(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 118 058 B1

(12) EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
17.01.2007 Bulletin 2007/03

(21) Application number: **99915300.0**

(22) Date of filing: **06.04.1999**

(51) Int Cl.:
G06F 17/30 *(2006.01)* ***G11B 27/00*** *(2006.01)*

(86) International application number:
PCT/US1999/007541

(87) International publication number:
WO 1999/060493 (25.11.1999 Gazette 1999/47)

(54) PERSONALIZED TIME-SHIFTED PROGRAMMING

PERSONALISIERTES ZEITVERSCHOBENES PROGRAMMIEREN

PROGRAMMATION PERSONNALISEE EN TEMPS DIFFERE

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE

(30) Priority: **20.05.1998 US 82490**

(43) Date of publication of application:
25.07.2001 Bulletin 2001/30

(73) Proprietor: **Audible, Inc.**
Wayne, NJ 07470 (US)

(72) Inventors:
- **STORY, Guy, A.**
  New York, NY 10012 (US)
- **RAJASEKHARAN, Ajit**
  East Brunswick, NJ 08816 (US)
- **MOTT, Timothy**
  Ketchum, ID 83340 (US)

(74) Representative: **Becker Kurig Straus**
Patentanwälte
Bavariastrasse 7
80336 München (DE)

(56) References cited:
US-A- 5 491 820
US-A- 5 572 442
US-A- 5 616 876
US-A- 5 721 827
US-A- 5 926 624

EP 1 118 058 B1

Description

FIELD OF THE INVENTION

[0001] The present invention relates generally to information playback systems. More specifically, the present invention relates to time shifting of media programming, particularly to a method and apparatus for providing personalized time-shifted media programming according to the preambles of claim 1 and 9. Such a method for distributing personalized information is known from e.g. US 5, 721, 827.

BACKGROUND OF THE INVENTION

[0002] Many forms of information available through many types of media are available for delayed playback. For example, video cassette recorders (VCRs), Laser Discs, and Digital Versatile Discs (DVDs) allow for time-shifting of audio/visual (A/V) programming. Audio playback systems include such devices as cassette tape players and compact disc (CD) players. Audio content stored and played back with these devices typically include music, audio books, recordings of radio programs or lectures, etc. Other media are available or will be available to for time-shifting of various types of programming.

[0003] One shortcoming of these prior art playback devices is general inflexibility. For example, the possibility of having selections distributed over several storage components. A single audio book or series of lectures may require multiple cassettes or CDs for complete audio coverage. Audio/visual programming, such as movies, may also require multiple storage components. Another shortcoming is that cassettes (video or audio) and optical media (CDs, DVDs, etc.) are typically not rewritten with new content when the user finishes the original content, which leads to a proliferation of storage media that the user must dispose of or store. While technology exists to rewrite over original material, there exists few opportunities to acquire and record new content to write over the original content purchased by the user. according to the preamble of claim 1 and 9. Such a method for distributing personalized information is known from e.g. US 5, 721, 827.

[0004] The prior art also includes digital playback devices that store audio content in an rewritable memory, such as flash memory. Such devices may be used advantageously to acquire and use programming content, however, these devices are typically inflexible as to storage and use of the content. For example, a playback device may store a time-limited portion of particular audio content. According to US 5 721 827 the user may be required to listen to the complete portion before storing a subsequent portion of the audio content or a different selection. Prior art digital playback devices typically do not provide the ability to store multiple programming selections and use the selections at different rates. Therefore, what is needed is an improved playback device that provides personalized time-shifted programming.

SUMMARY OF THE INVENTION

[0005] A method and apparatus for personalized time-shifted programming according to claims 1 and 9 are provided. Further, a computer readable medium according to claim 17 and a system according to claim 24 are provided

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] The present invention is illustrated by way of example, and not by way of limitation, in the figures of the accompanying drawings in which like reference numerals refer to similar elements.

Figure 1 is one embodiment of a block diagram of components for providing personalized time-shifted programming.

Figure 2 is one embodiment of a computer system that may be used as a library access device.

Figure 3 is one embodiment of a playback device.

Figure 4 is one embodiment of playback time allocation of audio content that may be provided.

