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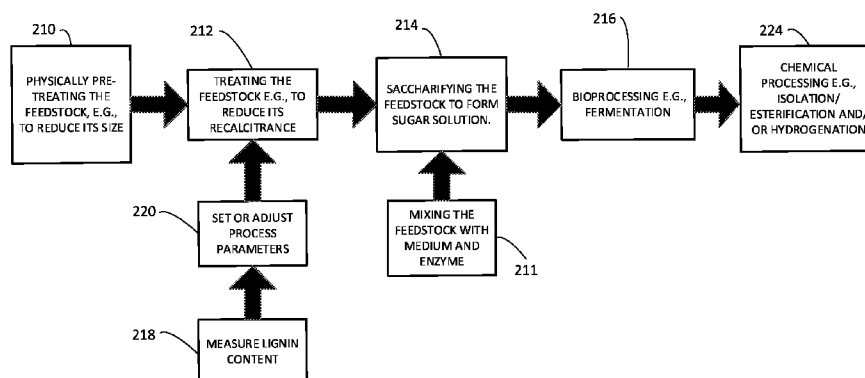
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(54) Title: PROCESSING AND TRANSFORMING BIOMASS

FIG. 2



(57) Abstract: Biomass (e.g., plant biomass, animal biomass, and municipal waste biomass) is processed to produce useful intermediates and products, such as energy, fuels, foods or materials. The saccharified biomass is fermented in two steps to form two separate products. The second product can be a carboxylic acid which is reacted with an alcohol to form an ester. The alcohol used for the esterification may be obtained from the biomass. The ester is hydrogenated to alcohols with catalysts.