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Touro et al.

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[54] **PROCESS FOR RECOVERY OF GOLD FROM GOLD ORES USING A COMPLEXING PRETREATMENT AND SULFUROUS ACID LEACHING**

4,919,715	4/1990	Smith et al.	75/423
5,051,128	9/1991	Kubo	75/736
5,055,199	10/1991	O'Neill, et al.	423/29

FOREIGN PATENT DOCUMENTS

3740680 6/1989 European Pat. Off. 423/27

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[57] ABSTRACT

[21] Appl. No.: **703,853**

A process for recovering gold from gold-bearing ores includes the steps of forming a slurry of ground ore and treating the ore with an oxidizing and complexing agent such as hydrogen sulfide or a sulfide salt. A chelating agent, SO₂, air, and an anion exchange resin are added to the slurry to subject the ore to a simultaneous sulfurous acid leaching and anion exchange resin adsorption step in the presence of dissolved oxygen. The gold transfers to the resin which is then removed from the slurry. The gold is then separated from the resin by chemical stripping. Alternately, the ground ore is blended with an oxidizing agent such as calcium hypochlorite and then with a gold-complexing agent. The ore blend is slurried in water, with the addition of a chelating agent, SO₂, air and an anion exchange resin to effect the leaching and adsorption of gold values.

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[52] U.S. Cl. **423/27; 423/28; 423/36; 423/37; 423/39; 75/736**

[58] Field of Search **423/27, 28, 36, 37, 423/39; 75/736**

[56] References Cited

U.S. PATENT DOCUMENTS

3,235,328	2/1966	Lerner et al.	423/60
4,289,532	9/1981	Matson et al.	75/105
4,552,589	11/1985	Mason et al.	75/105
4,662,938	5/1987	Whitney et al.	423/39
4,668,289	5/1987	Langer, et al.	423/27
4,723,998	2/1988	O'Neil	75/101
4,738,718	4/1988	Bakshani et al.	75/105
4,902,345	2/1990	Ball et al.	423/27

52 Claims, 1 Drawing Sheet

