



New connection on: : 22-08-2017 : 22:18:00 - Last disconnection on: : 22-08-2017 : 17:42:42

V 4.0.0.43847(LP,U,linux) (Rev:41675 2016-01-15 13:33:59 +0100#(D201706)) (RPM D201706)

Welcome to EPOQUE Rebuild under the Production Environment

[EPODOC: SS 9] sediment or settl*

Results in EPODOC **32.285**

EPODOC: term 'SETTL*' not found in index 'BI'. WARNING(1)

[SS 10] sediment or settl+

Results in EPODOC **164.729**

[SS 11] 10 and heavy and (hydrocarbon or fuel)

Results in EPODOC **356**

[SS 12] 10 and gas

Results in EPODOC **13.064**

[SS 13] 11 and gas

Results in EPODOC **105**

[SS 14] 13 and temperature and pressure and (time or minut+ or second+)

Results in EPODOC **11**

[SS 15] ..li



1/11 © EPODOC / EPO

PN - [CN101665712](#) A 20100310

PNFP - CN101665712B B 20140326

PR - CN20081146500 20080902

AP - CN20081146500 20080902

DT - I

PA - (A B)

LI LI

TI - (A B)
Method and device for fluidized catalytic conversion

AB - (A)
The invention provides a method for catalytic conversion of **heavy** oil, which comprises a fluidized catalytic conversion process that: **heavy hydrocarbon** raw materials contacts a catalyst in a riser reactor or fluidized bed reactor to react; the reaction **temperature** is 400 to 650 DEG C (preferably 480 to 560 DEG C); the reaction **pressure** is 0.11 to 0.4MPa; the contact **time** is 0.05 to 5 **seconds** (preferably 0.1 to 3 **seconds**); and the weight ratio of the catalyst to the raw materials (catalyst to oil ratio) generally is 3 to 15, preferably 5 to 12. The reaction products flow in a **settler** for catalyst and oil **gas** separation; the separated catalyst to be regenerated is stripped by a stripping section and enters a regenerator for coke burning regeneration; and the regenerated catalyst is cooled or directly returns to the riser reactor to be recycled. The method can solve the problems encountered in the resid-blend ratio improvement and gasoline upgrade and update processes of the prior catalytic conversion.

2/11 © EPODOC / EPO

PN - [GB1152948](#) A 19690521

PR - GB19660046108 19661014

AP - GB19660046108 19661014

DT - *

CCI - [C10G47/24](#) ; [B01J8/22](#) ; [C10G47/26](#)

IDT - 23B5F15

PA - HYDROCARBON RESEARCH INC [US]

TI - Hydrogenation of **Heavy** Petroleum Oils

AB - 1,152,948. Hydrocracking oils. **HYDROCARBON** RESEARCH Inc. 14 Oct., 1966, No. 46108/66. Heading C5E. A process of hydrogenating a petroleum oil composed of at least 30% of a fraction boiling above 975 F. comprises flowing said oil in liquid phase with a hydrogen-rich **gas** upwardly through a contact zone containing a bed of particulate hydrogenation catalyst having a narrow size range between 3 and 270 mesh at a hydrogen **pressure**, **temperature** and space velocity such that the conversion of the fraction boiling above 975 F. to a fraction boiling below 975 F. is not less than 60% with at least 20% boiling below 650 F., maintaining a hydrogen rich **gas** velocity at from 1 to 20 standard cubic feet per pound of **hydrocarbon** charge, withdrawing two separate reaction effluent streams from the upper part of the contact zone, one of the streams being substantially vapour-free liquid and the **second** stream being substantially liquid free vapour, re-cycling a a portion of the vapour-free liquid stream into the contact zone together with the fresh liquid feed such that the upflow liquid velocity through the bed of catalyst is main tained in the range from 1 to 80 gallons per **minute** per square ft. of horizontal cross-section of the zone, depending upon the particle size and density of the catalyst and the viscosity and density of the liquid to establish at least a 10% expansion of the volume of the bed, based upon the **settled** volume of the bed, and accomplish random motion of the particles without carry over of particles from the zone, and fractionating the liquid effluent stream before it is cold. The process is applicable to residua which may contain over 5% by weight of asphaltenes. The

preferred embodiment comprises an apparatus in which liquid is recycled by means of a pipe passing downwards through the bed of catalyst. In specific examples, West Texas sour vacuum bottoms and mid-Continent vacuum bottoms are hydrocracked.

3/11 © EPODOC / EPO

PN - [GB915601](#) A 19630116

PR - US19600003391 19600119

AP - GB19600044759 19601230

DT - *

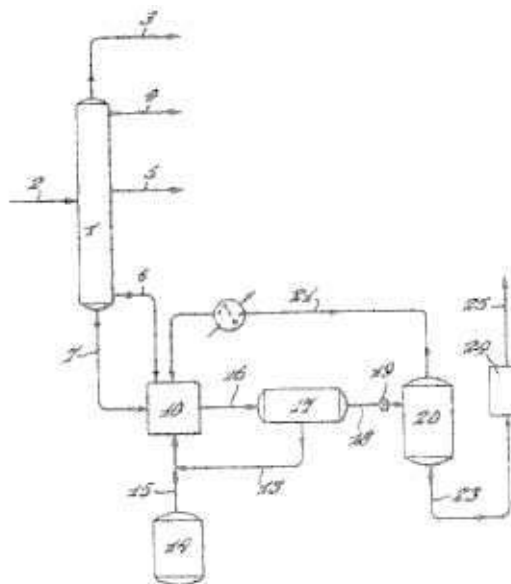
CCI - [C10G21/003](#) ; [C10G17/07](#) ;
[C10G29/12](#)

IDT - 23B7WE1

PA - EXXON RESEARCH ENGINEERING
CO

TI - Demetallization of petroleum oils

AB - Metallic contaminants present as complex organic chelate compounds of the porphyrin type are removed from petroleum oils having constituents boiling above 950 DEG F. by contacting the oil at a **temperature** of 100 DEG F.-550 DEG F. with from 0,01 to 2 volumes of liquid hydrofluoric acid per volume of oil, thereby precipitating the contaminants, and thereafter separating the oil from the acid phase and the precipitated contaminants. The hydrofluoric acid may be employed as a 10% to 99% aqueous solution or in the anhydrous form. Boron trifluoride may be added to the acid to increase its effectiveness. The process may be applied to an undeasphalted topped petroleum crude oil, which may be deasphalted with a **hydrocarbon** having <PICT: 0915601/III/1> 3-8 carbon atoms, and the demetallized oil may thereafter be cracked. In the Figure, a crude oil is distilled in zone 1, and a **heavy gas** oil fraction boiling between 950 DEG F. and 1300 DEG F. is



withdrawn via line 6. Bottoms are withdrawn via line 7. These two fractions may be treated, either together or separately, in zone 10, which is equipped with heating and agitating means. Aqueous hydrofluoric acid is introduced into this zone, which is desirably maintained at 200 DEG F. to 400 DEG F. and 15 p.s.i. g. to 1,200 p.s.i.g., and the oil and acid remain in contact for 2 to 120 **minutes**, after which the mixture passes to **settling** zone 17, from where withdrawn acid is recycled to zone 10. The demetallized oil is passed through **pressure** release valve 19 to flash zone 20, from which acid vapours are withdrawn via line 21. The oil passes through filter 24 and the desired oil of low metal content is recovered via line 25. The oil may be washed with water or caustic to complete removal of acid.

4/11 © EPODOC / EPO

- PN - [GB149306](#) A 19210622
- PR - USX149306 19190805
- AP - GB19190032048 19191222
- DT - *
- CCI - [C10L1/322](#)
- PA - LINDON WALLACE BATES
- TI - Improvements in **fuel**
- AB - A **fuel** consists of a suspension and a colloidal solution of any carbonaceous particles in any liquid **hydrocarbon**, whereby the liquid, paste, or gel formed is mobile and may be atomized at the **temperature** of use, and yet is stable, that is does not **settle**, for a period permitting storage and transport. The carbonaceous substance is pulverized or otherwise reduced mechanically, electrically, or chemically, until about and preferably more than 95 per cent passes through a screen of 100 mesh to the linear inch and 85 per cent through a screen of 200 mesh, and is then mixed with the liquid **hydrocarbon** by passage through a ball, tube, or paint mill, or by heating to 65-95 DEG C. with or without agitation, or by a combination of these methods, or the solid may be reduced in presence of the liquid. Suitable carbonaceous substances specified are anthracite, semi-anthracite, bituminous and semi-bituminous coals, lignites, peats, anthracite culm, dust, and slush, bituminous and lignite slack, screenings, and dust, coal seam

dust, **pressure** still, smelting, and **gas** cokes and charcoals, and wood. Suitable liquids mentioned are **fuel** oils, **pressure**-still oil or tar, coal tar from coke ovens or **gas** works, and molasses, and liquefied solid hydrocarbons. The liquid should preferably have a viscosity of about 20 DEG Engler at 20 DEG C., and 10 DEG C at 30 DEG C. The viscosity may be increased by (1) addition of petroleum or asphaltic pitch, petroleum residues or **heavy** petroleums; 5-10 per cent of pitch is suitable. (2) emulsifying the oil as with the lime-resin product mentioned below, followed or not by repeated heating and cooling. It may be reduced by addition of kerosene, turpentine, **pressure**-still oil or tar, or other "cut-back." The stability of the compounds may be increased by (1) increasing the viscosity of the oil as above. (2) addition of "peptisers," which reduce the apparent specific gravity of the particles; coal-tar distillates, particularly croesote, naphthalene, solvent naphtha, and the "green" residual after removal of anthracine are specified; 1-10 per cent is suitable. (3) addition of a protecting agent or "fixateur" particularly the lime-resin product mentioned. This product may be in liquid, paste, powder or other solid form, or as grease by addition of oil. The last and preferred form is made, for example, by saponifying 10 parts resin by 5 parts lime slaked and suspended in 83.5 parts Texas Navy oil and 1 1/2 parts water. The resin may be replaced by balsams, turpentine, and other resinous by-products or by pine-wood pitch, and other alkali than lime may be employed. Usually such an amount of this protector is used as will add 0.5-1.5 per cent resin to the **fuel**. (4) promoting the tendency to "get" formation; as by addition of a little extra "fixateur," or preventing vibration or shock, or by keeping the **temperature** low and constant. (5) the use of two or more liquid hydrocarbons more or less immiscible, especially when one of the liquids contains solid particles, as free carbon or asphaltum. (6) the addition of "fillers" preferably of lighter specific gravity than the oil. Cellulosic by-products such as waste from starch, corn, and flour factories, wood pulp, wood dust, particularly that containing resin, and finely divided peat and lignite are mentioned. Liquid products may be obtained containing up to 45 per cent of carbonaceous particles, and atomizable pastes containing up to 75 per cent solid particles. Oils and tars such as **pressure**-still oil containing free carbon and asphalt may be centrifuged to reduce the percentage of solids. Examples of suitable compositions are: (1) 50.5 parts **pressure**-still oil, 3 parts **pressure**-still wax tailings, 1 1/2 parts "fixateur," 30 **pressure**-still coke, and 15 parts petroleum pitch. (2) 67.8 parts Navy **fuel** oil, 31.2 parts bituminous coal, 1 per cent "fixateur." (3) 50 parts **pressure**-still oil, 1.2 parts "fixateur," 6.8 parts Texas Navy oil, 10 parts coal tar, 2 parts creosote, and 31 parts coke. (4) 30.5 parts Pacahontas coal ground so that 85 per cent passes a screen of 300 mesh per inch, 69.0 parts texas Navy oil, 1.5 parts of the lime resin grease blended in an ordinary paint-mixing machine with a 200 lb. wheel running at 70 revs. per **minute**.

