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(54) Title: SYSTEM AND PROCESS FOR BIOMASS CONVERSION TO RENEWABLE FUELS WITH BYPRODUCTS RECYCLED TO GASIFIER

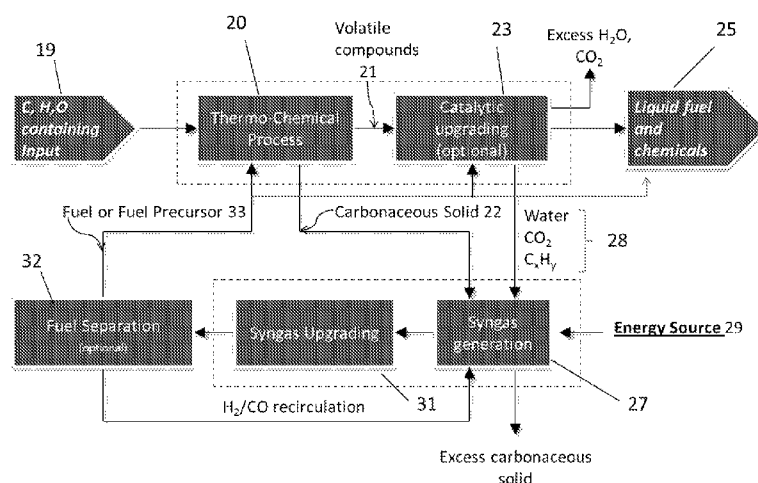


Fig. 1

(57) Abstract: This invention relates generally to a method and system for improving the conversion of carbon-containing feed stocks to renewable fuels, and more particularly to a thermal chemical conversion of biomass to renewable fuels and other useful chemical compounds, including gasoline and diesel, via a unique combination of unique processes. More particularly, this combination of processes includes (a) a selective pyrolysis of biomass, which produces volatile hydrocarbons and a biochar; (b) the volatile hydrocarbons are upgraded in a novel catalytic process to renewable fuels, (c) the biochar is gasified at low pressure with recycled residual gases from the catalytic process to produce synthesis gas, (d) the synthesis gas is converted to dimethyl ether in a novel catalytic process, and (e) the dimethyl ether is recycled to the selective pyrolysis process.