

[54] HELMET SYSTEM INCLUDING AT LEAST THREE ACCELEROMETERS AND MASS MEMORY AND METHOD FOR RECORDING IN REAL-TIME ORTHOGONAL ACCELERATION DATA OF A HEAD

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[75] Inventors: Walter Stewart, Baltimore; Nicholas Jones, Monkton; Wolfger Schneider, Columbia, all of Md.

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[73] Assignee: Johns Hopkins University, Baltimore, Md.

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[*] Notice: Under 35 U.S.C. 154(b), the term of this patent shall be extended for 00 days.

(List continued on next page.)

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Related U.S. Application Data

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[57] ABSTRACT

[51] Int. Cl.⁶ A42B 3/04
[52] U.S. Cl. 2/422; 2/425; 2/906; 73/491; 340/669
[58] Field of Search 2/422, 425, 906; 340/669; 455/100; 73/488, 489, 491, 492, 514.01, 514.02, 514.35

A system designed to measure and record in real time data relating to translational and angular acceleration of an individual's head during normal sporting activity. One embodiment of the device includes at least three orthogonal accelerometers mounted within a sports helmet together with means for recording, in real-time, the data output from the accelerometers. The data is either recorded on a memory card or other mass memory means installed in the helmet, or is transmitted to a nearby receiver for reception and storage on a computer's hard drive or other conventional mass storage device. The device provides real-time storage of translational and angular acceleration data over a length of time such that cumulative exposure effects and thus limits can be established for the individual's further or future participation in the sport. The data also allows detection of the precise motions of the head which precede the occurrence of a severe head injury.

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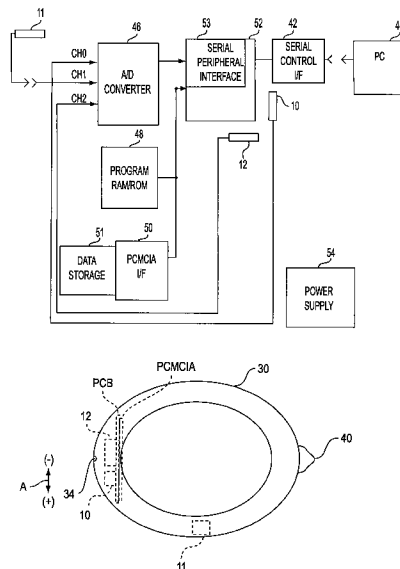
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20 Claims, 7 Drawing Sheets



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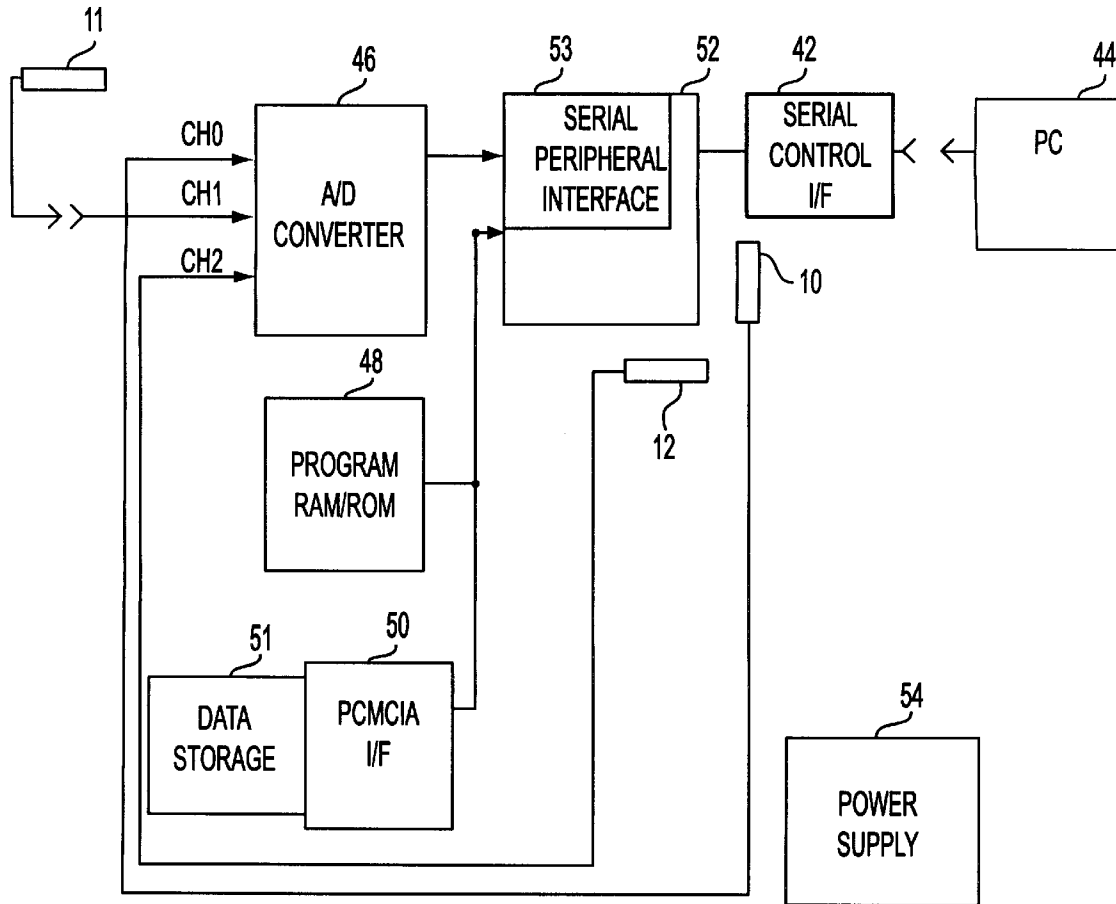


