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(54) **Title**: COMPONENT SEPARATIONS IN POLYMERIZATION

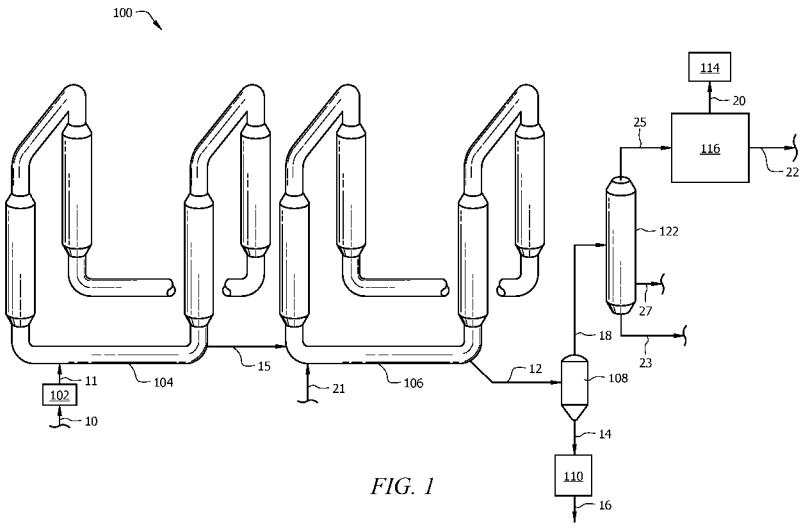


FIG. 1

(57) **Abstract**: A process for component separation in a polymer production system, comprising separating a polymerization product stream into a gas stream and a polymer stream, wherein the gas stream comprises ethane and unreacted ethylene, distilling the gas stream into a light hydrocarbon stream, wherein the light hydrocarbon stream comprises ethane and unreacted ethylene, contacting the light hydrocarbon stream with an absorption solvent system, wherein at least a portion of the unreacted ethylene from the light hydrocarbon stream is absorbed by the absorption solvent system, and recovering a waste gas stream from the absorption solvent system, wherein the waste gas stream comprises ethane, hydrogen, or combinations thereof.

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