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- (71) Applicant (for all designated States except US): **EXXON-MOBIL RESEARCH AND ENGINEERING COMPANY** [US/US]; 1545 Route 22 East, P.O.Box 900, Annandale, NJ 08801-0900 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **OLDENBURG, Paul, D.** [US/US]; 360 Kirkland Road, Easton, PA 18040 (US). **ROBERTS, Virginia, M.** [US/US]; 306 Springfield Avenue, Summit, NJ 07901 (US). **DAAGE, Michel, A.** [FR/US]; 1847 Viola Lane, Hellertown, PA 18055 (US). **BERLOWITZ, Paul, J.** [US/US]; 4 Nicole Terrace, Glen Gardner, NJ 08826 (US). **LONG, David, C.** [US/US]; 20786 Silver Thistle Court, Ashburn, VA 20147 (US). **OUMAR-MAHAMAT, Halou** [US/US]; 105 Castleton Road, Princeton, NJ 08540 (US).
- (74) Agents: **PURWIN, Paul, E** et al.; Exxonmobil Research And Engineering Company, 1545 Route 22 East, P.O.Box 900, Annandale, NJ 08801-0900 (US).
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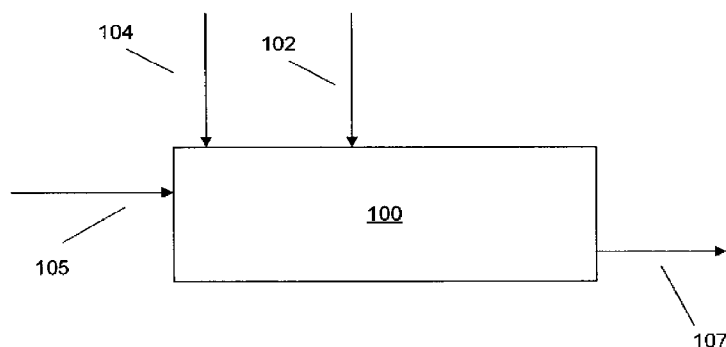


FIG. 1

(57) Abstract: Biomass based feeds are processed under hydrothermal treatment conditions to produce a hydrocarbon liquid product and a solids portion. The hydrothermal treatment is performed in the presence of catalyst particles. The presence of the heterogeneous catalyst can modify the nature of the hydrocarbon products produced from the hydrothermal treatment. After the hydrothermal treatment, the catalyst particles can be separated from the algae-based solids, to allow for recycle of the catalyst particles.