5/11 © EPODOC / EPO

PN - [GB1036518](#) A 19660720
 PR - GB19640029139 19640715
 AP - GB19640029139 19640715
 DT - *
 CCI - [C10C1/205](#)
 PA - HYDROCARBON RESEARCH INC
 TI - Process for treating tar sands

AB - 1,036,518. Treating tar sands. **HYDROCARBON RESEARCH** Inc. July 15, 1964, No. 29139/64. Heading C5E. A natural tar or bitumen containing at least 0.1% silt which is non-**settling** at a **temperature** up to the coking **temperature** of the tar, e.g. of <325 mesh particle size, is refined by passage in the liquid phase in the presence of a hydrogencontaining **gas** through a reaction zone at a **temperature**, **pressure** and space velocity such that the silt is converted to a free **settling** state. Suitable conditions are a **temperature** between 700 and 950 F., a total **pressure** and hydrogen partial **pressure** of 400-2000, 200-1000 p.s.i.g. respectively and a residence **time** of 30-90 **minutes**; a 60% H₂ containing **gas** may be used at a consumption of 500-1500 standard cubic feet per barrel. Part of the reaction zone effluent may be recycled thereto to establish an ash concentration of 25-50% by weight; the remaining effluent passes to a solids **settling** zone from which a portion of the tar effluent is recycled to the reaction zone. An ash-free **heavy fuel** oil may be produced by vacuum distillation of the liquid components of the treated tar.

6/11 © EPODOC / EPO

PN - [GB615425](#) A 19490106

PR - GB19450019547 19450730

AP - GB19450019547 19450730

DT - *

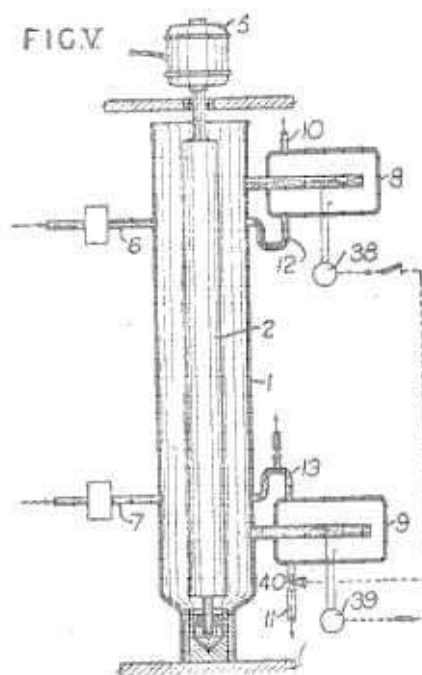
CCI - [B01F7/28](#) ; [B01J8/10](#) ;
[B01J19/18](#) ; [C10G17/06](#)

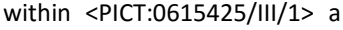
CCA - [B01J2219/00094](#) ;
[B01J2219/00162](#) ;
[B01J2219/00164](#) ;
[B01J2219/00168](#) ;
[B01J2219/00171](#) ;
[B01J2219/00182](#)

PA - JAMES GEORGE FIFE

TI - Improvements in method of contacting fluids one with another

AB - Two or more substances which form at least two phases in contact with each other, at least one of which substances is a fluid, are contacted by passing the phases simultaneously, preferably in countercurrent, into an annular zone formed between two surfaces of revolution, which have different angular velocities, the relative angular velocity being such that an orderly distribution of a dispersed phase in a continuous phase is maintained. Orderly



distribution is a condition associated with regular visual patterns formed by the disperse phase, as distinct from random turbulence. In the apparatus shown a cylinder 2 is rotated within  a stationary cylinder 1 by a variable speed motor 5, preferably at a peripheral velocity greater than 2.5-3.0 feet per **second**. **Heavy** fluid enters at 6 and leaves at 11, while light fluid enters at 7 and is withdrawn at 10. Separation of the phases takes place in quiescent **settling** zones 8 and 9, **heavy** and light fluids returning to the contactor through lines 12 and 13 respectively. Electric controls 38 and 39 regulate the withdrawal valve 40 according to the levels in the **settling** zones. The apparatus may operate under increased or reduced **pressure** and may be surrounded by a jacket for **temperature** control. Substances may be added which reduce the viscosity or alter the surface tension of the phases. The annular zone may be of different shapes, e.g. the cross-sectional area may vary from one end of the zone to the other, so that the peripheral velocity of the surface alters along the zone. The axes of the surfaces need not be concentric, and several surfaces, forming a plurality of annuli, may be used. In examples, (1) gasolines are treated with aqueous potassium hydroxide to remove tertiary-butyl mercaptans; (2) a mixture of petroleum alkyl phenols dissolved in iso-octane and benzene is extracted with aqueous caustic soda to

separate ethyl phenols and xlenols from cresols; (3) crude lubricating oil is extracted with furfural; (4) hydrogen sulphide is separated from a gaseous mixture with nitrogen by treatment with an aqueous solution of diethanolamine; (5) a cracked light **hydrocarbon gas** is purified by contact with powdered carbon black adsorbent. Reference is made to other processes as follows: **gas** drying and humidification; separation of methane from ethane and ethylene in natural **gas** by adsorption on charcoal; fractionation of powder by elutriation or **gas** flotation; the extraction, concentration, and purification of antibiotics with solvents, with or without the addition of a solid adsorbent; treatment of mineral oils with sulphuric acid; the activation of clays with acid; washing precipitates; de-oiling of wax with solvents; regeneration and de-oiling of adsorbents; extraction of oils from shales and asphalts; and the separation of antigens, allergenic proteins, hormones, vitamins, and antibiotics from solution by a solid adsorbent. Specifications 613,229 and 615,479 are referred to. ALSO: Two or more substances which form at least two phases in contact with each other, at least one of which substances is a fluid, are contacted by passing the phases simultaneously, preferably in countercurrent, into an annular zone formed between two surfaces of revolution, which have different angular velocities, the relative angular velocity being such that an orderly

distribution of a dispensed phase in a continuous phase is maintained. Orderly distribution is a condition associated with regular visual patterns formed by the disperse phase, as distinct from random turbulence.

In the apparatus shown, a cylinder 2 is rotated within a stationary cylinder 1 by a variable-speed motor 5, preferably at a peripheral velocity greater than 2.5-3.0 feet per **second**. **Heavy** fluid enters at 6 and leaves at 11, while light fluid enters at 7 and is withdrawn at 10. <PICT:

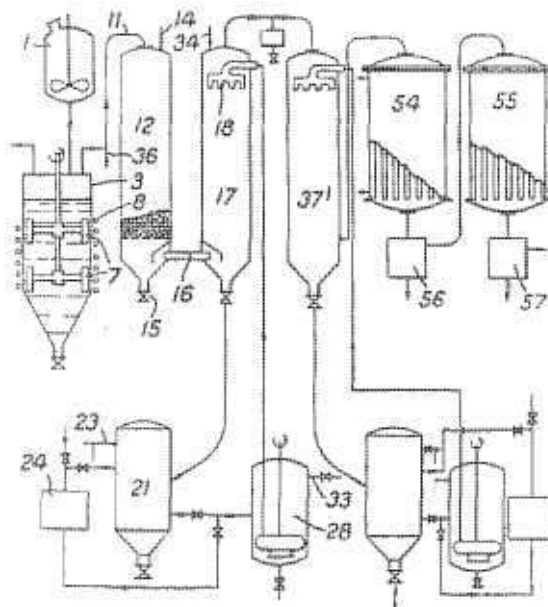
0615425/IV(b)/1> Separation of the phases takes place in quiescent **settling** zones 8 and 9, **heavy** and light fluids returning to the contactor through lines 12 and 13 respectively. Electric controls 38 and 39 regulate the withdrawal valve 40 according to the levels in the **settling** zones. The apparatus may operate under increased or reduced **pressure** and may be surrounded by a jacket for **temperature** control. Substances may be added which reduce the viscosity or alter the surface tension of the phases. The annular zone may be of different shapes, e.g. the cross-sectional area may vary from one end of the zone to the other, so that the peripheral velocity of the surfaces alters along the zone. The axes of the surfaces need not be concentric, and several surfaces, forming a plurality of annuli, may be used. In examples: (1) gasolines are treated with aqueous potassium hydroxide to remove tertiary-butyl mercaptans; (2) a mixture of petroleum alkyl phenols

dissolved in iso-octane and benzene is extracted with aqueous caustic soda to separate ethyl phenols and xylenols from cresols; (3) penicillin is extracted from aqueous solutions with methyl-isobutyl-ketone or chloroform or a mixture thereof; (4) a methyl-isobutyl-ketone solution of acetic acid is extracted with water. Reference is made to other processes as follows: adsorption of olefines, diolefines or acetylenes by cuprous salts; separation of olefines, diolefines, acetylenes, naphthenes, aromatics, alkyl phenols, thiophenols, and nitrogen bases from petroleum or coal tar fractions by extraction with sulphur dioxide, furfural, phenols, sulpholanes, copper-containing solutions, aldehydes, ketones, ethers, esters, amines, nitrites, and nitro-hydrocarbons; the purification of fatty acids by extraction with ethanolamine, furfural and sulpholane; separation of a dialkylamine such as di-isopropylamine from the corresponding monoalkylamine by extraction with a **hydrocarbon**; the extraction, concentration and purification of antibiotics with solvents, with or without the addition of a solid adsorbent; the separation of polymers with solvents; separation of epian and dichlorohydrins from water with diisopropyl ether; the separation of alkyl phenols from thiophenols, and of mixtures of phenols, sulphonic and naphthenic acids by treatment with liquid caustic alkali; the separation of antigens,

allergenic proteins, hormones, vitamins, and antibiotics from solution by a solid adsorbent; the separation of phenols from hydrocarbons and aromatics from non-aromatics by adsorption on silica gel; the transfer of phenols from solution in a high boiling **hydrocarbon** into solution in a lower boiling denser solvent by contact with an aqueous alkaline solution. Specifications 613,229, [Group III], and 615,479 are referred to.

7/11 © EPODOC / EPO

- PN - [GB420909](#) A 19341203
- PR - GB19330016090 19330602
- AP - GB19330016090 19330602
- DT - *
- CCI - [C10G29/02](#) ; [C10G19/00](#) ; [C10G29/04](#)
- IDT - 23B7K
- PA - JUSTIN FED WAIT
- TI - Improvements in or relating to the treatment of **hydrocarbon** oils
- AB - **Hydrocarbon** oils are freed from impurities by passing oil vapours through contact zones at a **temperature** of 250 to 500 DEG C., each containing a flowing stream of a molten anhydrous mixture of free active metal and one or more compounds thereof, and subsequently condensing the vapours. The contact zones differ <PICT:0420909/III/1> in the **temperature** used, or in the composition of the treating agent. Suitable agents consist of metals having one unpaired electron such as the alkali or alkaline earth metals, or aluminium in admixture with compounds of these metals such



as sodium or potassium hydroxide, sodamide or aluminium chloride. Such mixtures may be formed in the electrolytic cell described in Specification 408,819 in which caustic soda for example is dehydrated and partially electrolyzed to form an amount of free sodium in admixture with anhydrous caustic soda. A dispersion of sodium in oil is made in a vessel 1 from which it flows into a vessel 3 containing the oil such as lubricating oil, to be treated. The vessel 3 maintained under reduced **pressure** is heated to 250 to 300 DEG C., by an electric winding 8 and is provided with a **heavy** agitator the blades 7 of which just scrape the inside of the vessel. Oil vapours rise through a pipe 11 and pass through a vessel 12 filled with metal turnings and may be mixed with light hydrocarbons such as cracking **gas** admitted through a pipe 14. Any polymerized material is removed through an outlet 15, and the hot vapours pass through a pipe 16 into the bottom of the first treating tower 17, down which a stream of molten sodium mixed with sodium hydroxide at a **temperature** of 350--400 DEG C., flows from a distributor 18. The treating period is preferably short for example a few **seconds**. A further quantity of light vapours may be admitted through a pipe 34. The treated vapours pass to a **second** tower 37<1> in which it is treated in concurrent with a similar treating agent at a **temperature** of 300--350 DEG C., but containing a higher proportion

of free metal for example from a few per cent up to nearly pure sodium. The vapours are then fractionally condensed in condensers 54, 55 and the fractures drawn off from separators 56, 57. The spent reagent flows from the treating tower 17 into a **settling** tank 21 where it is washed with oil, which is discharged together with impurities through a pipe 23. The partially purified molten mass is then subjected to electrolysis in an electrolytic cell 24 to form about 1 per cent of free sodium, and the mixture then flows into a tank 28 from which it is returned to the distributor 18. Oil or inert **gas** may be admitted to the tank 28 through a pipe 33. A similar regenerating plant is provided for the treatment of the spent reagent passing from the **second** treating tower 37<1>. The preliminary treatment in vessels 1, 3 and 12 may be replaced by treatment with an alkali hydroxide, aluminium chloride, aluminium, calcium or salts thereof, or the preliminary treatment may be dispensed with and the oil vapours admitted to the main treating towers of which a series is then preferably employed.

