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### United States Patent

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*Lucia Staret Kuo*

*Acting Director of the United States Patent and Trademark Office*



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(12) **United States Patent**  
**Lin et al.**

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(54) **SOLID ELECTROLYTIC CAPACITOR HAVING A PROTECTIVE STRUCTURE AND METHOD FOR MANUFACTURING THE SAME**

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(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 255 days.

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(58) **Field of Classification Search** ..... 361/523, 361/516-519, 525, 528-529, 535-541; 29/25.01, 29/25.03

See application file for complete search history.

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(57) **ABSTRACT**

A solid electrolytic capacitor with a protective structure, which includes stacked capacitor elements electrically connected to the positive and negative terminal. A packaging material such as synthetic resin is used to encapsulate the capacitor elements, the positive terminal, and the negative terminal. Before packaging, a protective layer is formed by a colloid material, which covers the main body of the capacitor that includes the capacitor elements, the positive terminal, and the negative terminal. The protective layer provides a better seal and relieves the external pressure exerting on the capacitor during the packaging process. The protection prevents structural damage to the capacitor's main body while reducing the risk of short-circuits and excessive current leakage.

**9 Claims, 7 Drawing Sheets**

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*If the application for this patent was filed on or after December 12, 1980, maintenance fees are due three years and six months, seven years and six months, and eleven years and six months after the date of this grant, or within a grace period of six months thereafter upon payment of a surcharge as provided by law. The amount, number and timing of the maintenance fees required may be changed by law or regulation. Unless payment of the applicable maintenance fee is received in the United States Patent and Trademark Office on or before the date the fee is due or within a grace period of six months thereafter, the patent will expire as of the end of such grace period.*

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*If this application was filed prior to June 8, 1995, the term of this patent begins on the date on which this patent issues and ends on the later of seventeen years from the date of the grant of this patent or the twenty-year term set forth above for patents resulting from applications filed on or after June 8, 1995, subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b) and any extension as provided by 35 U.S.C. 156 or any disclaimer under 35 U.S.C. 253.*

