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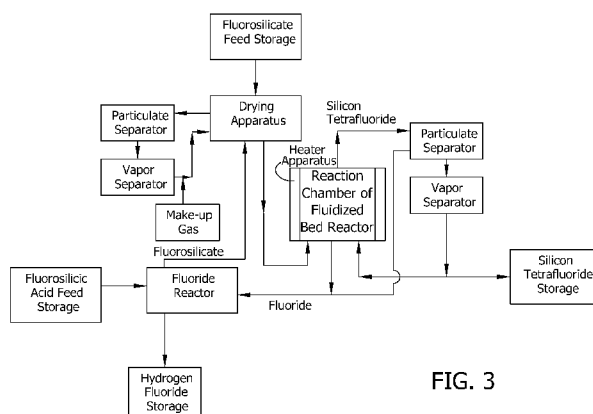


FIG. 3

(57) Abstract: Processes and systems for preparing silicon tetrafluoride by the thermal decomposition of an alkali or alkaline earth-metal fluorosilicate in a fluidized bed reactor. A portion of silicon tetrafluoride that is generated in the decomposition reaction may be recycled to the reactor and used as a fluidizing gas to suspend the fluorosilicate material. Alkali or alkaline earth-metal fluoride residue generated in the decomposition reaction may be discharged from the reactor and reacted with fluorosilicic acid to produce an alkali or alkaline earth-metal fluorosilicate that may be introduced to the reactor for further generation of silicon tetrafluoride.