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 Database: EPODOC

[EPODOC: SS 1] coal and solid+ and content and (mechanic+ or centrifug+) and particles and size and (dry+ or dewater+ or dehydrat+)

Results in EPODOC 3

[SS 2] ..li



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PN - [WO8203085](#) A1 19820916

PR - WO1981US00259 19810302

AP - WO1981US00259 19810302

DT - *; Rep

CT - || STSE (A1)

US4156593 A 19790529
[X] (ENERGY & MINERAL
RESEARCH);

US4052169 A 19771004

[X] (TEXACO INC);

US4054506 A 19771018

[X] (WESTERN OIL SANDS LTD);

US3846087 A 19741105

[X] (TEXACO INC);

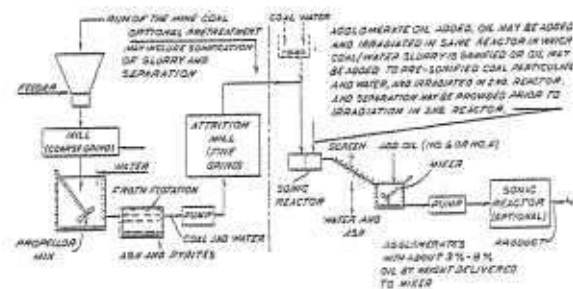
US1390232 A 19210906

[X] (BATES LINDON W)

CCI - [C10L1/324](#)

PA - COTTELL ERIC CHARLES

TI - PROCESSES FOR CLEANING
MINERALS AND FOR PRODUCING
STABLE SUSPENSIONS/EMULSIONS,
PARTICULARLY FUELS



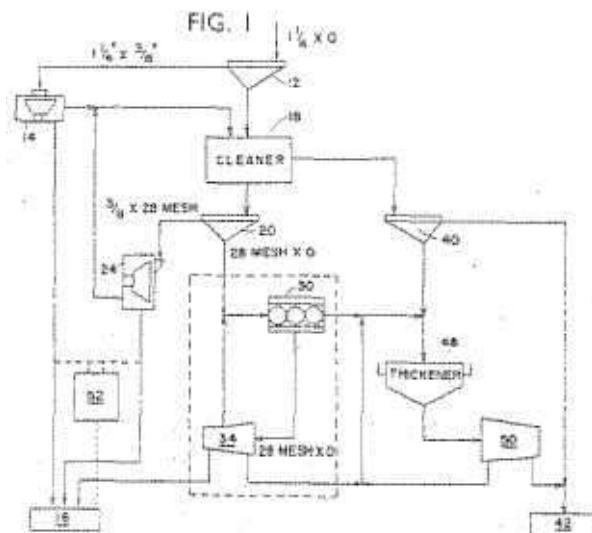
COMPRISING **COAL**, OIL, AND
WATER

AB

- A **coal** slurry is agitated and may be cavitated under pressure by sonic energy so that contaminant matter may be released from the **coal** and then separated. The clean slurry is then cavitated under pressure by sonic energy making the particle **size** even smaller and freeing any remaining contaminants including iron pyrites and ash. During sonification of the clean slurry a small amount of oil is added to cause flocculation and spherical agglomeration of the **coal** and oil to occur. The agglomerate and water mixture is screened to separate out most of the water leaving behind about 10-40% water in the **coal**, during which process the contaminants in the discharged water are also discharged. The spherical agglomerates are mixed with a balance of oil to produce a stable **coal**, oil, water fuel and is again agitated, preferably sonified, to further reduce the particle **size** of the **coal** and to irrigate the **coal** particulate. Stability of the fuel is enhanced by combining distillate oil and residual oil in the process. In some instances heating the water used in the clean slurry also assures stability. Apparatus for carrying out the process is also disclosed. The processes are applicable to a wide range of mineral slurries to stabilize such suspensions or dispersions.
- Methods are claimed for producing fuels from **coal particles**, pref. run of the mine **coal**, with water and opt. oil. In the first method, a **coal**-

water slurry is vibrated to produce cavitation, to remove impurities from the **coal** and to reduce the particle **size**, and the impurities are then **mechanically** removed and the slurry is partially **dewatered**. In the second method, the slurry is treated as above and then oil is added to agglomerate the **coal**; the mixture is again partially **dewatered** and then agitated with further oil to form a stable emulsion. In the third method, the aq. **coal** slurry is cavitated using sonic energy, with simultaneous addn. of oil. followed by partial **dewatering** and emulsification with further oil. Also claimed is fuel produced by the third method in which the oil is a mixture of residual oil and distillate oil. It . The combination of beneficiation and agglomeration gives a high quality fuel product, and the use of sonic (or ultrasonic) energy allows a stable emulsion to be formed with higher **solids content** and lower oil **content**. -