PN - [GB595742](#) A 19471215

PR - USX595742 19440822

AP - GB19450015882 19450621

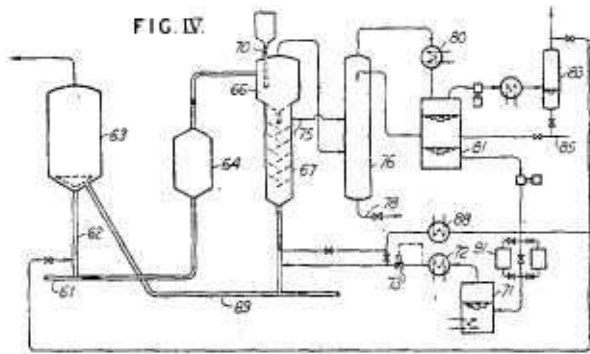
DT - *

CCI - [B01J21/04](#)

PA - SHELL DEV

TI - Catalytic conversion of hydrocarbons and the preparation of catalysts therefor

AB - <PICT:0595742/III/1> Boric oxide catalysts are produced by impregnating adsorptive base material consisting predominantly of alumina with mixed vapours of steam and boric acid at 140-590 DEG C., preferably at a combined vapour **pressure** below one atmosphere, e.g., by the addition of diluent gases. Suitable boric oxide concentrations vary from 2.9×10^{-4} grams per square metre of surface for dehydrogenation to 10×10^{-4} g.p. s.m. for cracking. The base preferably contains 2-10 per cent. water, 2-15 per cent. silica, has a density of 0.6-1 and an available surface of at least 150 square metres per gram. It may contain minor amounts of oxides of calcium, barium, strontium, magnesium, beryllium, p titanium, tin, thorium, zirconium, bismuth, chromium, molybdenum and tungsten. In the fluid catalyst system shown, **hydrocarbon** oil or **gas** entering at 61, charged with finely divided catalyst from the **secondary** regenerator 63 passes to the hindered **settling** reactor 64 and separator 66. Cracked gases pass to a fractionator 76 **heavy** oil being withdrawn at 78 while steam, boric acid vapour, and light

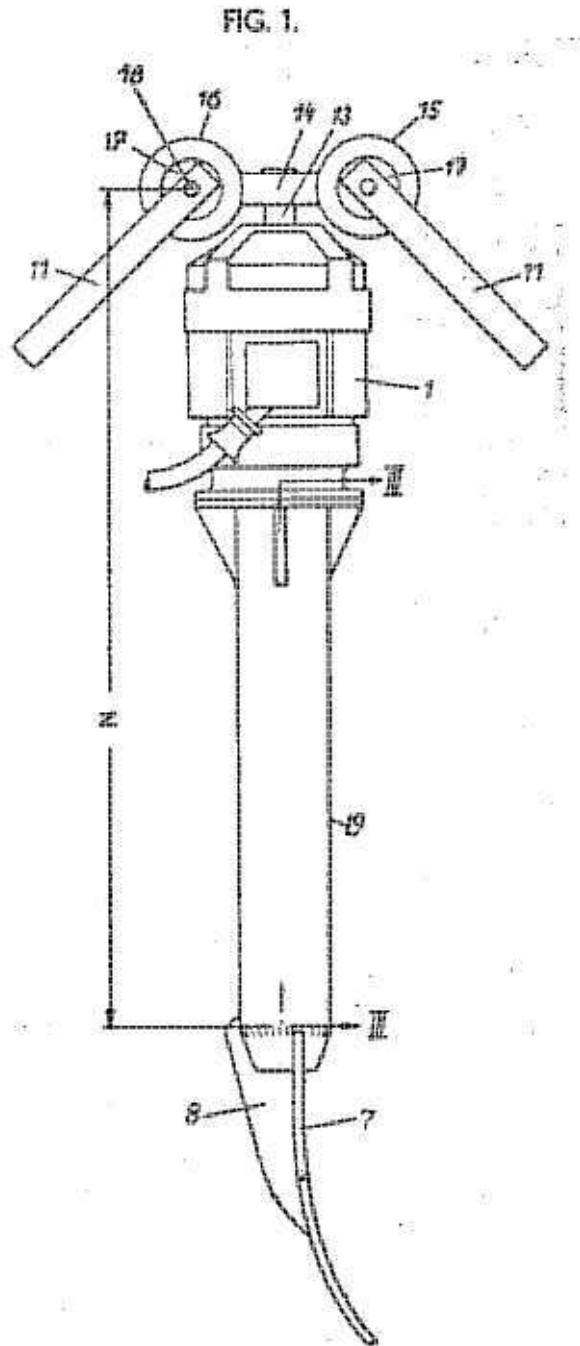


gases pass to a cooler 80 and separator 81.

Uncondensed **hydrocarbon** gases after compression and cooling pass to a separator 83 and out of the system, part being diverted to regenerator leg 62 to displace air in the catalyst. Light and **heavy** gasoline from the separator leave at 85. Boric acid solution from separator 81, fortified in the saturators 91 passes to the boiler 71, preferably maintained at over 4.5 atmospheres and below 3 per cent. boric acid concentration. Catalyst and make up base material charged at 70 pass down the baffled stripping regenerating impregnator 67 countercurrent to vapours of steam and boric acid fed from boiler 71 via superheater 72 and expansion valve 73 and diluted with **hydrocarbon** gases bled from the separator 83 via heater 88. **Hydrocarbon** oils stripped from the catalyst pass at 75 to the fractionator 76. Impregnated catalyst is conveyed by an air current 69 to the regenerator 63 where carbon deposits are burnt off. Impregnation thus occurs at the reactor **temperature**, e.g., 980 DEG F. or below and in the presence of **hydrocarbon** oils and gases which protect the base against damage by steam. The **secondary** regenerator 63 may operate at, e.g., 1100-1400 DEG F. In modifications ordinary bottom draw off reactors and impregnators are used in a similar cycle, the make up material being charged to the **second** stage regenerator. Fortified boric acid solution may be charged direct to hot catalyst from the reactor thus dispensing

with the boiler. Alternatively catalyst may cycle in parallel streams from the **second** stage regenerator to the reactor and to the impregnator. Impregnation may thus take place at a much lower **temperature** while excessive regenerator temperatures may be avoided. Examples are given.

PN - [GB1038518](#) A 19660810
 PR - AT19630002124 19630318
 AP - GB19640010979 19640316
 DT - *
 CCI - [E01B27/14](#)
 PA - VIKTOR SEIDL
 TI - A ballast tamping device
 AB - A natural tar or bitumen containing at least 0.1% silt which is non-**settling** at a **temperature** up to the coking **temperature** of the tar, e. g. of <325 mesh particle size, is refined by passage in the liquid phase in the presence of a hydrogen-containing **gas** through a reaction zone at a **temperature** , **pressure** and space velocity such that the silt is converted to a free **settling** state. Suitable conditions are a **temperature** between 700 DEG and 950 DEG F., a total **pressure** and hydrogen partial **pressure** of 400-2000, 200-1000 p.s.i.g. respectively and a residence **time** of 30-90 minutes; a 60% H₂-containing **gas** may be used at a consumption of 500-1500 standard cubic feet per barrel. Part of the reaction zone effluent may be recycled thereto to establish an ash concentration of 25-50% by weight; the remaining effluent passes to a solids **settling** zone from which a portion of the tar effluent is recycled to the reaction zone. An ash-free **heavy fuel** oil may be produced by vacuum distillation of the liquid components of the treated tar.



10/11 © EPODOC / EPO

PN - [GB722729](#) A 19550126
 PR - USX722729 19510925
 AP - GB19520006004 19520307

DT	- *
CCI	- C10G33/02 ; C10G31/08 ; C10G33/06
PA	- STANDARD OIL DEV CO
TI	- Improvements in or relating to purification of hydrocarbon oils
AB	- Oil- and water-insoluble contaminants are removed from hydrocarbon oils, particularly hydrocarbon oils to be used as feed stocks for catalytic cracking processes, by intimately mixing the hydrocarbon oil with water to form an initial emulsion of the oil with the water, forming from this initial emulsion a minor unbroken emulsion phase and a major free oil phase, and separating this unbroken emulsion phase as a whole from the free oil phase. The contaminants which may be iron, its oxides and sulphides, other metal compounds, carbon, siliceous materials and heavy hydrocarbonaceous materials such as pitches and asphalts, become concentrated in the minor unbroken emulsion phase, which may be treated, for example by processes involving filtration or distillation, to obtain uncontaminated oil therefrom. Alternatively, this minor unbroken emulsion phase may be broken, for example by long time gravity settling , treatment with caustic alkali or other chemical emulsifiers, or by electrical precipitation, and the contaminated oil obtained may be distilled or it may be recycled by mixing with the hydrocarbon feed oil from which the initial emulsion is formed. The hydrocarbon oil to be purified may be a gas oil, a lubricating oil, a cutting oil or an oil for oil burners. In preparing the initial emulsion, the oil and water may be intimately mixed at elevated temperature and pressure in a mixing valve to produce a water-in-oil emulsion. The initial emulsion may be converted into a minor unbroken emulsion phase and a major free oil phase by gravity settling , but the conversion may be facilitated by the addition of emulsion breaking agents such as petroleum sulphonates, or by filtering, centrifuging or applying electrical precipitation. Suitable conditions under which the purified oil may be catalytically cracked are described. The process of Specification 680,244, for breaking an emulsion, is disclaimed.

