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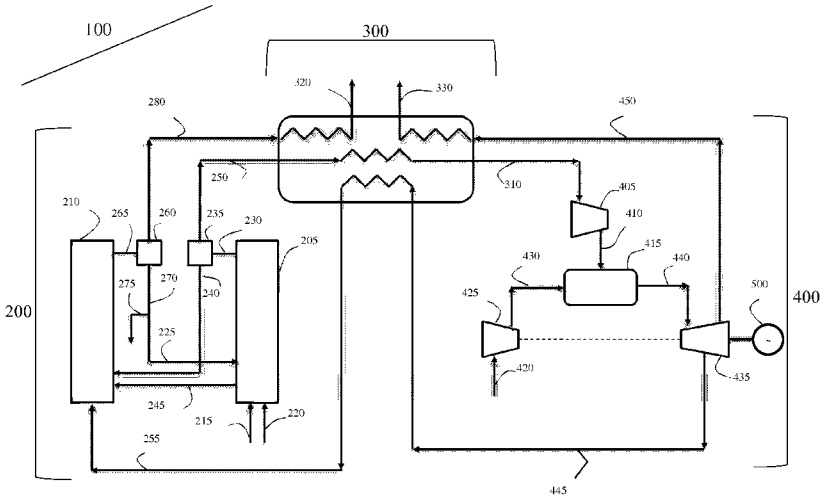


Fig. 1

(57) Abstract: A chemical looping combustion (CLC) process for sour gas combustion is integrated with a gas turbine combined cycle and a steam generation unit, and is configured to provide in-situ removal of H2S from the sour gas fuel by reacting the H2S with a oxygen carrier at a location within the fuel reactor of the CLC unit. The process is also configured such that oxygen-rich exhaust gases from the gas turbine combined cycle is used to feed the air reactor of the CLC unit and re-oxidize oxygen carriers for recirculation in the CLC unit.

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