - MINDRU SHAFT FURNACE FOR THERMOLYTIC DISTILLATION OF HYDROCARBON FUEL	3911 NIOI PL.	HONOLULU	HI	96816
SANGA	3870605 - YASUHIRO COMBINATION SOLAR AND MANUAL DISTILLER AND RAIN CATCHER	19-26, 5-CHOME, SHAKUJIICHO	NERIMAKU, TOKYO	JA	JA
	3875077 - METHOD OF AND APPARATUS FOR PRODUCING ACTIVATED CHARCOAL FROM WASTE TIRES				

SYNTHETIC FUELS II A 2- IN VITRO - OBTAINING LIQUID HYDROCARBONS - APPARATUS  
 UNASSIGNED PATENTS (1/75-12/78) INVENTORS (ALPHA LISTING)

INVENTOR NAME	STREET	CITY	ST	ZIP/CNTRY
SINGH	ALAMJIT D. WASTE DISPOSAL METHOD AND APPARATUS	CHICAGO	IL	60690
SMITH	DAVID E. PROCESS AND APPARATUS FOR PRODUCING CHAR AND CO-PRODUCTS FROM COAL AND THE LIKE	ROLLA	MO	65401
STONE	PATRICK L. METHOD AND APPARATUS FOR PRODUCING CHAR AND CO-PRODUCTS FROM COAL AND THE LIKE	ADA	OK	74820
STORRS	KINDRED L. METHOD AND APPARATUS FOR DESTRUCTIVE DISTILLATION OF SOLID WASTES AND RECOVERY OF DISTILLED PRODUCTS	SALT LAKE CITY	UT	84103
STOUT	VINCENT H. PROCESS FOR SEPARATING AND RECOVERING LIQUID PRODUCTS FROM SOLID AND LIQUID SUBSTANCES	RIVERTON	WY	82501
SUSLOV	ALEXANDR NIKOLAEVI HYDROCARBON RECOVERY SYSTEM	KHARKOV	SU	
TSAY	YAW JENN PLANT FOR DISCHARGING COKE FROM HORIZONTAL-FLUE COKE OVEN	CHIA I, TAIWAN	CT	
VOLMARI	JOSEF SOLAR POWERED DISTILLING DEVICE	463 BOCHUM	DT	
WEISS	GUNTHER SHED FOR THE DISCHARGE SIDE OF A COKE OVEN BATTERY	BEAVERTON	OR	97005
	4081331 - PORTABLE WATER DISTILLATION APPARATUS			

PATENTS (1/63-12/78) WITH NEITHER ASSIGNMENT NOR INVENTOR INFORMATION IN DATABASE

3431177	- HORIZONTAL COKE OVENS WITH CONTROLLED TWO STAGE HEATING AND AIR ADMISSION
3431178	- COMPOUND COKE OVEN BATTERY WITH CONTROLLED TWO STAGE
343713	- GRAVITY-FLOW CALCINER AND PROCESS FOR CALCINING CARBONACEOUS SOLIDS
3436314	- TECHNIQUE FOR CONVERTING BAGASSE AND OTHER MOIST PLANT SUBSTANCES INTO CHARCOAL
3461606	- ROOT WATERING DEVICE
3462346	- SMOKELESS COKE OVENS
3475279	- RECOVERY PROCESS AND APPARATUS
3475317	- METHOD AND APPARATUS FOR OF SOLID HYDROCARBONACEOUS MATERIALS INCLUDING REACTIONS BETWEEN GASES AND UNSIZED SO LIDS AND THE PHYSICAL SEPARATION THEREOF
3476651	- CONVEYING COKING APPARATUS WITH A DOWNWARDLY EXTENDING TUBULAR HEATING MEANS
3476652	- HORIZONTAL COKE OVEN BATTERIES
3488259	- VERTICAL FLUE COKE OVEN HAVING BURNERS OF ENLARGED DIMENSIONS
3494833	- COKE OVEN BATTERY INCLUDING HIGH AND LOW RICH GAS BURNERS
3501381	- SOLAR STILL WITH FLOATING SLAB-SUPPORTING PARTICULATE RADIANT ENERGY RECEPTOR
3503852	- HORIZONTAL COKE OVEN HAVING THICKENED EXTREME ENDS FIRING CHANNEL WALLS
3505842	- METHOD FOR CONTROLLING THE READINESS OF THE COKE MASS IN THE CHAMBER OF A HORIZONTAL COKE OVEN
3509027	- DIL SHALE RETORTING APPARATUS HAVING FRUSTO- CONICAL PASSAGES
3519540	- CARBONIZING OVEN HAVING PARALLEL HORIZONTAL FLUES AND U-SHAPED AIR DUCTS
3528251	- SALT WATER IRRIGATION SYSTEM
3560347	- APPARATUS FOR CARBONIZING CARBONACEOUS MATERIALS USING MICROWAVE ENERGY