PN - [EA200300003](#) A1 20030424

PNFP - EA003897 B1 20031030

PR - CA20002310858
20000606; WO2001IB00962
20010601

AP - EA20030000003 20010601

DT - I

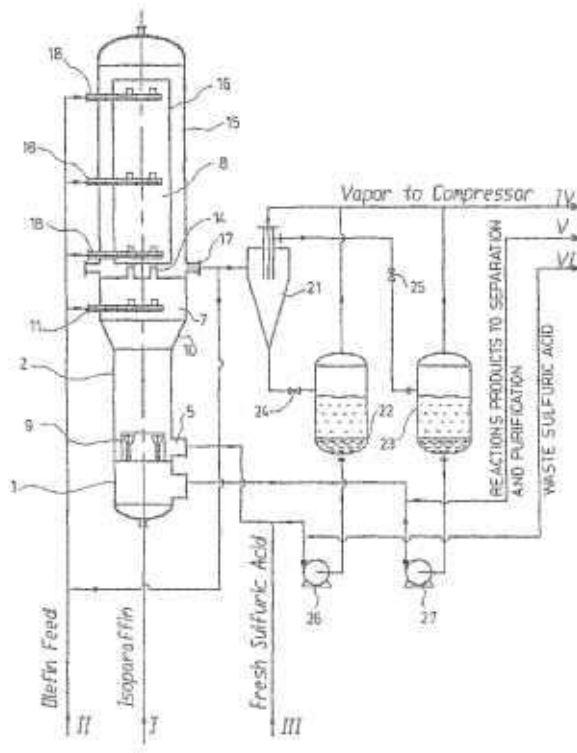
CCI - [B01J19/088](#) ; [C07C2/62](#)

CCA - [B01J2219/0809](#) ; [B01J2219/083](#) ;
[B01J2219/0835](#) ;
[B01J2219/0839](#) ;
[B01J2219/0875](#) ;
[B01J2219/0879](#) ;
[B01J2219/0886](#) ;
[B01J2219/0894](#) ; [C07C2527/054](#)

PA - (B1)
ORGRALINTERNAT
TECHNOLOGIES C [BB]

TI - (B1)
METHOD AND DEVICE FOR THE
PRODUCTION OF ALKYLATES

AB - (B1)
1. A method for the production of
alkylate (s) by sulfuric
acidalkylation of at least one
isoparaffin with at least one
olefin, comprising the steps of:
(a) preparing a mixture of said at
least one isoparaffin with
recycled reaction products by
mixing said at least one
isoparaffin previously cooled
down to a **temperature** equal to
or lower than +12 C with recycled
reaction products separated
from sulfuric acid and cooled
down to a **temperature** equal to
or lower than +12 C; (b)
preparing a first hydrocarbons-
in-sulfuric acid emulsion by
injecting the mixture obtained in
step (a) in multiple parallel jets
into a sulfuric acid composition;
(c) preparing a **second** emulsion
by injecting a given portion of
said at least one olefin in jet
streams through nozzles into the



first hydrocarbons-in-sulfuric acid emulsion obtained in step (b); (d) injecting the **second** emulsion obtained in step (c) through nozzles into a reaction chamber of given height and cross-section, where said **second** emulsion is circulated in a closed circuit and a balanced amount of reaction mixture is continuously discharged; (e) injecting another portion of said at least one olefin in jet streams through a system of injectors into the **second** emulsion circulating into the reaction chamber, all over the cross-section and height of said reaction chamber; (f) processing the reaction mixture discharged from the reaction chamber through at least one hydrocyclone in order to separate said reaction mixture into an acid-containing phase and a **hydrocarbon**-containing phase and subjecting each of said phases to a **pressure** reduction and a **gas** separation; (g) recycling to step (a) one part the **hydrocarbon**-containing phase that is in a liquid form after said **gas** separation, said recycled phase acting as said recycled reaction products, recovering the remaining part of said **hydrocarbon**-containing phase and subjecting said recovered part to deacidification, purification and separation to extract the requested alkylate (s); and (h) recycling to step (b) the acid-containing phase after said **gas** separation and a cooling, said recycled acid containing phase acting as said sulfuric acid composition, part of said acid-containing phase being

withdrawn to regeneration prior to being recycled and being replaced by fresh acid. 2. The method of claim 1, wherein: - steps (a), (b), (c) and (d) are run in vertical flows; -steps (b) and (h) are controlled in such a manner that the amount of sulfuric acid circulating through the reaction chamber and having been processed in step (f) ranges between 40 to 80 m³/t of commercial grade alkylate (s); - steps (b) and (d) are controlled in such a manner that in step (b), the first emulsion flows at a speed of 1.5 to 3.5 m/s and in step (d), the **second** emulsion flows in the reaction chamber at a speed of 2 to 4 m/s; and -steps (c) and (d) are controlled in such a manner that the at least one olefin is injected with a **pressure** drop higher than 1kg/cm². 3. The method of claim 1 or 2, wherein a further portion of said at least one olefin is injected into the reaction mixture at an outlet of the reaction chamber. 4. The method of claim 1 to 3, wherein said at least one isoparaffin comprises isobutane and said at least one olefin comprises propylene, butylenes, amylenes or mixtures thereof. 5. A method for separating into phases a reaction mixture exiting from an unit of sulfuric acid alkylation of at least one isoparaffin by at least one olefin, said phases including a liquid **hydrocarbon**-containing phase and a liquid acid-containing phase, which comprises the steps of: - injecting said reaction mixture at a speed of 4 to 10 m/s into a hydrocyclone in order to separate it into said liquid **hydrocarbon**-

containing phase and said liquid acid-containing phase; and further processing said phases by subjecting each of said phase to a **pressure** reduction, injecting the phase having been subjected to said **pressure** reduction into a **gas** separator, recovering liquids from said **gas** separator by means of a pump for further utilization, and extracting vapors from said separator by means of a compressor. 6. The method of claim 5, wherein the phases having been subjected to said **pressure** reduction, are injected into separate **gas** separators. 7. The method of claim 5, wherein: -the phases having been subjected to said **pressure** reduction, are injected into a same **gas** separator comprising a vessel divided by an overflow baffle plate into a **settling** tank and an accumulating tank, said baffle plate having an upper end; - reaction products to be recovered are withdrawn from said accumulating tank and subjected to rectification in order to obtain a commercial grade alkylate; -acid is withdrawn from a bottom part of the **settling** tank for recycling and regeneration; and -other reaction products to be recycled are withdrawn from the **settling** tank at a level that is lower than the upper end of the overflow baffle plate. 8. The method of claim 5, wherein: - the **hydrocarbon**-containing phase exiting from the hydrocyclone is injected into another hydrocyclone where it is separated into an upper lightweight flow and a lower **heavy** weight flow; -the

upper lightweight flow is subjected to **pressure** reduction and **gas** separation and then to rectification and fractionation in order to obtain a commercial grade alkylate; and -the lower **heavy** weight flow is subjected to **pressure** reduction and **gas** separation and then recycled to the unit. 9. The method of claim 5, wherein: -the acid-containing phase existing from the hydrocyclone is injected into another hydrocyclone wherein it is separated into an upper lightweight flow and a lower **heavy** weight flow; -the upper lightweight flow that is enriched by acid is returned to the unit as a first portion of acid to be recycled; and -the lower **heavy** weight flow is separated into a first part that is returned to the unit as a **second** portion of acid to be recycled, and a **second** part that is discharged as waste acid for further regeneration. 10. The method of claim 9, wherein: -the lower **heavy** weight flow separated within the other hydrocyclone is injected into a further hydrocyclone where it is separated into another upper lightweight flow and another lower lightweight flow; -the other lower **heavy** weight flow obtained in said further hydrocyclone is used as said **second** portion of acid to be recycled; and -the other upper lightweight flow obtained in said further hydrocyclone is discharged as further waste acid for further regeneration. 11. The method of any one of claims 5 to 10, comprising the additional step of carrying out a **gas**

separation downstream of the hydrocyclone. 12. A device for mixing and reacting at least two liquid components, comprising: (a) a mixing chamber for preparing a mixture of two of said components; (b) an emulsion chamber for preparing a first emulsion, where the mixture prepared in the mixing chamber (a) is injected in multiple parallel jets; (c) a pre-reaction chamber for preparing a **second** emulsion, where a given portion of one of said components is injected in jet streams into the first emulsion coming from the emulsion chamber (b); and (d) a reaction chamber of given height and cross-section where the **second** emulsion coming from the pre-reaction chamber (c) is injected through nozzles and one of said components is injected in jet streams all over the cross-section and height of said reaction chamber, said reaction chamber being devised so that said **second** emulsion is circulated in a closed circuit and comprising an outlet through which a balanced amount of reaction mixture is continuously discharged; wherein said mixing chamber (a), emulsion chamber (b), pre-reaction chamber (c) and reaction chamber (d) are coaxially arranged one above the other in vertical position and altogether form a reactor with said mixing chamber (a) being located at the bottom of the reactor and said reaction chamber (d) on top thereof. 13. A device for the production of alkylate (s) by sulfuric acid alkylation of at least one isoparaffin with at least one

olefin, comprising: (a) a mixing chamber for preparing a mixture of said at least one isoparaffin with recycled reaction products; (b) an emulsion chamber for preparing a first hydrocarbons-in-sulfuric acid emulsion by mixing sulfuric acid with the mixture prepared in the mixing chamber (a); (c) a pre-reaction chamber for preparing a **second** emulsion, where a given portion of said at least one olefin is injected in jet streams into the first hydrocarbons-in-sulfuric acid emulsion coming from the emulsion chamber (b); and (d) a reaction chamber of given height and cross-section where the **second** emulsion coming from the pre-reaction chamber (c) is injected through nozzles and another portion of the at least one olefin is injected in jet streams all over the cross-section and height of said reaction chamber; wherein said mixing chamber (a), emulsion chamber (b), pre-reaction chamber (c) and reaction chamber (d) are coaxially arranged one above the other in vertical position and altogether form a reactor with said mixing chamber (a) being located at the bottom of the reactor and said reaction chamber (d) on top thereof. 14. The device of claim 12 or 13, wherein the emulsion chamber (b) includes: -a plurality of parallel inlet branch pipes having a given internal diameter, through which the mixture prepared in the mixing chamber (a) is injected; -a cylindrical socket centrally mounted within said emulsion chamber, said socket having a height equal to 20 to 60 times to

internal diameter of the parallel inlet branch pipes, said socket also having an upper outlet; and - an enlargement fitting joined to the upper outlet of said cylindrical socket. 15. The device of any one of claims 12 to 14, wherein the pre-reaction chamber (c) has a bottom portion provided with a feed injection unit comprising injectors having axes running upward at an angle of 0 to 30° with respect to the vertical. 16. The device of any one of

[SS 15] tar or bitumen or hydrocarbon

Results in EPODOC **335.027**

[SS 16] 15 and "coking temperature"

Results in EPODOC **0**

EPODOC: term 'COKING TEMPERATURE' not found in index 'BI'. *WARNING(1)*

[SS 17] 15 and coking and temperature

Results in EPODOC **863**

[SS 18] 17 and (sediment or settl+)

Results in EPODOC **21**

[SS 19] ..li



1/21 © EPODOC / EPO

PN - [CN106479555](#) A 20170308

PR - CN20151553586 20150901

AP - CN20151553586 20150901

DT - I

PA - JIANGSU KECHUANG PETROCHEMICAL CO LTD

TI - Anti-**coking** agent for delaying **coking** and preparation method of anti-**coking** agent

AB - The invention discloses an anti-**coking** agent for delaying **coking** and belongs to the field of petrochemical engineering. The anti-**coking** agent for delaying **coking** is prepared from components in percentage by mass as follows: 10%-30% of a thermal cracking accelerative activator, 20%-40% of a free radical chain reaction inhibitor, 1%-15% of an

anti-scorching agent, 1%-15% of an antioxidant and the balance of a solvent, wherein the thermal cracking accelerative activator is block polyether, the free radical chain reaction inhibitor is pentaerythritol ether, and the anti-scorching agent is a sulfonamide agent. The anti-**coking** agent for delaying **coking** can effectively prevent and inhibit cokes from **settling** in a furnace tube of a heating furnace and can inhibit a free radical chain reaction, reduce production of dry gas, prevent aromatic **hydrocarbon** from condensation, reduce coke production, improve the thermal cracking reaction activity and improve the selectivity of a **coking** reaction; **coking** and scale depositing caused by high-**temperature** oxidation of raw materials in the furnace tube can be prevented, the scale inhibiting ratio reaches 92% or above, and the device running cycle is prolonged by one time or more.

