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(54) Title: SELECTIVE SULFUR REMOVAL PROCESS

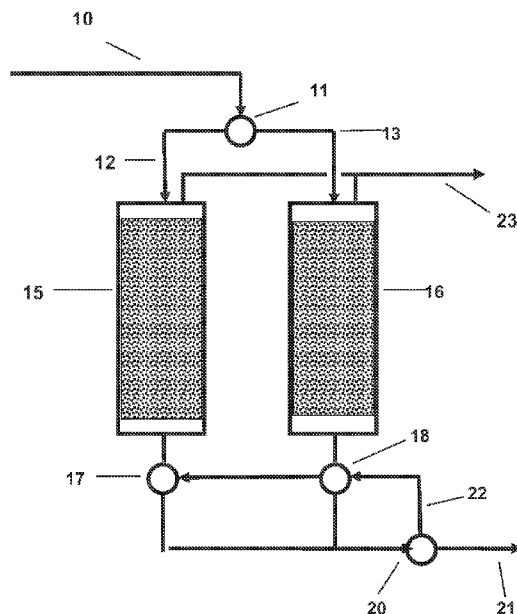


Figure 1

(57) Abstract: A cyclic process for selectively separating hydrogen sulfide from a gas mixture including CO₂ is operated by contacting the gas mixture under sorption conditions with a non-aqueous sorbent comprising a basic non-protogenic nitrogenous compound to react the H₂S with the basic compound so that the H₂S can be sorbed by the compound. The compound containing the sorbed H₂S can then be subjected to desorption conditions by which the H₂S is desorbed and the sorbent readied for another sorption step in the cycle. The basic nitrogenous compound can be carried on a porous solid sorbent, e.g., a solid oxide such as alumina, silica, silica-alumina, zeolites, or a mesoporous and/or macroporous solid oxide. The process may be operated using a pressure swing, temperature swing, partial pressure swing, purge displacement, or a combination thereof between the sorption and desorption portions of the cycle, preferably in a rapid cycle operation.



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