Figure 5 is one embodiment of a flow diagram for automatically providing most recent audio content.

Figure 6 is one embodiment of a flow diagram for automatically providing an episode in a series of episodes.

Figure 7 is one embodiment of a flow diagram for automatically providing a seamless update until complete of audio content.

DETAILED DESCRIPTION

[0007] A method and apparatus for personalized time-shifted audio programming is described. In the following description, for the purposes of explanation, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent, however, to one skilled in the art that the present invention may be practiced without these specific details. In other instances, well-known structures and devices are shown in block diagram form in order to avoid obscuring the present invention.

[0008] While generally described in terms of digital audio programming, the present invention is not limited to personalizing and time-shifting of audio content. The present invention is equally applicable to other media, such as video, audio/video (A/V), and other media or

combinations of media. The present invention is used with a device having a limited storage resource, such as a fixed amount of onboard memory. The present invention allows a user to "consume" (by listening to audio content, watching video content, etc.) programming content and have the content updated automatically in a manner consistent with the user's consumption of the content. The present invention also allows a user to maintain multiple programming selections in a single storage device and to consume the multiple selections at different rates. The multiple programming selections may also be updated in different manners, depending on type of content, the user's preference, etc.

[0009] Briefly, in terms of audio content, the present invention provides a method and apparatus for retrieving audio content as well as time-shifting and personalization of playback. In one embodiment, digital audio content is retrieved, for example, from a digital audio library. Once retrieved, the audio content is stored, for example, on a personal computer or other storage device. The stored audio content is transferred, in whole or in part, to a playback device that allows a user to listen to the audio content on the playback device.

[0010] In one embodiment, the user may designate portions of a playback time provided by the playback device to various audio selections. For example, with a playback device that provides two hours of audio content, a user may wish to listen to one half hour of daily news, one half hour of a comedy series and one hour of an audio book. Thus, the user may partition one quarter of playback time to each of news and the comedy series and one half of the playback time to the audio book.

[0011] In one embodiment, the present invention provides different automatic update techniques for the playback device that may be selected by the user based on how the audio content is to be used. For example, the news portion may be one half hour of the most recent news available from a particular source. The comedy series may be the oldest non-consumed episode in the series. The audio book portion may provide one hour of the audio book from the most recent stopping place each time the playback device is coupled to the library retrieval device. Of course, other combinations and scenarios may also be implemented.

Overview of an Arrangement for Providing Personalized Programming Content

[0012] **Figure 1** is one embodiment of a block diagram of components for providing personalized time-shifted audio programming. While the embodiment of Figure 1 is described in terms of personal computers, the Internet and Web servers the arrangement of Figure 1 could also be provided with alternative components. The components of Figure 1 may also be modified to provide personalized time-shifted programming for media other than audio.

[0013] Library 110 provides access to multiple audio products described generically as audio content, which includes one or more of the following: audio books, recorded radio programs, recorded lectures, audio newsletters and other periodicals, audio portions of television programming, messages or other communications from individuals, etc. Of course, other types of audio content may also be provided. Library 110 may be part of a larger digital library that includes video, text and other information not described with respect to the present invention.

[0014] Network 100 provides access to library 110. In one embodiment, network 100 is the Internet. In such an embodiment, library 110 may be presented to a user in the form of a World Wide Web (WWW, or Web) page. Alternatively, library 100 may be a different type of resource accessed via network 100, such as a bulletin board service (BBS), a file server, etc. Of course, network 100 may be a network other than the Internet, such as a local area network (LAN), a wide area network (WAN), a wireless network, or any other type of network.

[0015] Alternatively, library 110 may be a local storage device such as a DVD, a CD-ROM, etc. In such an embodiment, library 110 would not be accessed via network 100. Of course, programming content other than audio content may be retrieved by the library access devices.

[0016] Multiple library access devices, such as library access devices 120 and 150 may be coupled to network 100 to access library 110. Library access devices may be personal computers, dedicated library access devices or any other type of device that provides access to library 110 via network 100.

[0017] Coupled to each library access device is a playback device, such as playback devices 125 and 155. Playback devices store all or a portion of audio content accessed from library 110 for playback. In one embodiment, playback devices are portable devices that may be detached from an associated library access device by a user thereof. Alternatively, a playback device may be a component of an associated library access device and not readily separated therefrom.