2/21 © EPODOC / EPO

- PN - [RU2596249](#) C1 20160910
- PR - RU20150118509 20150518
- AP - RU20150118509 20150518
- DT - I
- CT - || STSE (C1)
[RU2465302](#) C1 20121027 [] (GUP INST NEFTEKHIMPERERABOTKI RESPUB BASHKORTOSTAN GUP INKHP RB [RU]);
[RU86948U](#) U1 20090920 [];
[EP2851409](#) A1 20150325 [] (BECHTEL HYDROCARBON TECHNOLOGY SOLUTIONS INC [US]);
[EP0186955](#) A2 19860709 [] (MOBIL OIL CORP [US])
- PA - GOSUDARSTVENNOE UNITARNOE PREDPRIYATIE INST NEFTEKHIMPERERABOTKI RESPUBLIKI BASHKORTOSTAN (GUP INKHP [RU])
- TI - METHOD FOR REMOVAL OF HARMFUL EMISSIONS FROM **COKING** REACTORS
- AB - FIELD: oil refining industry.SUBSTANCE: invention relates to oil processing industry, in particular, to a method of trapping of hazardous emissions from reactors of delayed **coking** of oil residues. Method comprises feeding products of heating reactors, steaming coke and cooling coke from reactors in absorption column. Liquid part from absorption column is partially used as live reflux, partially directed into main rectifier or boiler fuel tank, and steam-gas portion is discharged via condenser-cooler into separator for separation into a water condensate, directed for repeated separation in **settler** together with coke steaming and cooling products with **temperature** lower than 160 °C and then for advanced treatment, **hydrocarbon** condensate, which together with **hydrocarbon** condensate from **settling** tank is directed into main rectification column or boiler fuel tank, and gas directed for further processing, which is performed in ejector by mixing with superheated steam at **temperature** of 280-350 °C. Obtained raw mixture is fed into main rectification column for separation, wherein separation of steam-gas part from absorption column in separator is performed at **temperature** not lower than 90 °C, and gas from **settling** tank is removed into absorption column.EFFECT: technical result is reduction of emissions when burning gas into atmosphere, higher quality of separation products.1 cl, 1 dwg

3/21 © EPODOC / EPO

- PN - [CN105316090](#) A 20160210

PR - CN20141361890 20140728
 AP - CN20141361890 20140728
 DT - I
 PA - SHAANXI SHENGHUIYUAN INFORMATION SCIENCE & TECHNOLOGY CO LTD
 TI - Electrorheological fluid preparation method
 AB - The present invention discloses an electrorheological fluid preparation method, which is characterized in that heavy by-products in petroleum processing are adopted as raw materials, the C/H atomic ratio in the product is controlled at 1.5-3.0 through a one-step **coking** method, grinding is performed, and dispersion in insulating oil is performed. According to the present invention, the petroleum heavy by-products, the heavy thick oil and the heavy oil are uses, and the pre-refining requirement on the raw materials does not exist so as to expand the raw material selection range; the one-step **coking** method is used to replace the multi-step process in the prior art so as to substantially simplify the preparation process and avoid the used harsh conditions for obtaining the mesophase **bitumen** having optical anisotropy approaching 100%; and the prepared petroleum coke particle electrorheological fluid has good mechanical response, the shear stress can achieve more than or equal to 2 Kpa under the direct current field strength of 21 V/mm, the mechanical property of the electrorheological fluid at the high **temperature** during the work is not significantly decreased, the current density is not significantly increased, the particles do not significantly **settle** after the suspension is placed for a long time, and the advantages of good stability, wear resistance and long service life are provided.

4/21 © EPODOC / EPO

PN - [EA201400549](#) A1 20151130
 PNFP - EA026478 B1 20170428
 PR - EA20140000549 20140522
 AP - EA20140000549 20140522
 DT - I
 CT - || STSE (B1)
[SU1005829](#) A1 19830323 [] (ANDREJKO IVAN M [SU], et al);
[RU2090238](#) C1 19970920 [] (CHEREK ALEKSEJ MIKHAILOVICH [SU]);
[RU2040301](#) C1 19950725 [] (NIZHNETAGILSKIY METALL KOM [SU]);
[WQ8201664](#) A1 19820527 [] (DAMERAU HERBERT R)
 PA - (B1)
 OTKRYTOE AKTSIONERNOE OBSHESTVO GUBAKHINSKIY COX [RU]
 TI - (B1)
 MECHANIZED CLARIFIER
 AB - (B1)
 The invention is related to coke-chemical industry and can be used for **settling** of highly viscous **tar** from gas condensate, in particular, **tar** produced during **coking** of stock consisting of **coking** additive only. The mechanized clarifier comprises a body including an inlet for gas-**tar** condensate, an outlet for above-**tar** water, a discharge for **settled tar**. The clarifier further comprises a closed heating circuit including the following elements connected hydraulically: shell-and-tube type steam-water heater, a tank for steam condensate, a pump for condensate feed from the tank to the shell-and-tube type

steam-water heater, and one or several channels formed inside the double hollow bottom of the body. The system provides continuous uniform heating of the mechanized clarifier contents to the required **temperature** .

5/21 © EPODOC / EPO

- PN - [CN102432306](#) A 20120502
- PNFP - CN102432306B B 20130424
- PR - CN20111250879 20110829
- AP - CN20111250879 20110829
- DT - I
- CT - || STSE (A)
[CN101787298](#) A 20100728 [A] (BEIJING INST PETROCHEM TECH)
 [A]
[CN101787299](#) A 20100728 [A] (SHANGHAI SHANGYUAN CHEMICAL EN)
 [A]
[CN101508903](#) A 20090819 [A] (SHANGHAI BAOSTEEL CHEMICAL CO [CN])
 [A]
[CN102051191](#) A 20110511 [A] (SHANGHAI BAOSTEEL CHEMICAL CO)
 [A]
[CN101302431](#) A 20081112 [A] (HANDAN CITY XINBAO COAL CHEMIC [CN])
 [A]
- PA - (A B)
 YUNNAN KUNSTEEL COAL CARBONIZATION CO LTD; UNIV EAST CHINA SCIENCE & TECH
- TI - (A B)
 Method for intensively producing refractory material binder by coal **tar** pitch needle coke
- AB - (A)
 The invention discloses a method for intensively producing a refractory material binder by coal **tar** pitch needle coke, comprising: separating, **settling**, purifying, oxidizing and modifying the QI1 residue which is not utilized in the prior art, coal **tar**, byproduct oils of a delay **coking** tower, a conditioning agent and a nickel, vanadium and cobalt depriving agent, to obtain the refractory materialbinder with high softening point, high slagging resistance, high oxidizability and high thermal shock resistance, mixing the refractory material binder with the activators: white carbon black, ammonium humate, polyvinyl alcohol, carboxymethyl cellulose, etc., and dry-pressing and forming the mixture to obtain the refractory material for a steel furnace with the performance batter than that of thephenolic resins. The refractory material binder is dissolved in the solution of carbon black, xylene, coumarone, polyethylene glycol, etc., to obtain a liquid spray coating type binder for repairing the steel furnace, which has higher repairing intensity than the common medium **temperature** asphalt does. The refractory material binder can effectively prolong the service life of a converter, an electric furnace, a calciner, etc.

6/21 © EPODOC / EPO

- PN - [CN102311800](#) A 20120111
- PNFP - CN102311800B B 20130424

PR - CN20111250880 20110829

AP - CN20111250880 20110829

DT - I

CT - || STSE (A)
[CN101787299](#) A 20100728 [A] (SHANGHAI SHANGYUAN CHEMICAL EN)
 [A]
[CN101787298](#) A 20100728 [A] (BEIJING INST PETROCHEM TECH)
 [A]
[CN101798515](#) A 20100811 [A] (UNIV LIAONING SCI & TECH)
 [A]
[CN101302444](#) A 20081112 [A] (UNIV TONGJI [CN])
 [A]
[CN101302434](#) A 20081112 [A] (UNIV CHINA PETROLEUM [CN])
 [A]

PA - (A B)
 YUNNAN KUNANG COKING CO LTD; UNIV EAST CHINA SCIENCE & TECH

TI - (A)
 Modification method of coal **tar** pitch needle coke oily by product
 - (B)
 Modification method of coal **tar** pitch needle coke oil by-product

AB - (A)
 The invention provides a modification method of a coal **tar** pitch needle coke oily by product, comprising the following steps of: mixing medium **temperature** pitch and a conditioning agent at the mass ratio of 0.25-3.5:1 to prepare soft pitch, followed by extraction, **settlement** and flash evaporation to obtain an upper distillation substance and lower residues, carrying out regular calcining on the lower residues to obtain the needle coke, mixing the upper distillation substance and distillate oil generated during the delayed **coking** tower production process at the mass ratio of 0.25-0.75:1, using regular gamma-Al₂O₃, Ni-ZSM-5, WO₃-Y₁₃ molecular sieves as catalysts to carry out a catalytic hydrogenation reaction while the **temperature** is 300-390 DEG C, the pressure is 0.05-5 Mpa and the oil gas speed ratio is 0.8-1.9 h<-1> to obtain the modified modulation oil with aromatic hydrocarbons and kinematic viscosity being reduced and naphthene +straight chain alkane being increased. The oil produced in the invention not only can be used as soft pitch modulation oil but also can be directly used as a substitute of light diesel fuel, and can satisfy the requirements on a high-quality carbon material in industries such as metallurgy, military use chemical industry and the like, therefore leading to higher value comprehensive utilization of the coal **tar** pitch resource.

7/21 © EPODOC / EPO

PN - [CN101665713](#) A 20100310

PNFP - CN101665713B B 20120704

PR - CN20081146601 20080902

AP - CN20081146601 20080902

DT - I

CCA - [Y02P30/42](#)

- PA - (A B)
LI LI
- TI - (A B)
Method and device for circulating cold regenerated catalyst
- AB - (A)
The invention provides a method for circulating a cold regenerated catalyst and application thereof. A regenerated catalyst from a regenerator is cooled by a catalyst cooler to between 200 and 720DEGC, and is not mixed with a hot regenerated catalyst to directly enter a riser reactor, or is mixed with another part of uncooled hot regenerated catalyst into a mixed regenerated catalyst of which the temperature is not lower than that of the regenerator to enter the riser reactor; and a **hydrocarbon** raw material undergoes contact reaction with the catalyst in the riser reactor, the reaction material flow enters a **settler** for the separation of the catalyst and oil gas, the separated catalyst to be regenerated is subjected to steam stripping in a steam stripping section, and then enters the regenerator for coke burning regeneration, and the regenerated catalyst is cooled and returns to the riser reactor for recycling. The method for circulating the cold regenerated catalyst has wide application, can be used for various fluid catalytic cracking processes comprising resid fluid catalytic cracking, wax oil catalytic cracking, gasoline catalytic conversion upgrading and the like, and also can be used for other gas-solid reaction processes comprising residual oil pretreatment, fluid **coking** and the like.
- (B)
The invention provides a method for circulating a cold regenerated catalyst and application thereof. A regenerated catalyst from a regenerator is cooled by a catalyst cooler to between 200 and 720DEG C, and is not mixed with a hot regenerated catalyst to directly enter a riser reactor, or is mixed with another part of uncooled hot regenerated catalyst into a mixed regenerated catalyst of which the **temperature** is not lower than that of the regenerator to enter the riser reactor; and a **hydrocarbon** raw material undergoes contact reaction with the catalyst in the riser reactor, the reaction material flow enters a **settler** for the separation of the catalyst and oil gas, the separated catalyst to be regenerated is subjected to steam stripping in a steam stripping section, and then enters the regenerator for coke burning regeneration, and the regenerated catalyst is cooled and returns to the riser reactor for recycling. The method for circulating the cold regenerated catalyst has wide application, can be used for various fluid catalytic cracking processes comprising resid fluid catalytic cracking, wax oil catalytic cracking, gasoline catalytic conversion upgrading and the like, and also can be used for other gas-solid reaction processes comprising residual oil pretreatment, fluid **coking** and the like.

