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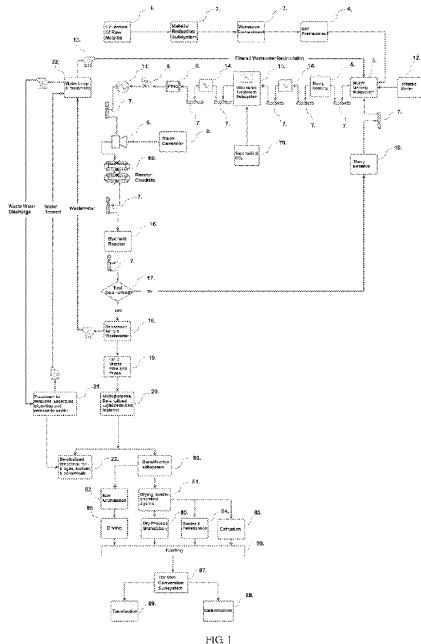
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(54) Title: METHOD AND SYSTEM FOR PRODUCING DEALKALIZED LIGNOCELLULOSIC MATERIAL AND BIO-BASED PRODUCTS



(57) Abstract: The present invention describes an integrated system, apparatus and method for de-alkalizing lignocellulosic material and producing bioproducts. Particularly, the system produces de-alkalized lignocellulosic feedstock which can be used in various downstream bioproducts, such as formation of biofuel, biogas and biochemicals. Among others, the system comprises a slurry-making subsystem for combining lignocellulosic pre-treated particles with a water mixture comprise of water and a chemical agent to obtain a slurry; an ultrasonic treatment subsystem for the disruption of cellular structures, loosening of lignocellulosic matrix, removing and neutralizing alkali at the cellular level of the lignocellulosic material in the slurry; a hydrodynamic cavitation subsystem for high-shear mechanical breakdown of the lignocellulosic material at the cellular level in the slurry; and a direct steam injection subsystem in connection with the slurry-making subsystem and/or the hydrodynamic cavitation subsystem to achieve hydrostatic cavitation and alkali neutralization in the slurry.

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