[0018] Alternatively, a playback device may include library access functionality. For example, a Personal Digital Assistant (PDA) may include playback functionality as well as library access functionality. In such an embodiment, updates to audio content may be performed automatically by the PDA according to one of the methods described below.

[0019] **Figure 2** is one embodiment of a computer system that may be used as a library access device. Computer system 200 comprises bus 201 or other communication device for communicating information, and processor 202 coupled with bus 201 for processing information. Computer system 200 further comprises random access memory (RAM) or other dynamic storage device 204 (referred to as main memory), coupled to bus 201 for storing information and instructions to be executed by processor 202. Main memory 204 also may be used for storing temporary variables or other intermediate information during execution of instructions by processor

202. Computer system 200 also comprises read only memory (ROM) and/or other static storage device 206 coupled to bus 201 for storing static information and instructions for processor 202. Data storage device 207 is coupled to bus 201 for storing information and instructions. Data storage device 207 such as a magnetic disk or optical disc and corresponding drive can be coupled to computer system 200.

[0020] Computer system 200 can also be coupled via bus 201 to display device 221, such as cathode ray tube (CRT) or liquid crystal display (LCD), for displaying information to a computer user. Alphanumeric input device 222, including alphanumeric and other keys, is typically coupled to bus 201 for communicating information and command selections to processor 202. Another type of user input device is cursor control 223, such as a mouse, a trackball, or cursor direction keys for communicating direction information and command selections to processor 202 and for controlling cursor movement on display 221.

[0021] Computer system 200 may be coupled to a network, such as network 100 via a network interface, modem or other device (not shown in Figure 2). Through the network interface, computer system 200 may be used to retrieve digital audio information from a library such as digital audio library 110. The audio content retrieved may be stored in main memory 204 and/or data storage device 207.

[0022] Playback device interface 225 provides an interface between computer system 200 and a mobile playback device (mot shown in Figure 2) described in greater detail below. Playback device interface 225 is used to transfer audio content from computer system 200 to the playback device and to receive information related to audio content from the playback device. Of course, playback device interface 225 may be used to transfer other data and/or to monitor audio content.

[0023] Alternatively, programming content may be updated directly to a playback storage device (not shown in Figure 2), without the need for the playback device being directly coupled to the library access device. In such an embodiment, a removable storage device is coupled to playback device interface 225 to receive updated programming content. Thus, a user may have multiple storage device for use with a playback device, which would allow the user to continually use the playback device without the need for pausing to update programming content.

[0024] The present invention has been described in terms of "pulling" content from a library to a playback device or storage device. However, the concepts of the present invention are equally applicable to "pushing" of content from the library to the playback device or the storage device. The pushing of content may be performed in response to a particular user's specifications as to what content is desired and how the content should be stored and updated. Alternatively, content may be pushed randomly to users, or users to which content is pushed may be selected based on either revealed or observed preferences. Revealed preferences may be obtained through a registration or other process in which the user is asked a series of questions, or in another manner that obtains information from responses generated by a user. Observed preferences may be obtained by observing the types of content selected by a user. For example, sports content may be pushed to a user who has previously consumed other sports content.

[0025] **Figure 3** is one embodiment of a playback device. Player 300 is a mobile playback device that allows digitized audio content to be downloaded, for example, via playback device interface 225 and replayed later. A user can utilize the buttons on player 300 to navigate through stored data to replay desired audio content.

[0026] Player 300 includes buttons 305, 310, 315, 320 and 325 and volume dial 330. Further details of player 300 can be found in U.S. Patent Application Serial No. 08/710,114, filed September 12, 1996.

[0027] In summary, player 300 includes a processor containing internal random access memory (RAM). External to the processor are conventional read only memory (ROM) and a memory storage device such as flash memory. The ROM contains the operating software, while the flash memory (or other memory storage device) contains audio data.

[0028] Player 300 can also include an interface to receive removable media that stores media content. For example, flash memory cards storing audio content can be inserted into player 300. Audio content stored on the removable media can be played back directly from the removable media or copied from the removable media and stored in player 300 for later playback.

