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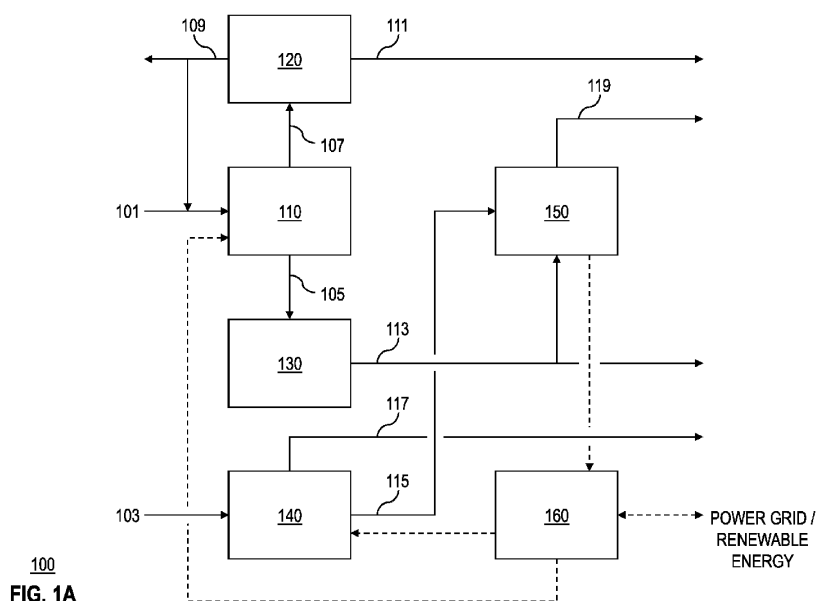
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(54) Title: CO-PRODUCTION OF HYDROGEN, CARBON, AND ELECTRICITY WITH CARBON DIOXIDE CAPTURE



(57) **Abstract:** A hydrocarbon feed stream is exposed to heat in an absence of oxygen (pyrolysis) to convert the hydrocarbon feed stream into a solids stream and a gas stream. The solids stream includes carbon. The gas stream includes hydrogen. The gas stream is separated into an exhaust gas stream and a first hydrogen stream. The first hydrogen stream includes at least a portion of the hydrogen from the gas stream. The carbon is separated from the solids stream to produce a carbon stream. Electrolysis is performed on a water stream to produce an oxygen stream and a second hydrogen stream. At least a portion of the oxygen of the oxygen stream and at least a portion of the carbon of the carbon stream are combined to generate power and a carbon dioxide stream. At least a portion of the generated power is used to perform the electrolysis on the water stream.

[Continued on next page]

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