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(12) **United States Patent**
Birrell et al.

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(45) **Date of Patent: Dec. 18, 2001**

(54) **LOW POWER SYSTEM AND METHOD FOR PLAYING COMPRESSED AUDIO DATA**

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(73) Assignee: **Compaq Computer Corporation**, Houston, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/249,183**

(22) Filed: **Feb. 12, 1999**

(51) **Int. Cl.**[7] **G06F 12/00**; G11B 17/22; G11B 3/90; G11B 27/36; G10L 21/00

(52) **U.S. Cl.** **711/112**; 711/111; 369/54; 369/48; 369/33; 369/60; 704/500; 704/504; 704/502

(58) **Field of Search** 711/112, 111; 369/54, 369/48, 60, 33; 704/500, 504, 502

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Assistant Examiner—Kimberly McLean
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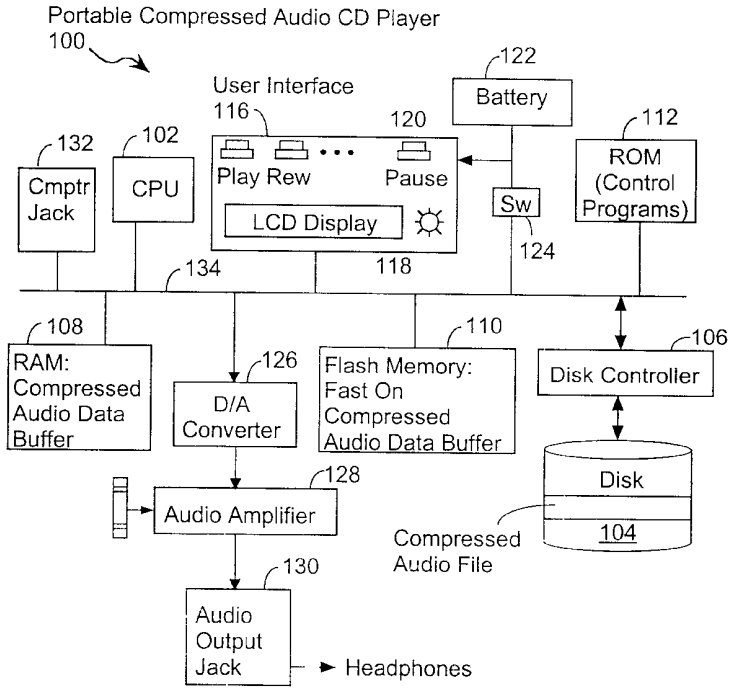
(57) **ABSTRACT**

A portable audio player stores a large amount of compressed audio data on an internal disk drive, and loads a portion of this into an internal random access memory (RAM) which requires less power and less time to access. The audio player plays the data stored in RAM and monitors the amount of unplayed data. When the amount of unplayed data falls below a threshold, additional data is copied from the disk drive into RAM. Because the time necessary to copy a block of data from the disk drive to RAM is much less than the amount of time it takes to play the same block of audio data from RAM, this approach minimizes the amount of time that the disk drive must be operated, and thus minimizes the amount of power consumed by the system.

