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(54) **Title:** REACTOR CELL FOR PHOTOCATALYSIS OF GASEOUS SPECIES FOR INDUSTRIAL CHEMICAL PRODUCTION

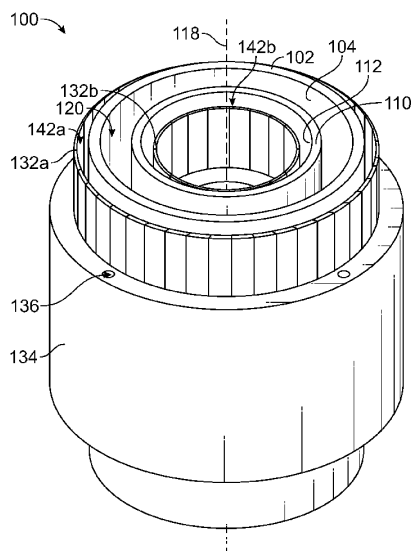


FIG. 1

(57) **Abstract:** A reactor cell assembly having an annular volume, a top endcap fitting having a reactant gas inlet, a bottom compression endcap fitting having a product gas outlet, a photocatalyst packed bed positioned in the annular volume, a porous base filter to position the photocatalyst packed bed in the annular volume, and a light housing. At least one of an outer portion and an inner portion of the light housing comprises a circumferential array of photon emitters arranged to uniformly emit photons incident on the photocatalyst packed bed to activate continuous photo-induced gas-phase reactions as at least one gaseous reactant introduced via the gas inlet flows through the photocatalyst packed bed and at least one resultant gaseous product exits via the gas outlet.

[Continued on next page]

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