



US005447411A

United States Patent [19][11] **Patent Number:** **5,447,411****Curley et al.**[45] **Date of Patent:** **Sep. 5, 1995****[54] LIGHT WEIGHT FAN BLADE
CONTAINMENT SYSTEM****[75] Inventors:** **Robert C. Curley**, White Marsh;
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DePinho, Jr.**, Baldwin, all of Md.**[73] Assignee:** **Martin Marietta Corporation**,
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156/60; 156/71; 156/292; 156/307.7; 156/327;
428/49; 428/198; 428/252**[58] Field of Search** 415/9, 196, 197, 200,
415/215.1; 156/60, 71, 292, 307.7, 327; 428/49,
198, 252**[56] References Cited****U.S. PATENT DOCUMENTS**

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[57] ABSTRACT

A method for fabricating a hard faced fan blade containment system for turbofan aircraft engines, and the product resulting from that method. The product combines a hard facing material, a high strength fiber and an elastomeric binder to form a fan blade containment system which is lightweight and effectively retains fan blade fragments. The method consists of lightly bonding layers of high strength fibers together with a small amount of elastomeric binder so that they work in unison as a composite to contain a failed fan blade rather than as individual layers which are subject to sequential failure. In addition, a hard material such as ceramic or heat treated steel is encapsulated in an elastomer and bonded to the impact face of the containment system to blunt sharp edges of failed blade fragments and to spread the impact energy of the blade fragments over a larger area of the high strength fiber backing.

16 Claims, 2 Drawing Sheets