FIG. 1

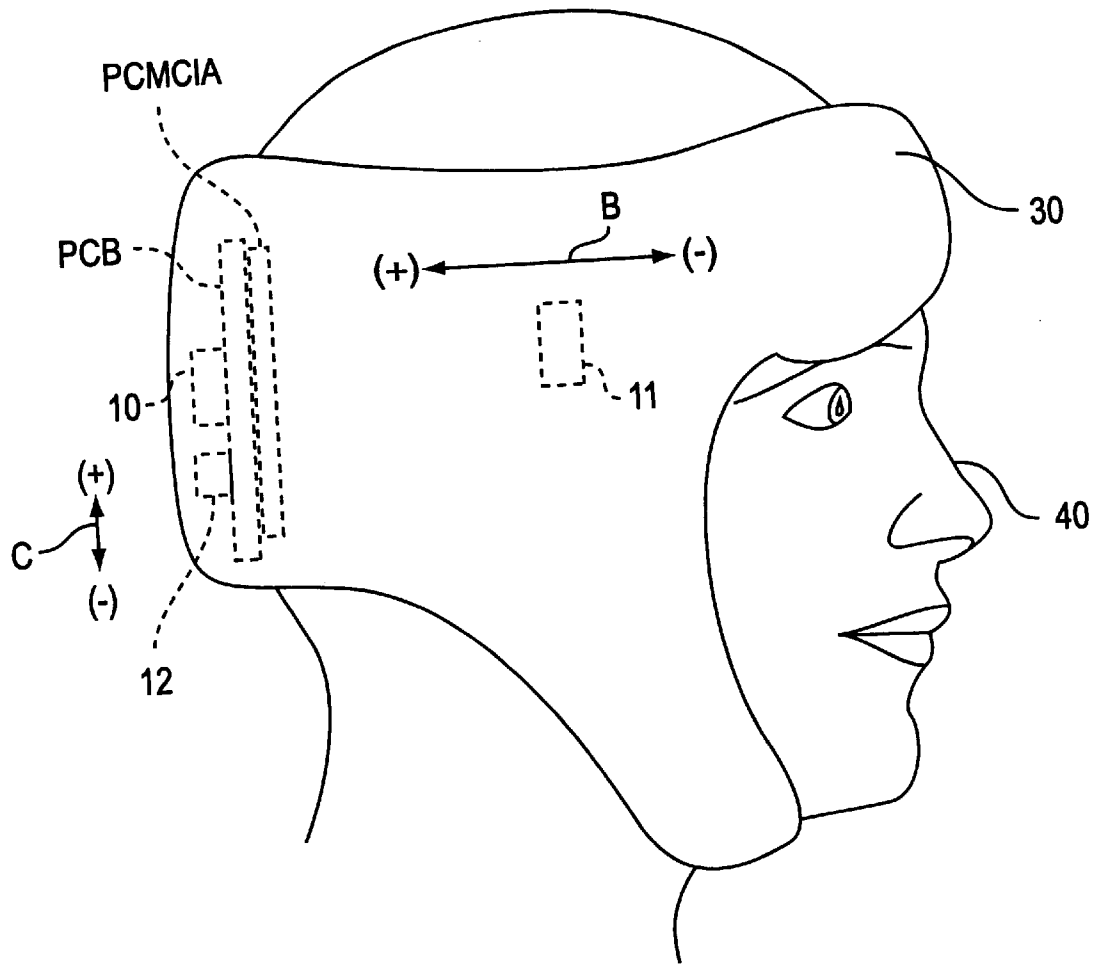


FIG. 2A

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