Overview of Personalization and Time-Shifting of Audio Programming

[0029] In general, the present invention provides intelligent use of free and used memory in the playback device to provide seamless playback of programming content to the user. Furthermore, the present invention provides independent playback at different rates of various programming products, such as news programs, audio books, entertainment series, etc.

[0030] **Figure 4** is one embodiment of an exemplary playback time allocation of audio content that may be provided. While the example of Figure 4 is described in terms of audio programming, the storage and playback concepts apply equally to other types of programming, such as video, audio/visual, etc.

[0031] In the example, of Figure 4 a two hour playback period is provided. The first half hour provides the latest financial news and the second half hour provides an episode from an interview series. The final hour provides an audio novel selected by the user. Of course, other playback lengths less than or greater than two hours may also be provided.

[0032] In one embodiment, the three audio selections

described with respect to Figure 4 are updated according to three different methods. Financial news portion 410 provides the most recent financial news available to the playback device. Interview series 420 provides an oldest non-consumed episode from a series of interviews. Audio novel 430 provides one hour of an unlistened to portion of a selected audio novel or the remainder of the audio novel, whichever is less. Of course, a different number of audio programs may be provided by a single playback device. Also, various combinations of one or more update methods may also be provided.

[0033] In one embodiment, unallocated playback time is used to expand designated playback times. For example, if a user allocates a half hour for a series and an hour for an audio book, the unallocated half hour can be used for the audio book. Alternatively, in the example of Figure 4, if a subsequent interview episode is not yet available, the half hour designated for the interview series may be used for the audio book until the subsequent episode is available.

[0034] **Figure 5** is one embodiment of a flow diagram for automatically providing most recent audio content. The method for updating audio content described with respect to Figure 5 may be used, for example, with audio content that changes frequently and the listener wishes to listen to the latest edition. Examples of such content include, but are not limited to, financial news, world news, sports scores, etc.

[0035] The steps of Figure 5 may be performed, for example, by a computer system coupled to the Internet having access to a digital audio library. The computer system may automatically retrieve audio content for the playback device whether or not the playback device is currently coupled to the computer system.

[0036] The method of Figure 5 starts at step 500. During step 500, a playback device may or may not have an edition of the audio content desired. An edition of audio content is a segment of a larger audio content. For example, an interview series may be the audio content with each interview being an edition or episode of the series. If the playback device does not have any edition of the desired audio content, the most recent edition available is retrieved and stored.

[0037] If the playback device currently stores an edition of the desired audio content, the edition of the stored content is determined in step 510. In step 520 the edition of available content is determined. The editions determined in steps 510 and 520 are compared in step 530. It is important to note that steps 510 and 520 may be performed in reverse sequence, or steps 510 and 520 may be performed in parallel.

[0038] In step 540, it is determined whether the stored edition is the same as the most recent edition. If so, updating of the stored audio content is not required. Processing then returns to step 510 either immediately, or after a predetermined period of delay. If the stored content is not the most recent content, the most recent available content is retrieved and stored in step 550. At this point the desired most recent edition has been obtained and processing is completed in step 560.

[0039] The edition retrieved may be stored in the library access device or in the playback device. If stored in the library access device, all or a portion of the edition retrieved may be stored in the playback device at a later time.

[0040] **Figure 6** is one embodiment of a flow diagram for automatically providing an episode in a series of episodes. The method of updating described with respect to Figure 6 may be used, for example, when a user is interested in listening to a series and wishes to hear the most recent edition of the series.

[0041] As with the steps of Figure 5 above, the steps of Figure 6 may be performed, for example, by a computer system coupled to the Internet having access to a digital library. The computer system may automatically retrieve audio content for the playback device whether or not the playback device is currently coupled to the computer system.

[0042] The method starts with step 600. In step 610, an episode is retrieved from the digital library. In step 620, it is determined whether the retrieved episode has been consumed. Step 620 may be performed periodically, for example, at predetermined times, when the playback device is coupled to the library access device, etc. Alternatively, step 620 may be performed continuously until the retrieved episode is consumed.

