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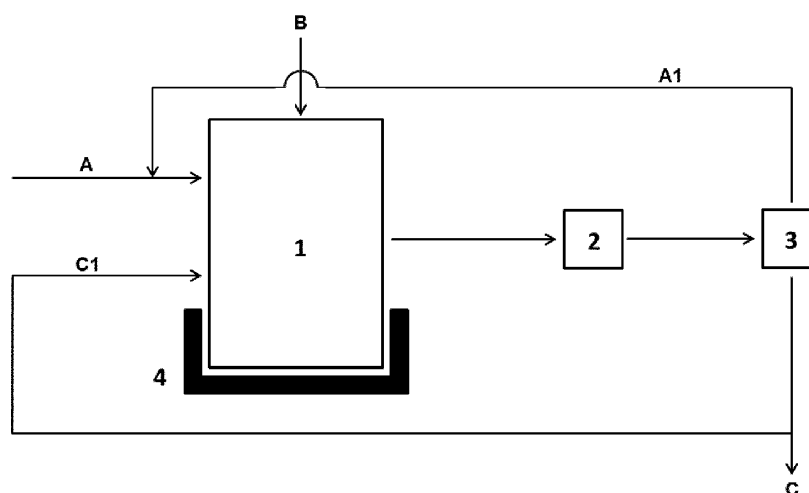
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(54) Title: METHODS FOR PRODUCTION OF BIO-CRUDE OIL

Figure 23

One embodiment of a system suitable for practicing methods of the invention



(57) Abstract: Where thermochemical liquefaction of lignocellulosic biomass is conducted using recirculated product oil as solvent, yields can be substantially increased by addition of a short chain alcohol reactant such as ethanol or methanol. A synergistic effect is thereby obtained where liquefaction is improved over using either recycled product oil or alcohol alone. The combination of recirculated product oil and alcohol reactant permits high conversion at operating pressures considerably lower than typically applied in alcohol solvolysis, typically within the range 30-60 bar. The liquefaction reaction occurs at subcritical pressure where the alcohol acts as a gaseous reactant and not as a solvent.

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