11 Claims, 4 Drawing Sheets



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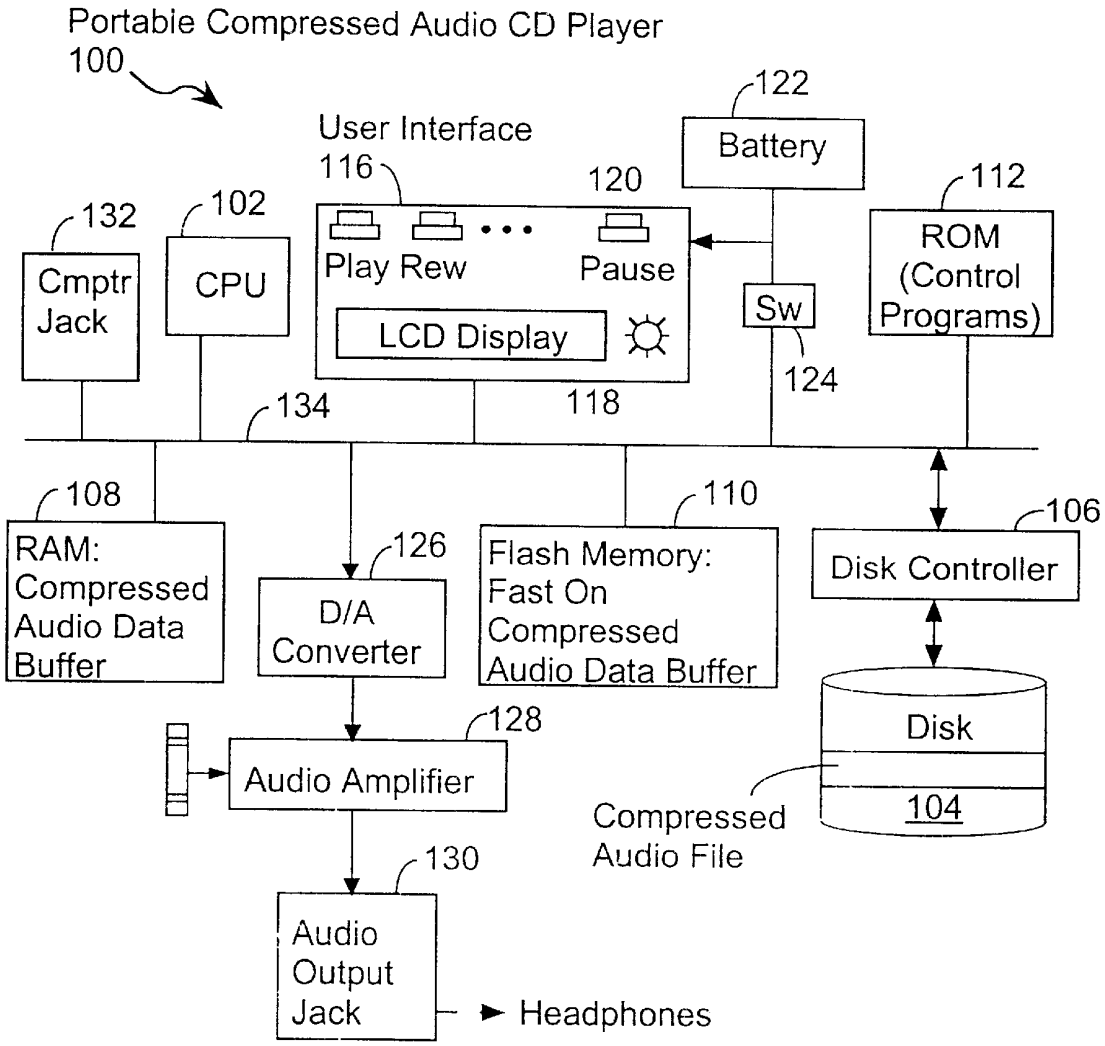

