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(54) **NANO-STRUCTURE SUPPORTED SOLID REGENERATIVE POLYAMINE AND POLYAMINE POLYOL ABSORBENTS FOR THE SEPARATION OF CARBON DIOXIDE FROM GAS MIXTURES INCLUDING THE AIR**

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(58) **Field of Classification Search** 502/400, 502/401

See application file for complete search history.

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(57) **ABSTRACT**

The invention relates to regenerative, supported amine sorbents that includes an amine or an amine/polyol composition deposited on a nano-structured support such as nanosilica. The sorbent provides structural integrity, as well as high selectivity and increased capacity for efficiently capturing carbon dioxide from gas mixtures, including the air. The sorbent is regenerative, and can be used through multiple operations of absorption-desorption cycles.

26 Claims, No Drawings