

United States Patent (10)

Lee

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- [54] COBALT TREATMENT OF NICKEL COMPOSITE ELECTRODE SURFACES
- [75] Inventor: Woodrow W. Lee, Silver Spring, Md.
- [73] Assignee: The United States of America as represented by the Secretary of the Navy, Washington, D.C.
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- [58] Field of Search 204/2.1

4,215,190 7/1980 Ferrando 429/222
 4,292,143 9/1981 Seiger 204/2.1

Primary Examiner—T. M. Tufariello
 Attorney, Agent, or Firm—Kenneth E. Walden; Roger D. Johnson

[57] ABSTRACT

A process for introducing a cobalt additive into a nickel active material/sintered nickel-coated graphite fiber plaque composite electrode in which the electrode is (1) soaked in a solution of cobalt nitrate, cobalt sulfate, cobalt chloride, or cobalt acetate in water or a mixture of water and methanol, ethanol or n-propanol, and (2) a cathodic current having a density of from about 10 to about 200 mA/cm² is applied across the composite electrode for from 5 to 600 seconds.

- [56] References Cited
- U.S. PATENT DOCUMENTS
- 3,507,699 4/1970 Pell 204/2.1
- 3,579,385 5/1971 Feduska 204/2.1
- 3,852,112 12/1974 Turner 204/2.1

12 Claims, 4 Drawing Figures