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(12) **United States Patent**  
**Wood**(10) **Patent No.:** **US 6,487,442 B1**  
(45) **Date of Patent:** **Nov. 26, 2002**(54) **DETECTION OF ABNORMAL AND  
INDUCTION OF NORMAL HEAT RATE  
VARIABILITY**5,873,369 A 2/1999 Lanido et al.  
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(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
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WO 9602185 A1 2/1996(21) Appl. No.: **09/559,653**(22) Filed: **Apr. 28, 2000**(51) **Int. Cl.<sup>7</sup>** ..... **A61B 5/0468**(52) **U.S. Cl.** ..... **600/515; 600/519**(58) **Field of Search** ..... 600/513, 515,  
600/516, 517, 518, 519(56) **References Cited**

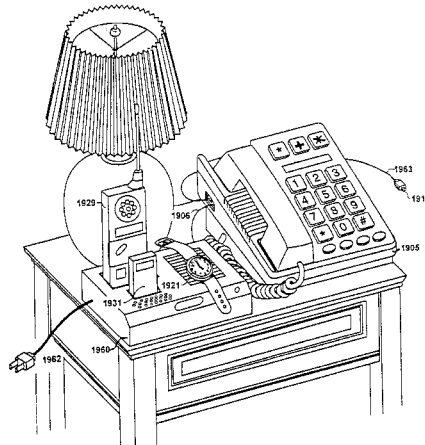
