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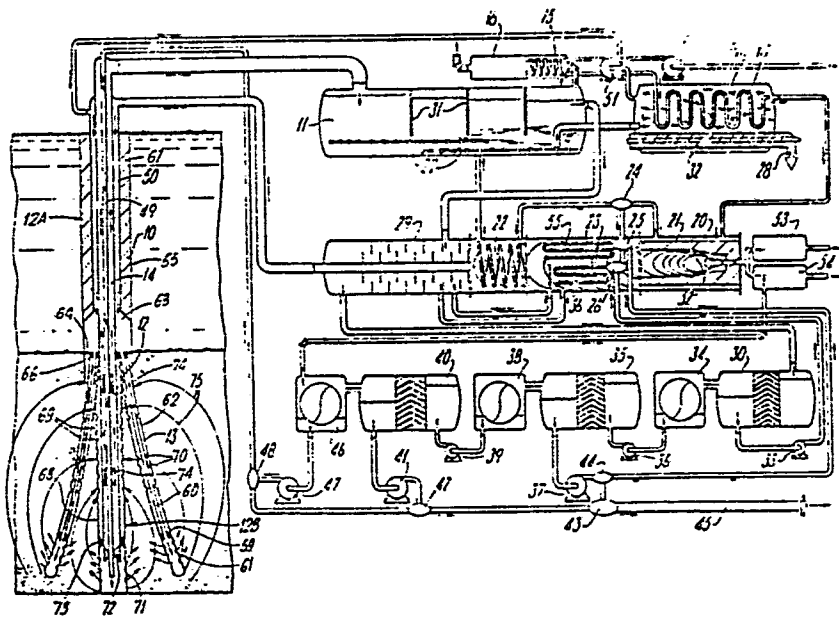
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(54) **Recovery and reforming of ultra heavy tars and oil deposits.**

(57) A process is provided for the recovery from petroleum-bearing formations of ultra-heavy crudes and tars. A 'daisy' well is employed with a main central bore surrounded by an array of slant bores. Hydrogen donor solvent is injected under pressure into the formation via the central bore and high temperature flue gases are injected at higher pressure via the slant bores. Dissolved and liquefied hydrocarbons are recovered together with solvent by gas lift in the central bore. The recovered hydrocarbons are reformed by a thermochemical reforming plant adjacent the well-head to obtain a pipeline quality product. The plant includes a high temperature high pressure furnace from the exhaust of which the hot flue gases are obtained, and output fractionation stages from which the solvent is recovered.





**01 44203**

Application number

EP 84 30 8156

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 4)
Y  A	US-A-4 008 764 (ALLEN)  * Abstract; column 2, line 66 - column 3, line 5, lines 11-22; column 4, lines 50-61; claims 5,9,14,15 *	1,2,5  3,4	E 21 B 43/24 E 21 B 43/16 E 21 B 43/40 E 21 B 43/12 E 21 B 43/30
Y  A	US-A-4 397 612 (KALINA)  * Abstract; column 1, lines 14-26 *	1,9 3,4	
Y  A	US-A-4 220 202 (ALADIEV et al.)  * Abstract; figure 1 *	2,9 10-16	
A	US-A-4 222 611 (LARSON et al.)  * Figure 1; abstract *	2,9, 10-16	TECHNICAL FIELDS SEARCHED (Int. Cl. 4)  E 21 B
Y  A	GB-B-1 064 681 (DEUTSCHE ERDOEL AG)  * Page 1, lines 57-64; page 2, lines 40-46 *	5  1	
<del>XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</del>			
Place of search		Date of completion of the search	Examiner
The Hague		26-09-1986	HEDEMANN
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone		T : theory or principle underlying the invention	
Y : particularly relevant if combined with another document of the same category		E : earlier patent document, but published on, or after the filing date	
A : technological background		D : document cited in the application	
O : non-written disclosure		L : document cited for other reasons	
P : intermediate document		& : member of the same patent family, corresponding document	



### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### X LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions,

namely:

- 1) Claims 1-5,9-16: Recovery of heavy hydrocarbons from formations containing petroleum deposits
- 2) Claims 6-8,17: Thermochemical reforming plant

- ☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☒ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims: 1-5,9-16