[0043] In step 630, the subsequent episode in the series is retrieved. The subsequent episode retrieved in step 630 may be stored for later playback, for example, in the library access device or the playback device. Alternatively, the subsequent retrieved episode may be consumed immediately. The process concludes in step 640.

[0044] Of course, the steps described with respect to Figure 6 may be modified to retrieve an edition from the series after the user has listened to the edition(s) already retrieved. Alternatively, new editions may be retrieved and stored by the library access device and stored in the playback device after an older edition has been used.

[0045] In an alternative embodiment, a portion of a subsequent episode can be stored in the memory allocated for the series. For example, if a user listens to 10 minutes of a 30 minute episode and has allotted 30 minutes for storing the episode, the playback device may be updated to store the final 20 minutes of the episode and 10 minutes of the subsequent episode. In other words, updating of episodes is not limited to an episode-by-episode basis.

[0046] **Figure 7** is one embodiment of a flow diagram for automatically providing a seamless update until complete of audio content. The method of updating described with respect to Figure 7 may be used, for example, when a listener is listening to an audio book. The listener may have stored on the playback device one hour of the audio book and may listen to 25 minutes of the audio book during a time period in which the playback device is sep-

arated from the library access device. When the listener couples the playback device to the library access device, the 25 minutes of the audio book immediately subsequent to the hour previously stored in the playback device is written over the 25 minute section previously listened to. The playback device then stores one hour of the audio book that the listener may listen to.

[0047] The method begins with step 700. In step 710 the playback device determines initial head and tail pointers of a particular audio content. The head pointer indicates the logical beginning of the audio content. Similarly, the tail pointer indicates the logical ending of the audio content. The logical beginning and ending of the audio content correspond to the beginning and ending, respectively, of the audio content if listened to "live." The audio content is not required to be stored in contiguous memory locations. In one embodiment, audio content is stored in multiple blocks of memory that are linked together to allow audio content stored in the memory blocks to be played back in proper audio sequence.

[0048] In step 720 a content counter is set to the initial head pointer. The content counter indicates the current memory location from which audio content is retrieved for playback. As audio content is played back, the content counter progresses through the audio content stored in memory in the proper audio sequence. In one embodiment, this is accomplished by stepping though memory blocks sequentially. When the end of a memory block is reached, a stored link that indicates the subsequent memory block is followed to the appropriate next memory block. That memory block is then stepped through sequentially to retrieve audio content. Of course, other memory arrangements may also be provided.

[0049] In step 730 the playback device waits for a user to complete a listening session. During the listening session, the content counter moves though memory as described above. During step 730, playback may be started and stopped multiple times. A listening session is defined as a time period during which the playback device is not coupled to the library access device, or other device that provides the playback device with audio content.

[0050] In step 740, when a listening session is complete, the head pointer is set to the content counter at the end of the listening session. This allows the subsequent listening session to begin at the point in the audio content where the most recent listening session ended. By updating the head pointer after each listening session, memory used for a particular audio selection may be treated as a circular queue such that used (played) audio content is replaced with unused (unplayed) audio content as the audio content is used rather than replacing a complete audio selection when the selection has been used.

[0051] In step 750, the memory storing the used audio content is freed and in step 760 the freed memory is used to store subsequent audio content from the library access device. When the new audio content is stored in the playback device, the tail pointer is set to the end of the new audio content in step 770. If the new audio content is placed in memory blocks other than those already used for the audio selection, the new memory blocks are linked to the existing audio content in step 780. The process completes in step 790.

[0052] Thus, an audio selection may be updated seamlessly such that the user may be unaware of memory limitations of the playback device. When the playback device is coupled to the library access device after a listening session, the used content in the playback device is replaced with new content from the library access device or other source.

[0053] Thus, a user may be provided with a mobile playback device that provides and updates audio according to the user's specifications. The user may specify an amount of time allocated for playback of one or more audio selections. The user may also specify a method for updating each of the audio selections. In this manner the user may personalize and time shift audio programming according to predetermined specifications.