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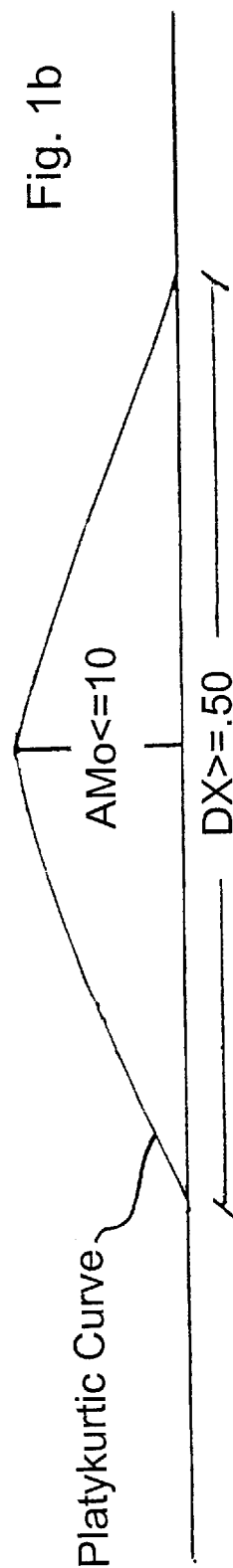
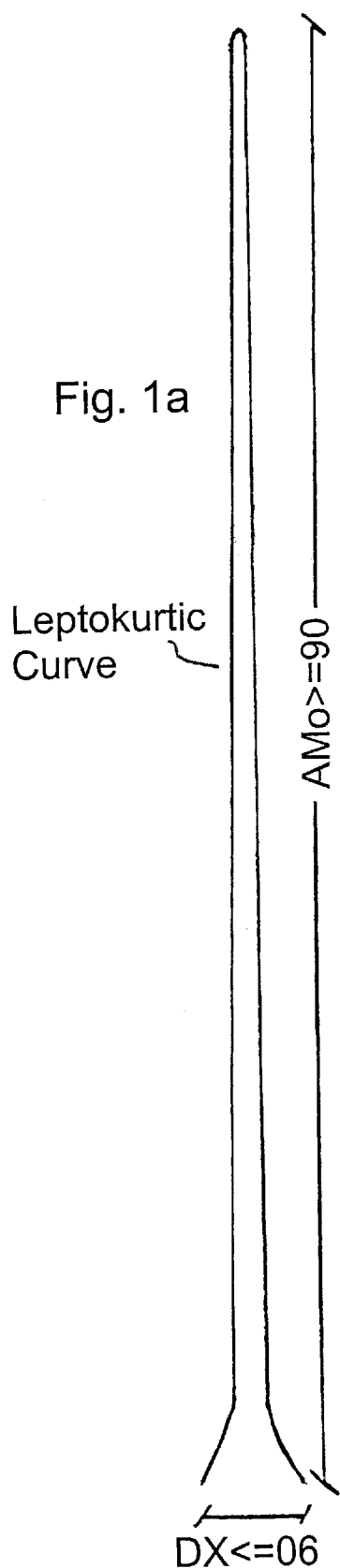
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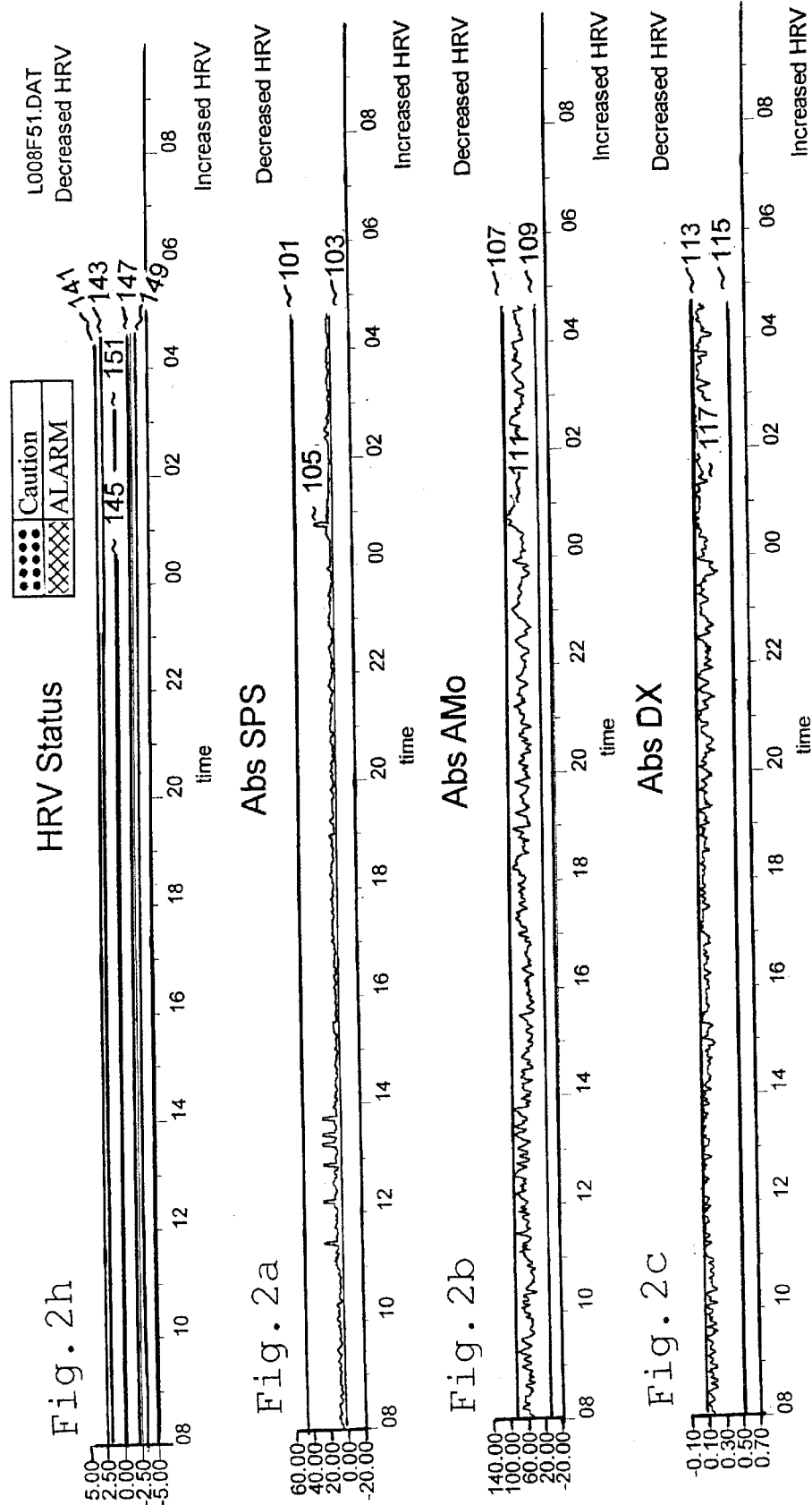
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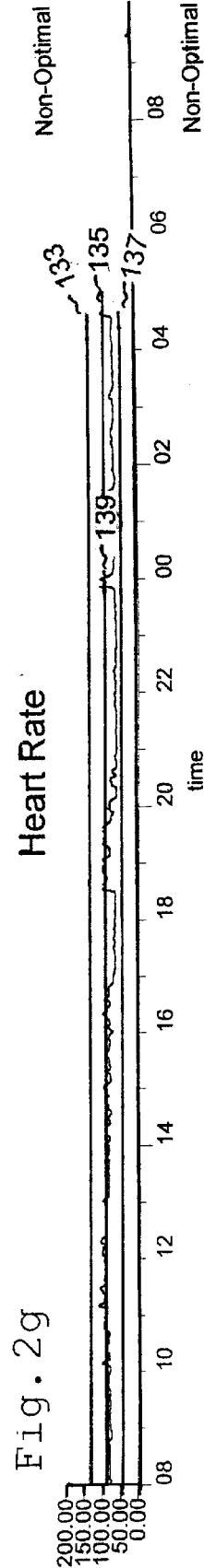
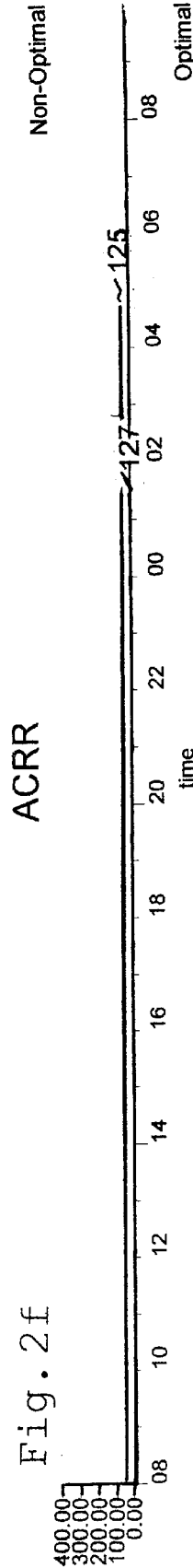
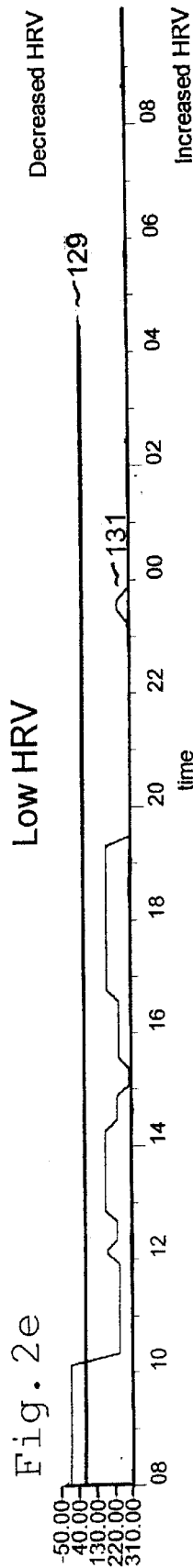
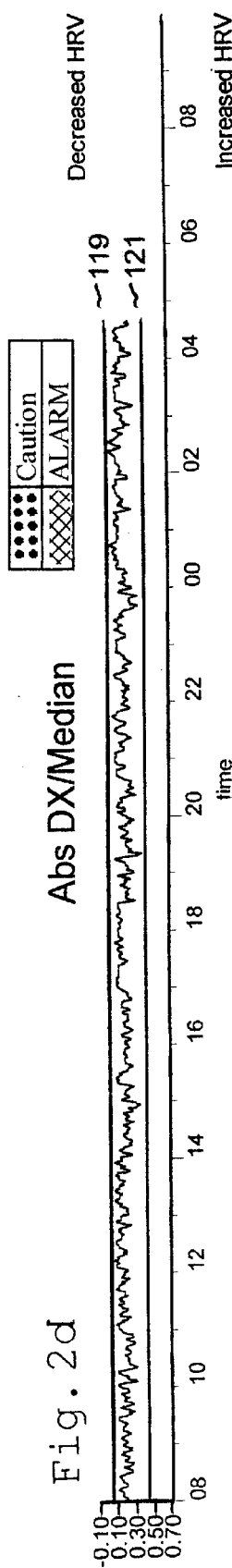
*Primary Examiner*—Scott M. Getzow(74) *Attorney, Agent, or Firm*—Stevens, Davis, Miller &  
Mosher, LLP(57) **ABSTRACT**An apparatus and method for predicting potentially fatal  
arrhythmias up to twenty four hours in advance of the event  
by employing formulas indicating either too little or too  
much heart rate variability. A number of these formulas have  
both predetermined upper and lower limits, which if  
exceeded for a period of time are a predictor of a potentially  
fatal arrhythmia. When a patient's ALARM condition is  
predicted, whether the patient is indoors or outdoors, con-  
scious or unconscious, a redundant protocol is utilized to  
relay that ALARM condition to a central monitoring station.  
The central monitoring station informs the patient's doctor,  
and then uses what ever means are available to transport the  
patient to the nearest emergency room for treatment. An  
apparatus and method for pacing the heart in a natural way,  
once a potentially fatal arrhythmia has been predicted is also  
disclosed.**42 Claims, 22 Drawing Sheets**

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