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[54] **REMOTE AND POWERLESS MINIATURE FATIGUE MONITOR AND METHOD**

[76] Inventor:

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[52] **U.S. Cl.** **73/795**; 73/762; 73/799; 73/849; 73/786

[58] **Field of Search** 73/762, 775, 776, 73/799, 812, 849, 786, 795

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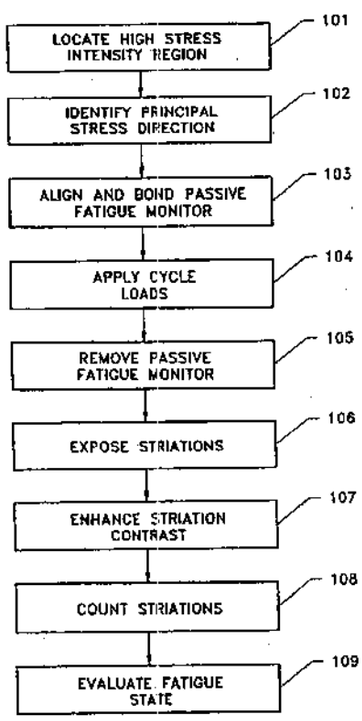
[57] **ABSTRACT**

A method and passive monitor for measurement of fatigue is provided. The method includes locating regions of high stress on a structure or material to be monitored, identifying the direction of principal stresses, and then aligning and bonding a specially fabricated passive fatigue monitor to the structure. After the structure has been subjected to a stress cycle, the passive fatigue monitor is removed and the striations formed in the monitor are evaluated. If necessary, contrast enhancement of striations can be performed prior to striation evaluation. Data from evaluations is assessed using rain flow cycle counting and Miners cumulative damage algorithms. The passive fatigue monitor is a small coupon of material fabricated from aluminum or other material known to form well-defined striations. The monitor is specially modified to contain a precrack which provides the location for striation formation.

18 Claims, 6 Drawing Sheets