Claims

1. A method for providing personalized time-shifted media programming comprising:

   retrieving digital media content from a library;
   storing said media content for subsequent playback;
   providing a first subset of the media content in a playback device based on user's specification;
   storing said first subset in said playback device;
   characterized by allowing a portion of the first subset of media content to be consumed such that a consumed portion of arbitrary length of the first subset of media content and an unconsumed portion of the first subset of media content result; and
   automatically selecting a second subset of said media content to replace the consumed portion of the first subset of the media content in the playback device according to user's specification, such that the unconsumed portion of the first subset of the media content and the second subset of the media content together provide an updated section of unconsumed content having a playback time approximately equal to a playback time of the first subset of the media content, by
   determining the amount of the portion of the media content consumed, if any; and
   storing a subsequent portion of the media content representing said second subset corresponding to the amount of to the amount of the portion of media content consumed in the playback device.

2. The method of claim 1, wherein the step of storing

a subset of the media content comprises automatically storing a most recent segment of a dynamically changing particular audio content.

3. The method of claim 2 wherein the segment is selectable by the user.

4. The method of claim 1 wherein the step of storing a first and subset of the media content further comprises the steps of:

determining a selected segment length;
determining a selected particular media content; and
storing a segment of the selected particular media content in the playback device having a length of the selected segment length.

5. The method of claim 1, wherein the step of storing a first subset of the media content comprises automatically storing a most recent episode in a series of episodes.

6. The method of claim 1, wherein the step of storing a first subset of the media content further comprises the steps of:

determining a media program having a series of episodes;
retrieving a particular episode in the series of episodes; and
retrieving an episode subsequent to the particular episode when the particular episode has been consumed.

7. The method of claim 1, wherein the step of storing a first subset of the media content comprises automatically storing a most recent segment from a series of audio content having multiple segments.

8. The method of claim 1, wherein the step of storing a first subset of the media content further comprises the steps of:

selecting a segment of the media content;
storing a portion of the media content in a playback device;

9. An apparatus for providing personalized time-shifted programming comprising:

means for retrieving digital content from a library;
means for storing the media content for subsequent playback;
means for providing a first subset of the media content in a playback device, based on user's specifications;
means for storing said first subset of the media content in a playback device;

characterized by
means for allowing a portion of arbitrary length of the first subset of media content to be consumed;
means for automatically selecting a second subset of the media content to replace the consumed portion of the first subset of the media content in the playback device according to user's specification, wherein the unconsumed portion of the first subset of the media content and the second subset of the media content together provide an updated section of unconsumed content having a playback time approximately equal to a playback time of the first subset of the media content, and means for
determining the amount of the portion of the media content consumed, if any; and
storing a subsequent portion of the media content representing said second subset corresponding to the amount of to the amount of the portion of media content consumed in the playback device.

10. The apparatus of claim 9, wherein the means for storing a first subset of the content comprises means for automatically storing a most recent segment of a dynamically changing particular content.

11. The apparatus of claim 10 wherein the segment is selectable by the user.

12. The apparatus of claim 9; wherein the means for storing a first subset of the content further comprises:

means for determining a selected segment length;
means for determining a selected particular content; and
means for storing a segment of the selected particular content in the playback device having a length of the selected segment length.

13. The apparatus of claim 9, wherein the means for storing a first subset of the content comprises means for automatically storing a most recent episode in a series of episodes.

14. The apparatus of claim 9, wherein the means for storing a first subset of the content further comprises:

means for determining a program having a series of episodes;
means for retrieving a most recent episode in the series of episodes; and
means for storing the most recent episode in a playback device.

15. The apparatus of claim 9, wherein the means for

storing a first subset of the content comprises means for automatically storing a most recent segment in the static content.

16. The apparatus of claim 9, wherein the means for storing a first subset of the content further comprises:

means for selecting a static content;
means for storing a portion of the static content in a playback device;
means for determining an amount of the portion of the static content consumed, if any; and
means for storing a subsequent portion of the static content corresponding to the amount of the portion of static content consumed in the playback device.