PN - [US4094781](#) A 19780613

PR - US19760740616 19761110

AP - US19760740616 19761110

DT - *

CT - [US3607720](#) A []; [US3607721](#) A [];
[US3779902](#) A []; [US3884829](#) A [];
[US3990885](#) A []

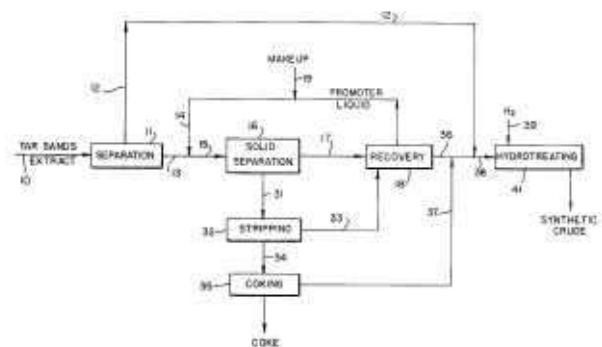
CTNP - [] Camp, Frederick W. The Tar Sands of Alberta Canada
Cameron
Engineers, Inc. 1974

CCI - [C10G1/045](#)

PA - LUMMUS CO

TI - Separation of solids from tar sands extract

AB - Solids are separated from a tar sands extract by gravity settling or centrifugation in the presence of a liquid promoter which promotes and enhances the separation of the solid material. The liquid promoter has a characterization factor of at least 9.75, a 5 volume percent distillation temperature of at least 250 DEG F and a 95 volume percent distillation temperature of at least 350 DEG F and no greater than 750 DEG F. As a result, liquid product is obtained without the necessity of preliminary coking of the entire extract.



PN - [US4481101](#) A 19841106

PR - US19820411141
19820825; US19810224778
19810113

AP - US19820411141 19820825

DT - *

CT - [US2358573](#) A []; [US3773653](#) A [];
[US4233138](#) A []; [US4411770](#) A []

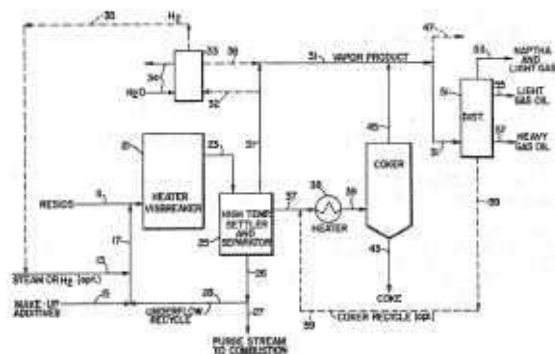
CCI - [C10G9/007](#) ; [C10G1/065](#)

CCA - [C10G2300/107](#)

PA - MOBIL OIL CORP [US]

TI - Production of low-metal and low-sulfur coke from high-metal and high-sulfur resids

AB - A process for demetallation and desulfurization of resids by visbreaking an admixture of resids, particulate solids, and steam and/or hydrogen, and then subjecting the visbroken mixture to high **temperature settling** and separating to provide a first vapor product, a liquid product, and a recycled underflow solids stream. The process further comprises **coking** the liquid product to produce a second vapor product and coke and then distilling the combined first and second vapor products to yield a plurality of demetallized and desulfurized liquid **hydrocarbon** products. A fraction of the recycled underflow from the **settler**/separator is removed as a purge stream and burned for recovery of heat and metals. If hydrogen is used in the visbreaking step, the first vapor product is condensed to separate the hydrogen for recycling.



10/21 © EPODOC / EPO

PN - [US4311682](#) A 19820119

PR - JP19790114651 19790906

AP - US19800183274 19800902
 DT - **
 CT - [US3035308](#) A []; [US3219731](#) A [];
[US4100265](#) A []
 CCI - [C10B55/00](#) ; [C04B35/532](#)
 PA - MITSUBISHI CHEM IND
 TI - Process for preparing a graphite product
 AB - A process for preparing a carbon product, which comprises: (a) mixing **hydrocarbon** material derived from coal with a **hydrocarbon** solvent having a boiling point or a distillation **temperature** for 95 vol % of the solvent less than 350 DEG C. and a B.M.C.I. value of 5 to 70, the value being defined as: B.M.C.I.=48,640/k+473.7S-456.8, wherein k is the average boiling point (DEG K) and S is the specific gravity at 60 DEG F., (b) separating insoluble material which **settles** from the resulting mixture upon standing, (c) removing by distillation at least a portion of said solvent from the insoluble matter free mixture, (d) **coking** the residue obtained after distillation, thereby forming an acicular, green coke, (e) calcining the acicular green coke, thereby obtaining an acicular calcined coke having a pore volume of more than 40+10-3 cc/g, and (f) blending the acicular calcined coke with a binder, shaping the blend and graphitizing the blend at a high **temperature** .

11/21 © EPODOC / EPO

PN - [JPH02284989](#) A 19901122
 PR - JP19890106849 19890426
 AP - JP19890106849 19890426
 DT - I
 FI - C10B57/04&101
 FT - 4H012/NA01; 4H012/NA03
 PA - NIPPON STEEL CORP; NIPPON STEEL CHEMICAL CO
 TI - PRODUCTION OF NEEDLE COKE
 AB - PURPOSE:To obtain high-grade needle coke, having a low thermal expansion coefficient and usable as a raw material for artificial graphite electrodes by heat-treating coal **tar** pitch free of portions insoluble in quinoline under specific conditions and then removing the formed mesophase. CONSTITUTION:The objective needle coke obtained by heat-treating coal **tar** pitch free of portions insoluble in quinoline under conditions of 350-450 deg.C **temperature** and 1-10kg/cm<2> pressure in an atmosphere in the absence of molecular oxygen, forming a mesophase in an amount of 2-30 pts.wt. (preferably 3-20 pts.wt.) based on 100 pts.wt. above-mentioned coal **tar** pitch, **settling** the aforementioned mesophase, then separating the supernatant liquid by decantation and carrying out delayed **coking** of the above-mentioned liquid.

12/21 © EPODOC / EPO

PN - [GB283545](#) A 19290321
 PR - DEX283545 19270113
 AP - GB19270034620 19271221

DT - *

CCI - [C10G1/04](#) ; [C10G1/02](#)

PA - IG FARBENINDUSTRIE AG

TI - Improvements in the recovery of valuable organic products from solid carbonaceous materials

AB - 283,545. I. G. Farbenindustrie Akt.- Ges. Jan. 13, 1927, [Convention date]. Addition to 282,691. Mineral and **tar** oils, extracting.-Oils and other organic products are obtained from coal and other solid carbonaceous materials by treatment at pressures of at least 75 atmospheres and at temperatures below the **coking** temperatures of the extracting agent, with such hydrocarbons or their derivatives as are liquid under the reactive conditions, and contain substantially no components boiling below 100° C. or above 300 C. Catalysts and gases substantially free from hydrogen may be present. The treatment may be conducted in stages at different pressures, lower pressures than 75 atmospheres being used initially if desired. Pressures up to 1000 atmospheres are specified; temperatures of 300-400 C. are preferable. The oils may be worked up into Diesel oils, lubricating oils, insulating oils, and the like, or be used for the treatment of fresh coal; or they or the solid residue may be treated with hydrogen in presence or absence of catalysts and pressure to produce middle oils, benzine, and the like. Extracting agents specified are xylene, cresol, hydrogenated naphthalenes, aniline, alkaline substances decomposing coal, oils boiling above 180 C. obtained by the process, oils resulting from the distillation or low **temperature** carbonization of coal, lignite, or mineral oils, or from the destructive hydrogenation of coal, tars, mineral oils, &c., or from the catalytic hydrogenation of oxides of carbon under pressure. These oils may also be used mixed with those boiling above 300 C. referred to in the parent Specification. In an example brown coal is triturated with xylene, and passed at 200 atmospheres pressure through a coil heated to 320-340 C.; the product is **settled** and centrifuged. Over 50 per cent of the coal is obtained as liquid oils.

13/21 © EPODOC / EPO

PN - [GB791756](#) A 19580312

PR - GB19540034431 19541126

AP - GB19540034431 19541126

DT - *

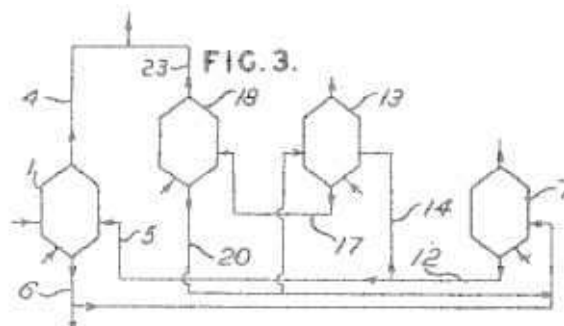
CCI - [C01B3/30](#) ; [C10G9/32](#)

IDT - 23B5B18T

PA - EXXON RESEARCH ENGINEERING CO

TI - Process for the production of combustible gases from liquid hydrocarbons

AB - 791,756. **Coking** and gasifying liquid hydrocarbons. ESSO RESEARCH & ENGINEERING CO. Oct. 25, 1955 [Nov. 26, 1954], No. 34431/54. Classes 55 (1) and 55 (2). In a process for



producing combustible gases from liquid hydrocarbons, the **hydrocarbon** is contacted in a **coking** zone 1 with a fluidized bed of coke-covered particles to produce a stream of gas leaving by line 4, coke-covered particles are continuously withdrawn by line 6 and passed to a heating zone 7 where they are heated by partial combustion, the heated cokecovered particles being in part recycled to the **coking** zone 1 by lines 12 and 5 and in part passed by lines 12 and 14 to a secondary heating zone 13 and further raised before transfer by line 17 to a gasification zone 18 where they are gasefied with steam to produce a stream of water gas leaving by line 23 and mixing with the gas produced in the **coking** zone 1. Residue from the gasification zone is returned to the heating zone 7 by line 20. The liquid **hydrocarbon** has a viscosity not less than 45 S.S.U. at 210 F. and preferably not less than 160 S.S.U. at 210 F. and may be a petroleum **hydrocarbon**. The **temperature** in the **coking** zone may be between 1450-2200 F., preferably between 1800-2200 F., and in the gasification zone may be between 1600-2500 F., preferably between 1800-2200 F. The pressure in the gasification zone is preferably between 25-125 p.s.i.g. and the amount of steam supplied thereto is usually from 30-200 wt. per cent based on the liquid feed to the **coking** zone. When the **coking** zone is operated at temperatures above 1600 F. the secondary heating zone 13 may be omitted and either or both of the heating zones may be a transfer line burner with **settling**

zones and cyclones.
Specification 791,754 is referred
to.

