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[54] **ELECTRONIC APPARATUS FOR PROVIDING PLAYER PERFORMANCE FEEDBACK**

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Related U.S. Application Data

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[52] **U.S. Cl.** ..... **340/323 R**; 273/29 A; 273/73 D; 364/411; 434/238

[58] **Field of Search** ..... 340/323 R; 273/29 A, 273/73 D, 73 R; 434/238, 247; 364/411

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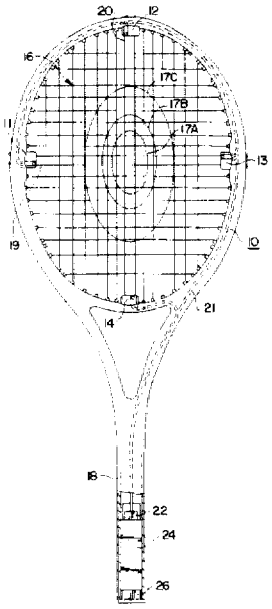
[57] **ABSTRACT**

An electronic system for incorporation in a racquet that monitors a player's ability to hit balls within a specific region on the string bed. A plurality of sensors are positioned around the periphery of the racquet string bed for detecting the relative time-of-arrival of transverse waves produced by impacts of balls on the string bed. A circuit incorporated within the racquet receive the signals from the sensors and provide a plurality of signals from which the position of impact on the string bed may be calculated. The system incorporates a low power microprocessor that is programmed to compute the ball impact location from the signals produced by the sensors. A display device on the racquet displays information derived from the calculated impact location to permit players to assess their performance as related to hitting a predetermined region. A sound generator is incorporated that emits audible signals having an amplitude, frequency and duty cycle that indicate relative positions of impact on the string bed. The system provides for statistical reporting of impacts as either percentages within a zone or a total tally of impacts. A user interface is provided permitting selection of various modes of operation. The microprocessor architecture and programming is optimized for lower power consumption while providing adequate resolution of impact locations.

41 Claims, 10 Drawing Sheets