17. A computer-readable medium having stored thereon a plurality of sequences of instructions including sequences of instructions which, when executed by a processor, cause the processor to:

retrieving digital media content from a library;
storing said media content for subsequent playback;
providing a first subset of the media content in a playback device based on user's specification ;
storing said first subset in said playback device;
allowing a portion of the first subset of media content to be consumed such that a consumed portion of arbitrary length of the first subset of media content and an unconsumed portion of the first subset of media content result; and
automatically selecting a second subset of said media content to replace the consumed portion of the first subset of the media content in the playback device according to user's specification, such that the unconsumed portion of the first subset of the media content and the second subset of the media content together provide an updated section of unconsumed content having playback time approximately equal to a playback time of the first subset of the media content, by
determining the amount of the portion of the media content consumed, if any; and
storing a subsequent portion of the media content representing said second subset corresponding to the amount of to the amount of the portion of media content consumed in the playback device.

18. A computer-readable medium of claim 17, wherein the sequence of instructions to store a first subset of the media content further cause the processor to automatically store a most recent segment of a dynamically changing particular media content.

19. The computer-readable medium of claim 17, wherein the sequence of instructions to store a first subset of the media content further cause the processor to:

determine a selected segment length;
determine a selected particular media content; and
store a segment of the selected particular media content in the playback device having a length of the selected segment length.

20. The computer-readable medium of claim 17, wherein the sequence of instructions to store a first subset of the media content further cause the processor to automatically store a most recent episode in a series of episodes.

21. The computer-readable medium of claim 17, wherein the sequence of instructions to store a first subset of the media content further cause the processor to:

determine a media program having a series of episodes;
retrieve a most recent episode in the series of episodes; and
store the most recent episode in a playback device.

22. The computer-readable medium of claim 17, wherein the sequence of instructions to store a first subset of the media content further cause the processor to automatically store a most recent segment in a static media content.

23. The computer-readable medium of claim 17, wherein the sequence of instructions to store a first subset of the media content further cause the processor to:

select a static media content;
store a portion of the static media content in a playback device;
determine an amount of the portion of the static media content consumed, if any; and
store a subsequent portion of the static media content corresponding to the amount of the portion of static media consumed in the playback device.

24. A system for providing personalized time-shifted programming comprising:

a library access device that provides access to a library;
a storage device coupled to the library access device that stores content retrieved from the library; and
a playback device having a memory and an interface coupled to the storage device;

wherein the playback device stores a selected content that is a first subset of the content stored by the storage device, and wherein further, upon consumption of a first portion of the selected content stored on the playback device, a second subset of the content stored by the storage device is used to automatically replace the consumed portion of the selected content, wherein the unconsumed portion of the selected content and the second subset of the content together provide a playback time approximately equal to a playback time of the first subset of the content, wherein the replacement is done by
determining the amount of the portion of the media content consumed, if any; and
storing a subsequent portion of the media content representing said second subset corresponding to the amount of to the amount of the portion of media content consumed in the playback device.

25. The apparatus of claim 24, wherein the library access device is a personal computer.

26. The apparatus of claim 24, wherein the library access device is an Internet terminal.

27. The apparatus of claim 24, wherein the library access device is a dedicated audio library access device.

28. The apparatus of claim 24, wherein the storage device is a magnetic disk.

29. The apparatus of claim 24, wherein the storage device is an optical disc.

30. The apparatus of claim 24, wherein the storage device is a flash memory.

31. The apparatus of claim 24, wherein the playback device memory comprises flash memory.

Patentansprüche

1. Verfahren zum Bereitstellen vom personalisiertem, zeitversetztem Medien-Programminhalt, umfassend:

- Abrufen von digitalem Medieninhalt von einer Bibliothek;
- Speichern des Medieninhalts zur nachfolgenden Wiedergabe;
- Bereitstellen einer ersten Teilmenge des Medieninhalts in einer Wiedergabevorrichtung auf Grundlage einer Benutzer-Vorgabe;
- Speichern der ersten Teilmenge in der Wiedergabevorrichtung;

gekennzeichnet durch

- Ermöglichen, dass ein Anteil der ersten Teilmenge des Medieninhalts derart konsumiert wird, dass sich ein konsumierter Anteil von beliebiger Länge der ersten Teilmenge des Medieninhalts und ein unkonsumierter Anteil der ersten Teilmenge des Medieninhalts ergeben; und
- automatisches Auswählen einer zweiten Teilmenge des Medieninhalts, um den konsumierten Anteil der ersten Teilmenge des Medieninhalts in der Wiedergabevorrichtung gemäß der Benutzer-Vorgabe zu ersetzen, sodass der unkonsumierte Anteil der ersten Teilmenge des Medieninhalts und die zweite Teilmenge des Medieninhalts zusammen einen aktualisierten Abschnitt von unkonsumiertem Inhalt bereitstellen, der eine Wiedergabezeit aufweist, die ungefähr gleich einer Wiedergabezeit der ersten Teilmenge des Medieninhalts ist,

