United States Patent [19]

Wiewiorowski et al.

[11] **Patent Number: 4,510,027**

[45] **Date of Patent: Apr. 9, 1985**

[54] **SIMULTANEOUS LEACHING AND ELECTRODEPOSITION OF PRECIOUS METALS**

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[21] Appl. No.: **567,155**

[22] Filed: **Jan. 4, 1984**

Related U.S. Application Data

[63] Continuation of Ser. No. 254,548, Apr. 15, 1981, abandoned.

[51] **Int. Cl.**[3] **C25C 1/20**

[52] **U.S. Cl.** **204/110**; 204/109; 204/111

[58] **Field of Search** 204/109, 110, 111; 75/105

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[57] **ABSTRACT**

A method for the recovery of precious metals such as gold and silver from various ore types is described which involves subjecting a slurry of the ore to a simultaneous leaching and electrodeposition process by mixing the slurry with a reagent such as an alkaline cyanide solution which provides for the leaching requirement and contacting said slurry with a metallic cathode with a negative electric potential applied thereto providing for the electrodeposition requirement. The cathode is made of a metal selected from the group consisting of cadmium, copper, iron, lead, molybdenum, tin, zinc, cobalt, nickel, silver, titanium, tungsten, vanadium and alloys and mixtures containing at least one of these metals. The simultaneous leaching and electrodeposition occur under conditions controlled to afford at least partial dissolution of the precious metal values from the ore, whereby continuous transfer of the precious metal from the ore onto the surface of the cathode is promoted. The resultant electrodeposition product, i.e., the cathode with precious metal values electrodeposited thereon, is then separated from the ore slurry and subjected to a subsequent precious metal recovery step by conventional methods.

28 Claims, 1 Drawing Figure