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(71) **Applicants** (for all designated States except US): **MEG ENERGY CORP.** [CA/CA]; 11th Floor, 520 - 3rd Avenue SW, Calgary, AB T2P 0R3 (CA). **CORSCADDEN, Tom** [CA/CA]; 24 Strathclair Place SW, Calgary, Alberta T3H 1H1 (CA).

(72) **Inventors; and**

(75) **Inventors/Applicants** (for US only): **BRUCE, Gerald** [CA/CA]; c/o 11th Floor, 520 - 3rd Avenue SW, Calgary, Alberta T2P 0R3 (CA). **DIDUCH, Greg** [CA/CA]; c/o 11th Floor, 520 - 3rd Avenue SW, Calgary, Alberta T2P 0R3 (CA). **HOCKING, Damien** [AU/CA]; c/o 11th Floor, 520 - 3rd Avenue SW, Calgary, Alberta T2P 0R3 (CA). **REMESAT, Darius** [CA/CA]; c/o 11th Floor, 520 - 3rd Avenue SW, Calgary, Alberta T2P 0R3 (CA).

(74) **Agents:** **WHITT, Michael R.** et al.; Bennett Jones LLP, 4500 Bankers Hall East, 855 2nd Street SW, Calgary, Alberta T2P 4K7 (CA).

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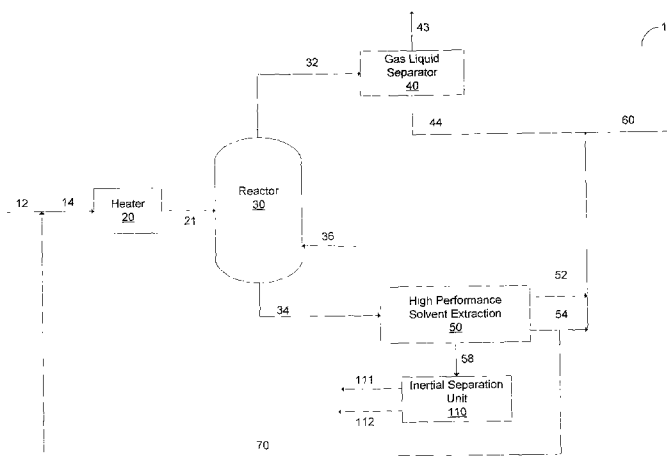
(54) **Title:** SOLVENT DE-ASPHALTING WITH CYCLONIC SEPARATION

FIG. 1

(57) **Abstract:** The present invention relates to a method of improving a heavy hydrocarbon, such as bitumen, to a lighter more fluid product and, more specifically, to a final hydrocarbon product that is refinery-ready and meets pipeline transport criteria without the addition of diluent. A solid asphaltene by-product is created for easy handling and further processing. The invention is targeted to enhance Canadian bitumen, but has general application in improving any heavy hydrocarbon. The process comprises: (a) pre-heating a process fluid in a heater to a designed temperature; (b) moving the pre-heated process fluid to a reactor, and optimally converting asphaltenes in the process fluid within the reactor to produce a stream of thermally affected asphaltene-rich fraction(s), and a stream of non-condensable vapour and lighter liquid hydrocarbon(s); (c) deasphalting the thermally affected asphaltene-rich stream with a solvent extraction process into a stream of heavy deasphalted oil (DAO) and a second stream containing concentrated asphaltene; (d) separating dry thermally affected asphaltene solids from the second stream in a separation unit, recovering the process solvent; (e) a produced refinery feedstock comprising at least one of the produced streams.