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- PN - [GB1036518](#) A 19660720
- PR - GB19640029139 19640715
- AP - GB19640029139 19640715
- DT - *
- CCI - [C10C1/205](#)
- PA - HYDROCARBON RESEARCH INC
- TI - Process for treating **tar** sands
- AB - 1,036,518. Treating **tar** sands. **HYDROCARBON** RESEARCH Inc. July 15, 1964, No. 29139/64. Heading C5E. A natural **tar** or **bitumen** containing at least 0.1% silt which is non-**settling** at a **temperature** up to the **coking temperature** of the **tar**, e.g. of <325 mesh particle size, is refined by passage in the liquid phase in the presence of a hydrogencontaining gas through a reaction zone at a **temperature**, pressure and space velocity such that the silt is converted to a free **settling** state. Suitable conditions are a **temperature** between 700 and 950 F., a total pressure and hydrogen partial pressure of 400-2000, 200-1000 p.s.i.g. respectively and a residence time of 30-90 minutes; a 60% H₂ containing gas may be used at a consumption of 500-1500 standard cubic feet per barrel. Part of the reaction zone effluent may be recycled thereto to establish an ash concentration of 25-50% by weight; the remaining effluent passes to a solids **settling** zone from which a portion of the **tar** effluent is recycled to the reaction zone. An ash-free heavy fuel oil may be produced by vacuum distillation of the liquid components of the treated **tar**.

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- PN - [GB829196](#) A 19600302
- PR - GB19560027433 19560907
- AP - GB19560027433 19560907
- DT - *; Rep
- CCI - [C10B55/00](#) ; [C10G9/00](#) ; [C10G11/00](#) ; [C01B32/00](#)
- PA - GREAT LAKES CARBON CORP
- TI - Improvements in or relating to process for producing a needle-like coke
- AB - Coke, which is suitable for the production of graphite electrodes, and which, when crushed to a fine size, shows a needle-like structure, is produced by removing from a high-boiling petroleum residuum the components which readily form an insoluble phase upon heating at 325 DEG to 550 DEG C., and **coking** the remaining residuum in a quiescent pool. Suitable residues may have an initial boiling-point above 250 DEG C. and not more than 25 to 30% distilling below 360 DEG C. The residuum may be charged into a batch still and the **temperature** gradually raised from 325 DEG C. to about 400 DEG to 425 DEG C., the residence time being greater than 5 hours and may be 10 to 30 hours. A distillate fraction may be taken off overhead. Additional quantities of residuum are added to the still from time to time. A heavy high-boiling **hydrocarbon**

liquid concentrate is left in the still together with an amorphous coke which may be separated therefrom by centrifuging or filtering. On **coking** the concentrate in a quiescent pool needle coke is formed. Alternatively the residuum may be heated under pressure at a **temperature** of 400 DEG to 600 DEG C. until 5 to 10% or more of the residuum has precipitated. This may be done by heating in pipe still and then passing the oil to a pre-**coking** drum. Also activated clay, silica, alumina catalyst, or activated alumina may be added to increase the rate or reduce the **temperature** at which the insoluble phase forms. In a modification about 80 to 95% of the **hydrocarbon** is flash distilled from a high-boiling petroleum residuum, the evolved vapours removed overhead being passed either directly to a quiescent **coking** zone or through a cooler and collected ready for **coking**, entrainment of the charge being prevented by passing the vapours through a knock-out drum or a column containing baffles, packing or bubble caps. The solid coke or pitch-like residue left in the still is removed and used for other purposes. In another form the residuum is preheated in a pipe coil to a **temperature** of 400 DEG to 600 DEG C. under super-atmospheric pressure and continuously passed into a flash distillation zone operated at a lower pressure which may be sub-atmospheric, the vapours being taken off overhead for **coking** and the non-volatile residue accumulating in the flash drum. In another form a low-boiling liquid paraffinic **hydrocarbon** such as propane, butane, pentane or hexane is mixed with residuum in the proportion of from 1 to 1 to 10 to 1 or more. Most of the residuum dissolved and this is separated from the heavy, viscous residue by **settling** or filtering. The solvent is distilled off and the purified oil is then coked. Topped or reduced crude oil may be vacuum distilled and the overhead extracted using a solvent such as furfural, phenol or liquid sulphur dioxide. The extract is separated from the raffinate, the solvent removed and the **hydrocarbon** extract is coked. The needle **coking** is carried out by passing the treated oil at a **temperature** above about 350 DEG C. and usually between about 375 DEG to 500 DEG C. into a vertical **coking** drum, the pool of oil being maintained at a uniform **temperature** so that thermal currents are avoided. When the coke drum is full, the coke is removed, broken into lumps and calcined at a **temperature** of 1000 DEG to 1500 DEG C. Calcined needle-coke flour is mixed with a binder such as coal **tar** pitch, baked at a **temperature** of 500 DEG to 1300 DEG C., and then graphitized at 2500 DEG to 3000 DEG C. to form electrodes.

PN - [GB723149](#) A 19550202

PR - USX723149 19510619

AP - GB19520013607 19520528

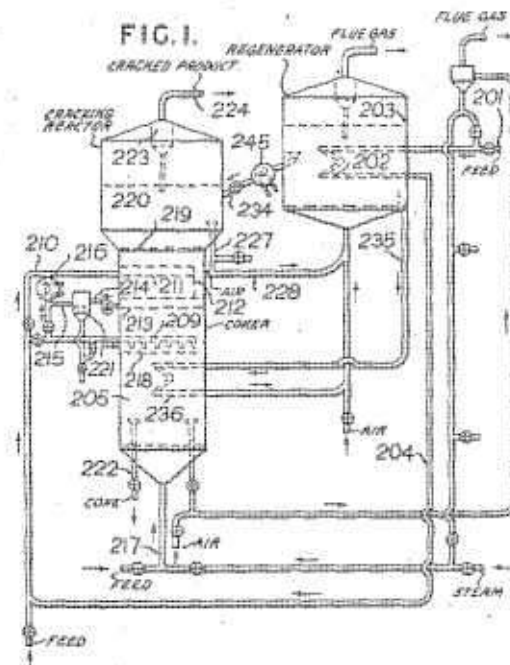
DT - *

CCI - [C10G51/04](#) ; [C10B55/10](#)

PA - STANDARD OIL DEV CO

TI - Cracking heavy hydrocarbons

AB - <PICT:0723149/III/1> In a process for converting heavy **hydrocarbon** oils wherein the oil is cracked in the presence of a hot bed of inert solid particles and the vapours so formed are contacted with a hot bed of catalytic solid particles, the vapours are scrubbed with relatively cool oil (e.g. the oil to be cracked) before they are introduced into the catalytic bed in order to remove entrained particles (from the inert bed) and vaporous coke-forming components which would otherwise contaminate the catalytic bed. The two beds are preferably of the densely-fluidized type; and both beds may be arranged in the same vessel with a pool of scrubbing liquid between them. The first bed may be operated as a **coking** zone, and may comprise particles of petroleum coke, sand, pumice, Kieselguhr, carborundum, alumina, spent clay catalyst, or spent synthetic silica-alumina catalyst. The second bed may comprise particles of cracking catalyst such as activated clay, activated alumina, or synthetic composites of silica with alumina, magnesia and/or boria. The solids in the second bed may also contain a reforming catalyst such as activated carbon, clay or bauxite, whereby



the octane number of naphtha produced in the coker may be improved. Whole or reduced crude petroleum, pitches, **tar**, asphalts, and the clarified bottoms from the recovery system of another cracking process, may be cracked by the process. Reduced crude is passed through line 201 to coil 202, which is immersed in the fluidized bed in catalyst regenerator 203; and is thereby preheated to 600 DEG -700 DEG F. The preheated feed is introduced through lines 204, 210 onto perforated plate 211. This plate, and also the plate 213 below, are disposed above the upper level 218 of a dense fluidized bed 205 of coke particles, but below a dense fluidized bed 220 of catalyst particles. The oil flows from plate 211 via downcomer 212 to plate 213; and is then introduced via line 214 and nozzles 209 into the coke bed 205, which is maintained at 850 DEG -1100 DEG F. by means of heating coil 236. The coke particles are fluidized by steam introduced through line 217. The oil is vaporized and partially coked in bed 205, without converting any substantial fraction of the feed into naphtha or gasoline; and the vapours flow up through the liquid pools on plates 213 and 211. The pool on plate 211 is maintained between 600 DEG and 800 DEG F.; a portion of the effluent (**temperature** about 850 DEG F.) from plate 213 being recycled, through line 215 and cooler 216, to the upper plate 211 in order to control the **temperature** . The building-up of coke fines in the scrubbing

section is prevented by means of slurry **settler** 221. Oil withdrawn from the scrubbing section may be returned to the **coking** bed 205. Coke particles are withdrawn from bed 205 through line 222; a portion thereof is ground down and recycled to the bed, while the remainder is withdrawn as a product. From plate 211 the vapours rise through perforated plate 219 into the fluidized catalytic bed 220, which comprises clay or silica/alumina particles maintained at 950 DEG -1100 DEG F. The effluent vapours from this second bed are passed through cyclone 223 and line 224 to a product fractionation system. Spent catalyst is withdrawn from bed 220 through standpipe 227, and is hydraulically lifted into regenerator 203 by means of air admitted through pipe 228. The catalyst particles form a dense fluidized bed in the regenerator, the **temperature** being maintained at 1050 DEG -1250 DEG F. Hot regenerated catalyst may be recycled from the regenerator to the catalytic bed 220 via line 234 and steam generator 245. Some of the hot regenerated catalyst is recycled to catalyst bed 220 via line 235 and coil 236, which is submerged in coke bed 205, in order to supply the required heat for the **coking** stage. Heat may also be exchanged directly by mixing coke and hot regenerated catalyst particles of different size, and then separating the two kinds of particles from the mixture by elutriation. Another embodiment is described wherein the coke bed is

maintained at a high **temperature** (up to 1300F DEG .) whereby gasoline is formed in addition to heavier vaporous components. These heavier components are removed in the scrubbing zone, which is maintained below 600 DEG F.; and the gasoline vapours leaving the scrubbing zone are contacted with silica/alumina catalyst at about 750 DEG F. in order to remove olefines and increase the stability. A process which employs three contact beds- for **coking**, catalytic cracking, and catalytic up-grading -is also referred to. Specification 714,210 is referred to.

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PN - [GB723629](#) A 19550209

PR - USX934299 19510529

AP - GB19520012359 19520515

DT - *; Rep

CCI - [C07C9/14](#) ; [C10B55/08](#) ;
[C10B55/10](#) ; [C10G9/28](#) ;
[C10G9/32](#) ; [C10G11/00](#)

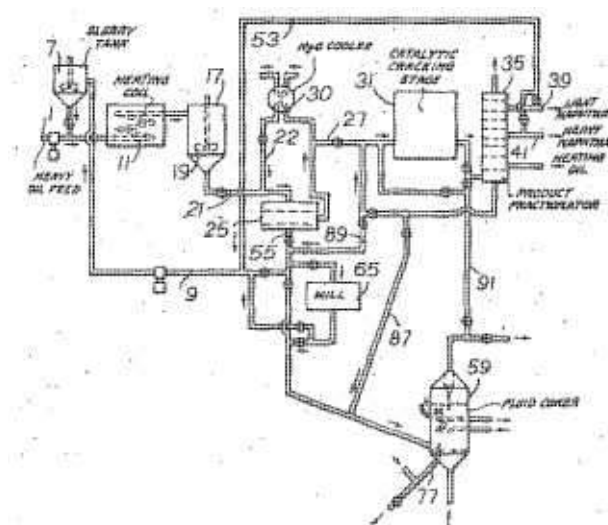
CCA - [Y02P20/129](#)

IDT - 23B5B15; 23B5D2B2

PA - STANDARD OIL DEV CO

TI - Improvements in or relating to a process for the conversion of heavy **hydrocarbon** oils into lower boiling hydrocarbons

