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(54) **INTEGRATED BOILER, SUPERHEATER, AND DECOMPOSER FOR SULFURIC ACID DECOMPOSITION**

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(58) **Field of Classification Search** 423/539; 422/129, 198, 200, 201, 202, 205
See application file for complete search history.

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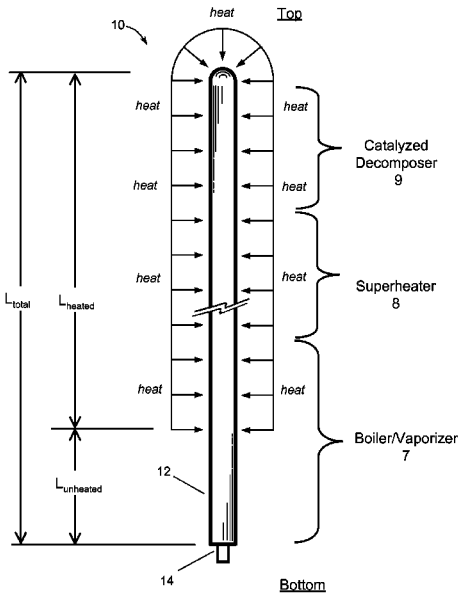
(57) **ABSTRACT**

A method and apparatus, constructed of ceramics and other corrosion resistant materials, for decomposing sulfuric acid into sulfur dioxide, oxygen and water using an integrated boiler, superheater, and decomposer unit comprising a bayonet-type, dual-tube, counter-flow heat exchanger with a catalytic insert and a central baffle to increase recuperation efficiency.

25 Claims, 9 Drawing Sheets