

- [54] APPARATUS AND METHOD FOR VISUALLY MONITORING AN ION EXCHANGE FLUIDIZED BED
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[56] **References Cited**
U.S. PATENT DOCUMENTS

545,765	8/1895	Reed et al.	73/328
574,765	1/1897	Semans	73/328
756,134	3/1904	Neeley	73/328
1,077,758	11/1913	Salter	73/328
1,110,474	9/1914	Bagley	73/328
1,605,226	11/1926	Fricke, Sr. et al.	73/328
1,875,779	9/1932	Thomson	73/328
4,108,000	8/1978	Norris	73/328
4,115,070	9/1978	Jukkola et al.	422/142

OTHER PUBLICATIONS

Greer et al., New Ion Exchange Resin for Uranium Recovery, Ind. & Eng. Chem., vol. 50, No. 2, Feb. 1958. Byproduct Uranium Recovered with New Ion Exchange Tech., George et al., Mining Engin. 1968. The Extractive Metallurgy of Uranium, Merritt, Col. School of Mines Research Inst., Chapter 6, pp. 132-182.

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[57] **ABSTRACT**

A method and apparatus for visually monitoring the fluidized bed of a resin ion exchanger. The method includes establishing a sample fluidized bed displaced from, but in fluid communication with, the resin ion exchanger fluidized bed and supplying a quantity of exchanger process solution in a controlled manner to the sample fluidized bed such that the sample fluidized bed represents among other exchanger fluidized bed characteristics the exchanger fluidized bed height. The apparatus includes a monitor having a transparent sampling column in fluid communication with the exchanger fluidized bed and a regulator in fluid communication with the exchanger and the sample column for establishing a solution sample for supply to the sample fluidized bed. The regulator includes an orifice for controlling the flow rate of solution sample supplied to the sample fluidized bed.

10 Claims, 3 Drawing Figures