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 PN - [GB1288016](#) A 19720906
 PR - US19700053508 19700709
 AP - GB19710018645 19710602
 DT - **
 CCI - [B03B9/005](#) ; [C10L9/00](#)
 AB - 1288016 Separating and **drying coal** BIRD MACHINE CO 2 June 1971 [9 July 1970] 18645/71 Heading B2H **Coal** containing refuse is converted to a usable **coal** product having a predetermined maximum moisture **content** by (a) separating wet, refuse-containing **coal** into fractions according to particle **size**,



including a finest fraction and at least one larger fraction; (b) removing refuse at least from said larger fraction; (c) **dewatering** said larger fraction to a moisture **content** below said predetermined moisture **content**; (d) **mechanically dewatering** said finest fraction in a continuous **centrifuge** of the screen bowl-type to provide a finest **coal** output of a moisture **content** above said predetermined maximum which when the said fractions are recombined, will provide a confined moisture **content** within said predetermined maximum; and (e) recombining the **dewatered** fractions to form the desired product. In one embodiment, Fig. 1, raw **coal** is screened at 12 into a first coarse fraction which is **dewatered** into an oscillating **centrifuge dryer** 14 and into a second fraction which passes with effluent from **centrifuge** 14 to a cleaner 18, e.g. concentrating table, cyclone or jig, which removes refuse **particles**. The cleaned **coal** fraction from 18 is screened at 20 into a medium fraction which is **dewatered** in an oscillating **centrifuge dryer** 24 or a thermal **dryer** and a finest fraction which passes to a froth flotation apparatus 30 for removal of further refuse **particles**. The cleaned **coal** slurry from 30 is **dewatered** in a continuous screen bowl **centrifuge** 34. The fractions from 14, 24 and 34 are delivered to a bin 16 where they are mixed to give the desired product. Instead of the froth flotation apparatus 30 a hydrocyclone

may be used. Refuse from cleaner 18 is **dewatered** on a screen 40 and delivered to a container 42. Effluent from the downstream screen portion of **centrifuge** 34 is returned to flotation apparatus 30 while effluent from its upstream imperforate portion is directed with effluent from screen 40 and refuse from apparatus 30 to a thickener 48 of which the overflow may be recirculated, e. g. for initial wetting of **coal**, and the underflow is sent to a **solid** bowl **centrifuge** 50. The **solids** from the latter are discharged into container 42 whereas the effluent is recirculated to thickener 48.

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PN - [ES515333](#) A0 19831101

PNFP - ES8400255 A1 19831101

PR - US19800194117 19801006

AP - ES19820515333 19820827

DT - I

PA - (A0 A1)
CONVAIR INVESTMENTS LTD [BS]

TI - (A1)
Fuel suspensions or emulsions prodn. from **coal** - with agitation, pref. by sonic energy, to beneficiate the **coal** and to agglomerate it

AB - (A1)
Methods are claimed for producing fuels from **coal particles**, pref. run of the mine **coal**, with water and opt. oil. In the first method, a **coal**-water slurry is vibrated to produce cavitation, to remove impurities from the **coal** and to reduce the particle **size**, and the impurities are then **mechanically** removed and the slurry is partially **dewatered**. In the second method, the slurry is treated as above and then oil is added to agglomerate the **coal**; the mixture is again partially **dewatered** and then agitated with further oil to form a stable emulsion. In the third method, the aq. **coal** slurry is cavitated using sonic energy, with simultaneous addn. of oil. followed by partial **dewatering** and emulsification with further oil. Also claimed is fuel produced by the third method in which the oil is a mixture of residual oil and distillate oil. It . The combination of beneficiation and agglomeration gives a high quality fuel product, and the use of sonic (or ultrasonic) energy allows a stable emulsion to be formed with higher **solids content** and lower oil **content**.