FIG. 1

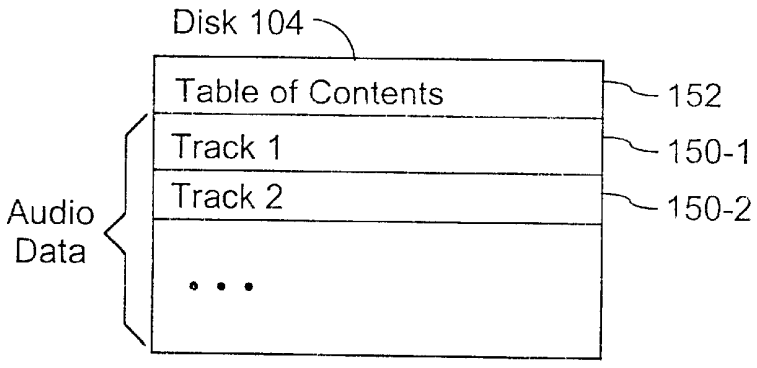

FIG. 2A

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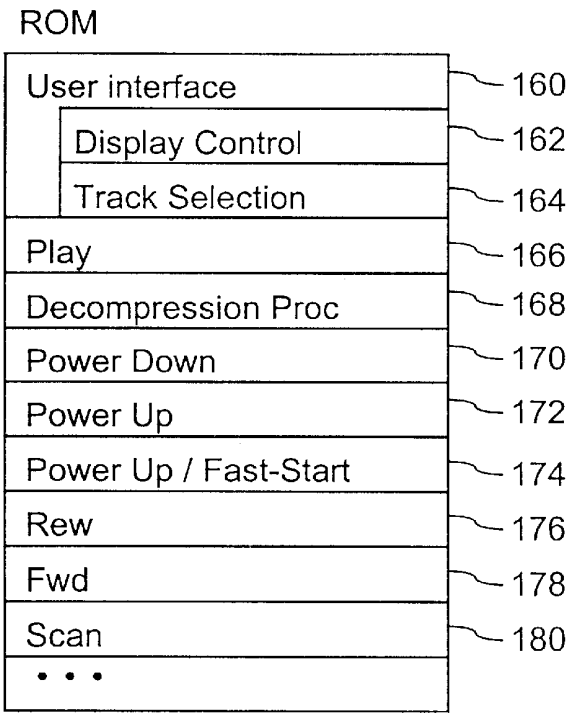