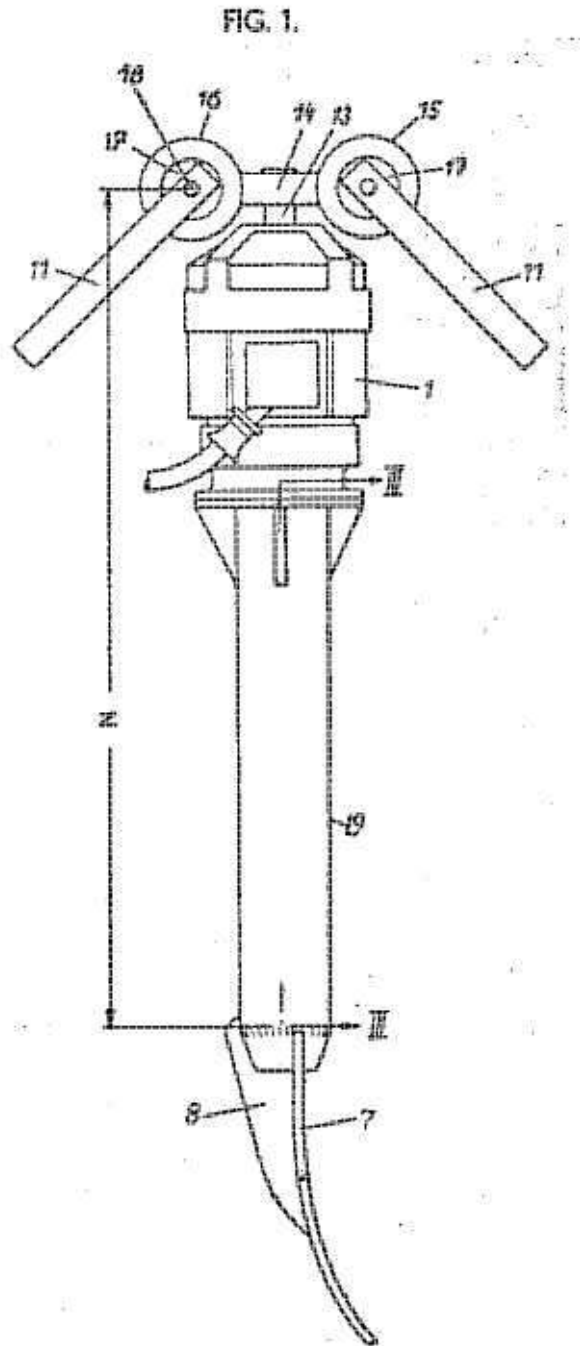
AB - <PICT:0723629/III/1> Heavy hydrocarbons such as reduced crudes and pitches are cracked in liquid phase to give lower boiling hydrocarbons and coke, the slurry of cracked oil and coke are separated by gravity into a thickened slurry and clarified oil, the thickened slurry is coked in a further **coking** stage and the clarified oil is catalytically cracked, preferably



in a fluidized solid cracker. The thickened slurry is also preferably coked in a fluidized solids bed and vapours from the **coking** stage passed to the clarified oil cracking stage or to the final product fractionator. As described in an example, heavy oil feed, preferably diluted with lighter oils and mixed with seed coke from a tank 7, containing a slurry of coke in fresh feed, naphtha, kerosene or product bottoms, is fed via line 1 to heating coil 11 (800-850 DEG F.) and soaker 17 where it is maintained above 800 DEG F. and at 1000-3000 p.s.i. pressure for 5 minutes to 2 hours or more. Feed velocity in coil 11 should be sufficiently high (4-10 ft. or more per second) to prevent coke deposition in the coil. In tank 17 the feed is agitated by paddle 19. Cracked products are led by line 21 to **settler** 25, being cooled below cracking **temperature** by mixture with cooled clarified oil from line 22. From **settler** 25 slurry is drawn off to fluidized solids coker 59 and possibly to slurry tank 7. Any quantity of the slurry may be passed through mill 65 to reduce the coke size to a suitable value. Clarified oil is taken off at 27, part recirculated via cooler 30 to the **settler** 25 and the remainder fed to catalytic cracker 31. From cracker 31 products are fed to product fractionator 35. Overheads from coker 59 may be fed either to cracker 31 or fractionator 35 by line 91. Light or heavy naphtha may be fed from product lines 39, 41 by line 53 to slurry tank 7 to dilute the feed. From coker 59 product coke may be taken off at 77 and part

utilized as seed coke for fresh feed. Bottoms from fractionator 35 may be recycled to cracking stage 31 or passed by line 87 to coker 59 or part or all returned to coil 11 by lines 89, 55 and 9. The Specification gives permissible ranges for temperatures, pressures and residence times which are somewhat wider than those specified in the example. Specification 734,509 is referred to.

PN - [GB1038518](#) A 19660810
 PR - AT19630002124 19630318
 AP - GB19640010979 19640316
 DT - *
 CCI - [E01B27/14](#)
 PA - VIKTOR SEIDL
 TI - A ballast tamping device
 AB - A natural **tar** or **bitumen** containing at least 0.1% silt which is non-**settling** at a **temperature** up to the **coking temperature** of the **tar**, e.g. of <325 mesh particle size, is refined by passage in the liquid phase in the presence of a hydrogen-containing gas through a reaction zone at a **temperature**, pressure and space velocity such that the silt is converted to a free **settling** state. Suitable conditions are a **temperature** between 700 DEG and 950 DEG F., a total pressure and hydrogen partial pressure of 400-2000, 200-1000 p.s.i.g. respectively and a residence time of 30-90 minutes; a 60% H₂-containing gas may be used at a consumption of 500-1500 standard cubic feet per barrel. Part of the reaction zone effluent may be recycled thereto to establish an ash concentration of 25-50% by weight; the remaining effluent passes to a solids **settling** zone from which a portion of the **tar** effluent is recycled to the reaction zone. An ash-free heavy fuel oil may be produced by vacuum distillation of the liquid components of the treated **tar**.



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PN - [GB108339](#) A 19170723
 PR - GB19160010263 19160721
 AP - GB19160010263 19160721

DT - *

CCI - [C10C1/18](#)

PA - MACLAURIN ROBERT

TI - Separating Low **Temperature** Tars into Components without Distillation.

AB - Low-**temperature** tars such as are obtained in accordance with Specification 24426/13, [Class 55 (i), **Coking &c.**], are separated into a black resinous portion and an oily portion by treatment with an **hydrocarbon** oil such as paraffin oil or gas oil in which the resinous bodies are insoluble. After agitation, the resinous portion is allowed to **settle** out. The addition of water aids in the separation, the water forming a layer between the layers of resin and oil. The resinous portion may be treated with further quantities of gas oil in order to purify it, and a final purification effected by means of a light petroleum oil. The black resin obtained is dissolved in benzol, methylated spirit, &c. for use as a varnish. ALSO: Low-**temperature** tars, consisting largely of paraffinoid hydrocarbons, such as are obtained in accordance with Specification 24426/13, [Class 55 (i), **Coking &c.**], are separated into a black resinous portion and an oily portion by treatment with an **hydrocarbon** oil such as paraffin oil or gas oil in which the resinous bodies are insoluble. After agitation, the resinous portion is allowed to **settle** out. The addition of water aids in the separation, the water forming a layer between the layers of resin and oil. The oily layer may be used as lubricating-oil. The resinous portion may be treated with further quantities of gas oil in order to purify it, the oily layers so obtained being used as fuel oils or lubricants.

- 108,339. Maclaurin, R. July 21, 1916. Resins and resinous compounds; varnishes.- Low-**temperature** tars, consisting largely of paraffinoid hydrocarbons, such as are obtained in accordance with Specification 24426/13, [Class 55 (i), **Coking &c.**], are separated into a black resinous portion and an oily portion by treatment with an **hydrocarbon** oil such as paraffin oil or gas oil in which the resinous bodies are insoluble. After agitation, the resinous portion is allowed to **settle** out. The addition of water aids in the separation, the water forming a layer between the layers of resin and oil. The resinous portion may be treated with further quantities of gas oil in order to purify it. A final purification is effected by means of a light petroleum oil. The black resin obtained is dissolved in benzol, methylated spirit, &c. for use as varnish.

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PN - [GB838743](#) A 19600622

PR - DEX838743 19570124

AP - GB19580001909 19580120

DT - *

PA - SIEMENS PLANIAWERKE AG

TI - Improvements in or relating to processes for the production of graphite bodies

AB - Graphite bodies are produced by graphitizing shaped bodies comprising pitch coke with pitch as binder, wherein the pitch coke is produced from a coal-**tar** pitch which is substantially free of constituents which are non-liquefiable in the process, such as high molecular weight oxygen, sulphur, or nitrogen compounds, the coal **tar** pitch being coked by thermal decomposition in the liquid phase, the gaseous constituents of the pitch which are separated therefrom being removed without the pitch passing through the gaseous stage, and the pitch being slowly heated up to a **temperature** of 600 DEG C.

The non-liquefiable constituents may be separated by melting and centrifuging, the pitch being mixed with anthracene oil if it is desired to reduce the viscosity of the melt. Alternatively the pitch may be dissolved in benzene, toluene, chlorobenzene, dichlorobenzene, anthracene oil, pyridine or quinoline, the insoluble constituents being removed by filtering, **settling** or centrifuging. The pitch is held at a **temperature** in the range 340 DEG to 400 DEG C. for at least three hours to produce nuclei around which the coke can form when the **temperature** is raised. The nucleus formation period is preferably carried out under high pressure and normal or reduced pressure is employed for the **coking** step. The **coking** chambers employed should be free of heavy metals or heavy metallic oxides and partitions are arranged within the **coking** chambers or concentric vessels arranged within the normal **coking** vessels, the inner part being charged with the pitch free of non-liquefiable constituents and the outer part being charged with normal pitch or pitch enriched with the discarded non-liquefiable constituents, so that the latter is in contact with the heating walls and in a rapid **coking** process produces poorlygraphitizing coke whereas the central pitch cokes slowly and produces the coke which graphitizes well. **Coking** may proceed beneath a column of liquid pitch. The pitch coke produced may be admixed with calcined coke, semi-coke or low-sulphur petroleum coke or may be used alone, in admixture with coal **tar** pitch, free of non-liquefiable constituents, to form moulded bodies which are graphitized at temperatures below 2,650 DEG C.

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PN - [CA1094485](#) A 19810127

PR - US19760740616 19761110

AP - CA19770289842 19771031

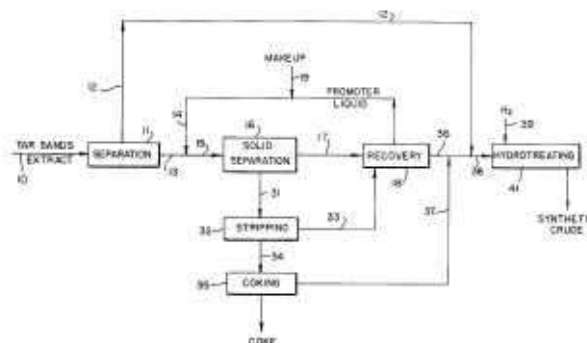
DT - I

CCI - [C10G1/045](#)

PA - LUMMUS CO

TI - SEPARATION OF SOLIDS
FROM **TAR** SANDS EXTRACT

AB - 3617A SEPARATION OF SOLIDS
FROM **TAR** SANDS EXTRACT Solids
are separated from a **tar** sands
extract by gravity **settling** or
centrifugation in the presence of
a liquid promoter which
promotes and enhances the
separation of the solid material.
The liquid promoter has a
characterization factor of at
least 9.75, a 5 volume percent
distillation **temperature** of at
least 250.degree.F and a 95
volume percent
distillation **temperature** of at
least 350.degree.F and no greater
than 750.degree.F. As a result,



liquid product is obtained
without the necessity of
preliminary **coking** of the entire
extract.

[SS 19]