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(54) Title: OXYCOMBUSTION WITH CO₂ CAPTURE IN REVERSE FLOW REACTORS

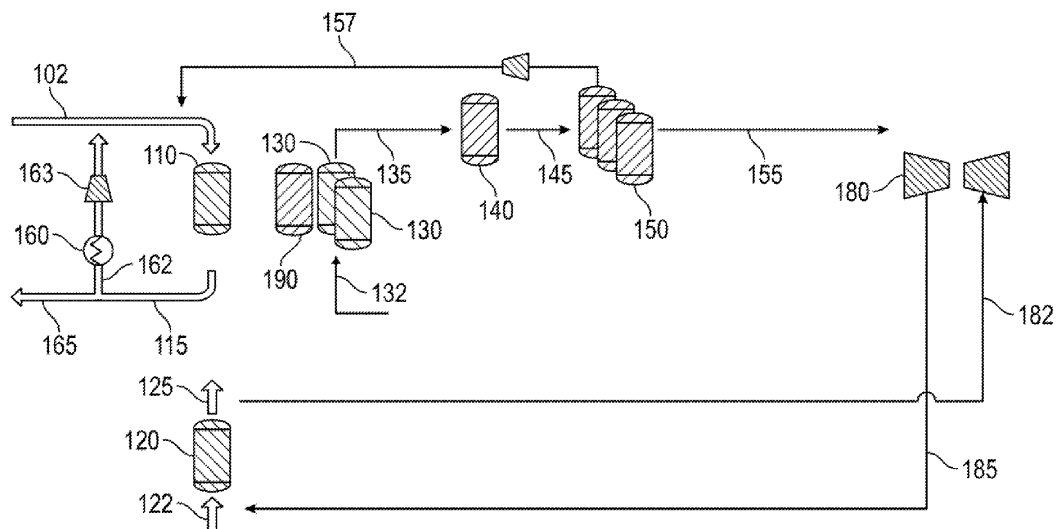


FIG. 1

(57) Abstract: Systems and methods are provided for using oxy combustion to provide heat within a reverse flow reactor environment. The oxygen for the oxy combustion can be provided by oxygen stored in an oxygen storage component in the reactor. By using an oxygen storage component to provide the oxygen for combustion during the regeneration step, heat can be added to a reverse flow reactor while reducing or minimizing addition of diluents and while avoiding the need for an air separation unit. As a result, a regeneration flue gas can be formed that is substantially composed of CO₂ and/or H₂O without requiring the additional cost of creating a substantially pure oxygen-containing gas flow.

[Continued on next page]

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