FIG. 2B

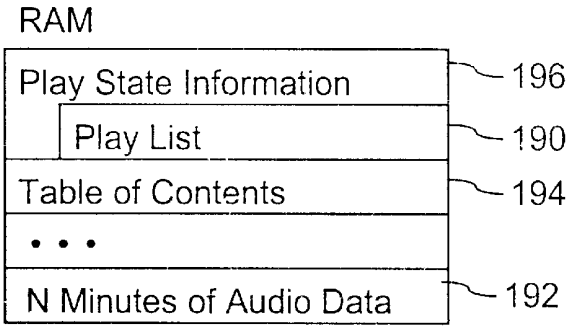

FIG. 2C

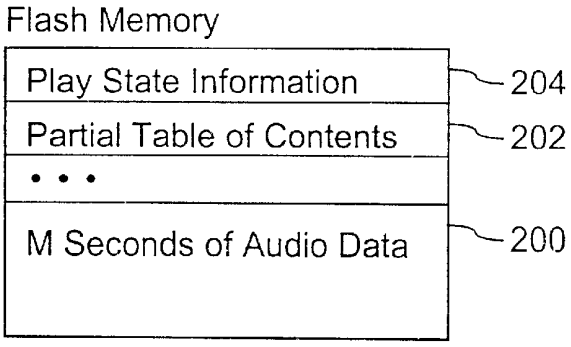

FIG. 2D

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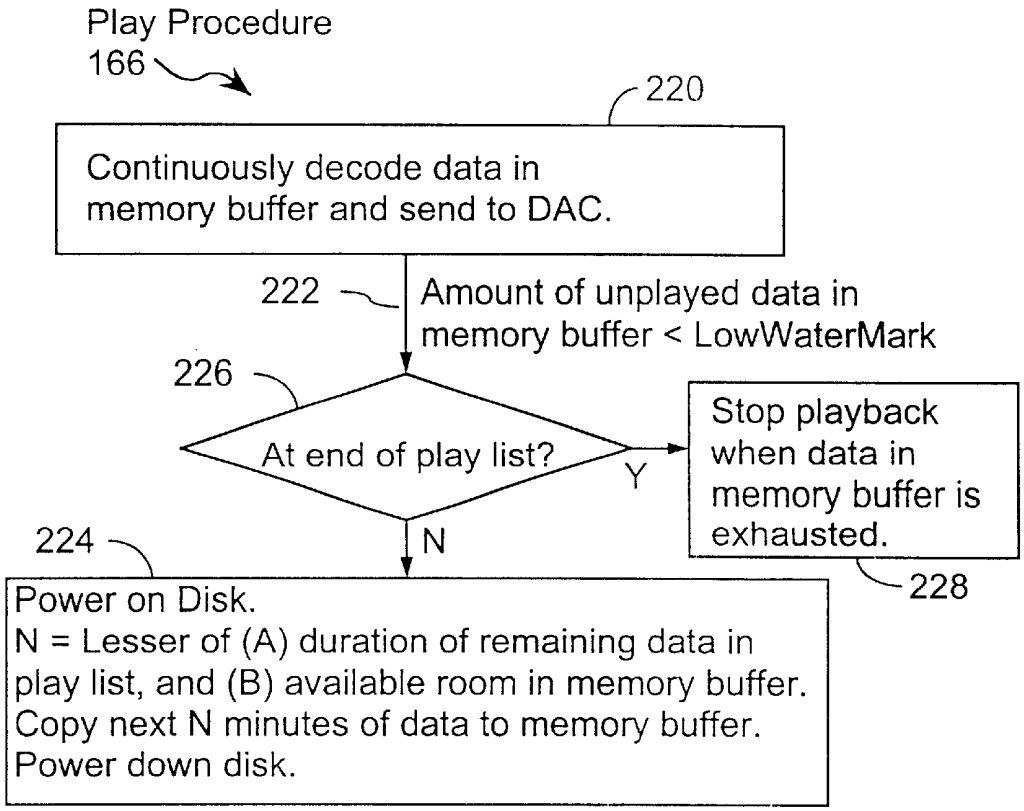

