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(71) Applicant: **EXXONMOBIL TECHNOLOGY AND ENGINEERING COMPANY** [US/US]; 1545 ROUTE 22 EAST, P.O. BOX 900, ANNANDALE, New Jersey 08801-0900 (US).

(72) Inventors: **LUX, Shelby G.**; c/o EXXONMOBIL TECHNOLOGY AND ENGINEERING COMPANY, 1545 ROUTE 22 EAST, P.O. BOX 900, ANNANDALE, New Jersey 08801-0900 (US). **ROSS, Jessica L.**; c/o EXXONMOBIL TECHNOLOGY AND ENGINEERING COMPANY, 1545 ROUTE 22 EAST, P.O. BOX 900, ANNANDALE, New Jersey 08801-0900 (US). **SIMMERS, Eric R.**; c/o EXXONMOBIL TECHNOLOGY AND ENGINEERING COMPANY, 1545 ROUTE 22 EAST, P.O. BOX 900, ANNANDALE, New Jersey 08801-0900 (US).

(74) Agent: **CARTER, Lawrence E.**; Shook, Hardy & Bacon LLP, 2555 Grand Blvd, Kansas City, Missouri 64108 (US).

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(54) Title: ROTARY BED FOR DIRECT CAPTURE OF CO₂ FROM AIR AND METHOD THEREOF

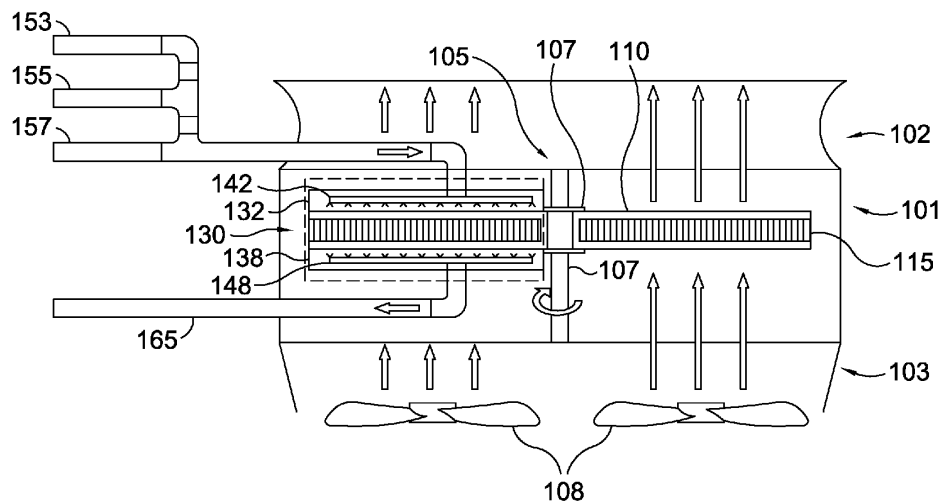


FIG. 1

(57) Abstract: Systems and methods are provided for performing direct air capture using a rotary sorbent bed configuration. The rotary sorbent bed is supported on a wheel that serves as a framework structure for supporting the sorbent bed. The sorbent bed can include one or more monoliths that form the support material for the sorbent bed, and a sorbent supported on the one or more monoliths. The rotational path of the sorbent bed passes through the enclosure that allows for sealing of the portion of the sorbent bed within the enclosure. Optionally, the enclosure can contain a plurality of sub-zones that facilitate temperature control and/or pressure control within the enclosure while allowing for recovery of a high purity CO₂ stream from the desorption zone. The rotary sorbent bed configuration can allow for continuous or semi-continuous capture of CO₂ while reducing or minimizing contact of the sorbent bed with oxygen at elevated temperature.

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