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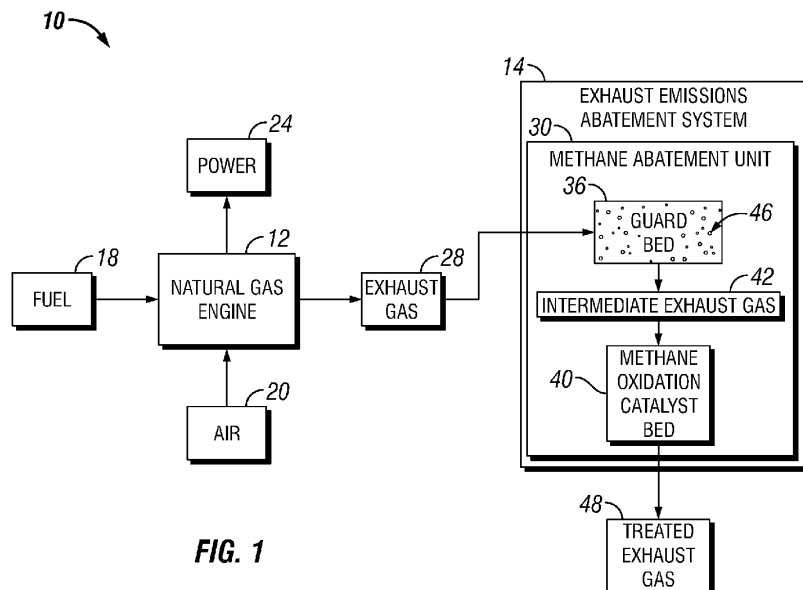
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(54) Title: EXHAUST GAS EMISSIONS ABATEMENT SYSTEM

**FIG. 1**

(57) **Abstract:** A system for removing methane oxidation catalyst (MOC) poisons from an exhaust gas including a methane abatement unit that may receive the exhaust gas having methane (CH₄) and the MOC poisons. The methane abatement unit includes a guard bed that may remove the MOC poisons from the exhaust gas and may generate an intermediate exhaust gas having the CH₄ and devoid of the MOC poisons. The guard bed includes a MOC poisons capturing component having a first transition metal oxide, an aluminum oxide (Al₂O₃) support material, and a dolomite-derived support material. The methane abatement unit also includes a MOC bed fluidly coupled to and positioned downstream from the guard bed. The MOC bed includes a MOC and may remove CH₄ from the intermediate exhaust gas to generate a treated exhaust gas having less than approximately 200 parts per million volume (ppmv) CH₄.

[Continued on next page]

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