FIG. 3

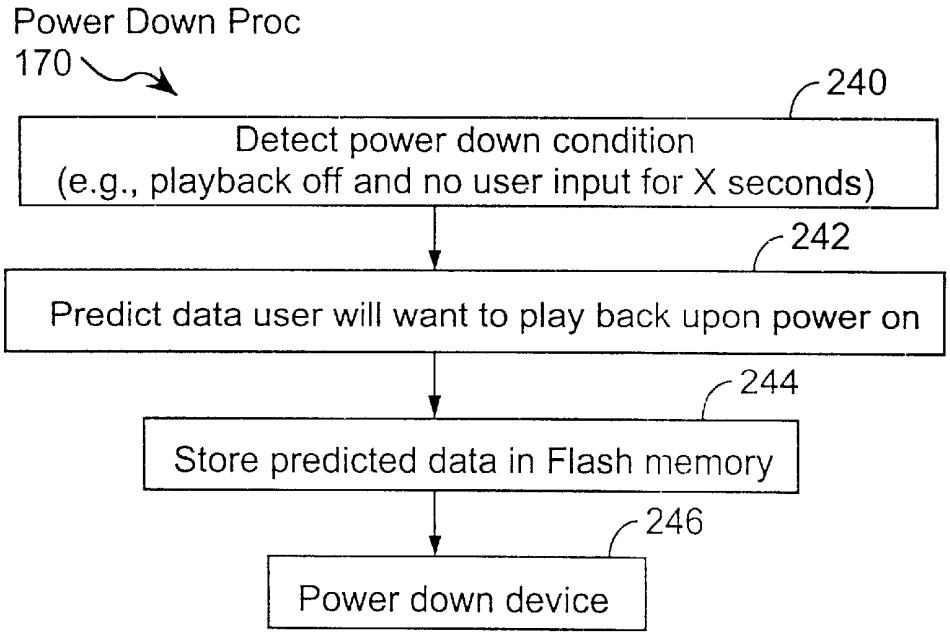

FIG. 4

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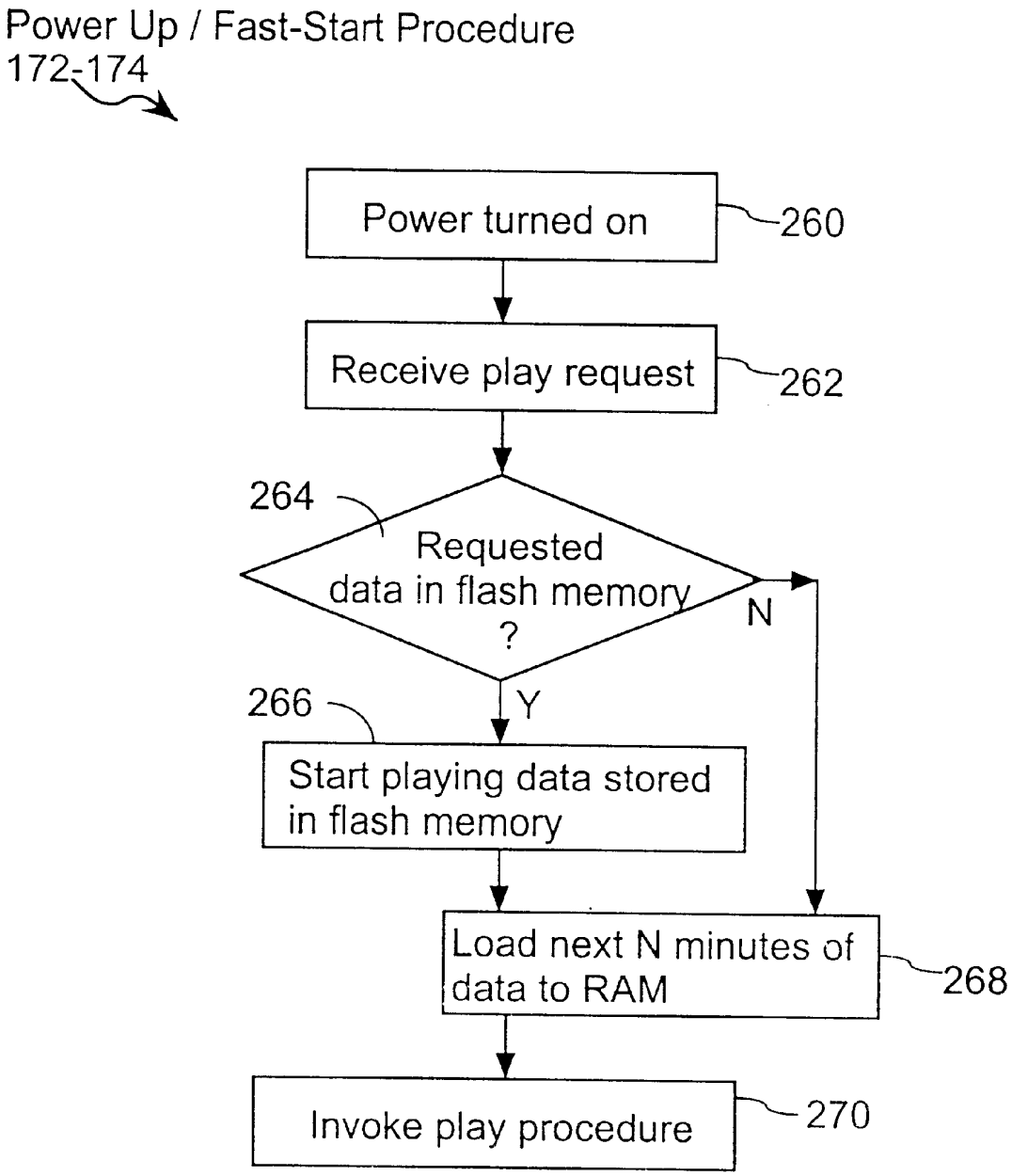

FIG. 5

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