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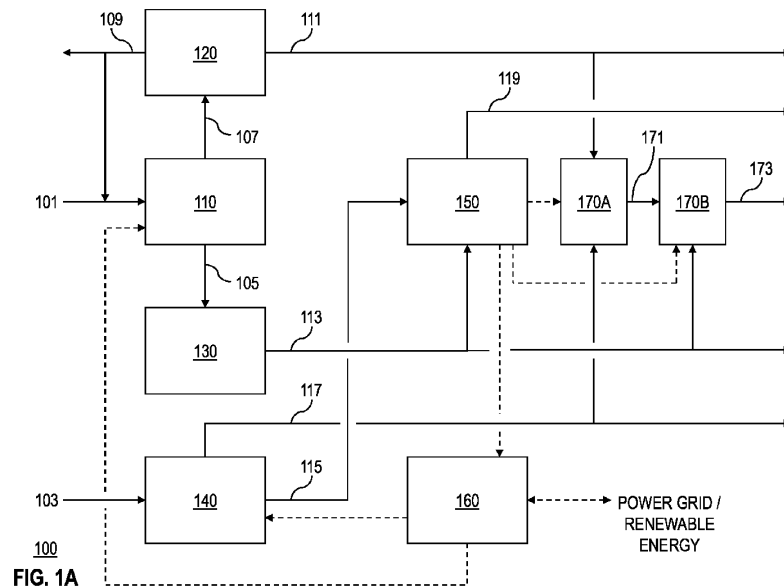
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(54) Title: CO-PRODUCTION OF HYDROGEN, CARBON, ELECTRICITY, AND STEEL WITH CARBON DIOXIDE CAPTURE



(57) Abstract: A hydrocarbon feed stream is exposed to heat in an absence of oxygen to convert the hydrocarbon feed stream into a solids stream and a gas stream. The gas stream is separated into an exhaust gas stream and a first hydrogen 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. An iron ore is reduced by flowing hydrogen across the iron ore to produce iron. The iron and a first portion of the carbon of the carbon stream are combined to produce steel. At least a portion of the oxygen of the oxygen stream and a second portion of the carbon of the carbon stream are combined to generate power and a carbon dioxide stream.

[Continued on next page]

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