durch

- Bestimmen der Menge des Anteils an konsumierten Medieninhalt, wenn vorhanden; und
- Speichern eines nachfolgenden Anteils des Medieninhalts, der die zweite Teilmenge darstellt, welcher der Menge des Anteils des Medieninhalts entspricht, der in der Wiedergabevorrichtung konsumiert wurde.

2. Verfahren nach Anspruch 1, wobei der Schritt des Speicherns einer Teilmenge des Medieninhalts automatisches Speichern eines neuesten Segments eines sich dynamisch verändernden, bestimmten Audioinhalt umfasst.

3. Verfahren nach Anspruch 2, wobei das Segment von dem Benutzer wählbar ist.

4. Verfahren nach Anspruch 1, wobei der Schritt des Speicherns einer ersten Teilmenge des Medieninhalts weiter folgende Schritte umfasst:

- Bestimmen einer Länge eines ausgewählten Segments;
- Bestimmen eines ausgewählten, bestimmten Medieninhalts; und
- Speichern eines Segments des ausgewählten, bestimmten Medieninhalts in der Wiedergabevorrichtung, mit einer Länge der Länge des ausgewählten Segments.

5. Verfahren nach Anspruch 1, wobei der Schritt des Speicherns einer ersten Teilmenge des Medieninhalts automatisches Speichern der neuesten Episode einer Reihe von Episoden umfasst.

6. Verfahren nach Anspruch 1, wobei der Schritt des Speicherns einer ersten Teilmenge des Medieninhalts weiter folgende Schritte umfasst:

- Bestimmen eines Medienprogramms mit einer Reihe von Episoden;
- Abrufen einer bestimmten Episode in der Reihe von Episoden; und
- Abrufen einer der bestimmten Episode nachfolgenden Episode, wenn die bestimmte Episode konsumiert worden ist.

7. Verfahren nach Anspruch 1, wobei der Schritt des Speicherns einer ersten Teilmenge des Medieninhalts automatisches Speichern eines neuesten Segments einer Reihe von Audioinhalten mit mehreren Segmenten umfasst.

8. Verfahren nach Anspruch 1, wobei der Schritt des Speicherns einer ersten Teilmenge des Medieninhalts weiter folgende Schritte umfasst:

- Auswählen eines Segments des Medieninhalts;
- Speichern eines Abschnitts des Medieninhalts in einer Wiedergabevorrichtung.

9. Vorrichtung zum Bereitstellen von personalisiertem, zeitversetzten Medien-Programminhalt, umfassend:

- Mittel zum Abrufen von digitalem Medieninhalt von einer Bibliothek;
- Mittel zum Speichern des Medieninhalts zur nachfolgenden Wiedergabe;
- Mittel zum Bereitstellen einer ersten Teilmenge des Medieninhalts in einer Wiedergabevorrichtung auf Grundlage der Benutzer-Vorgaben;
- Mittel zum Speichern der ersten Teilmenge des Medieninhalts in einer Wiedergabevorrichtung;

gekennzeichnet, durch:

- Mittel zum Ermöglichen, dass ein Anteil mit beliebiger Länge der ersten Teilmenge des Medieninhalts konsumiert wird;
- Mittel zum automatischen Auswählen einer zweiter Teilmenge des Medieninhalts, um den konsumierten Anteil der ersten Teilmenge des Medieninhalts in der Wiedergabevorrichtung gemäß der Benutzer-Vorgabe zu ersetzen, wobei der unkonsumierte Anteil der ersten Teilmenge des Medieninhalts und die zweite Teilmenge des Medieninhalts zusammen einen aktualisierten Abschnitt von unkonsumiertem Inhalt bereitstellen, der eine Wiedergabezeit aufweist, die ungefähr gleich einer Wiedergabezeit der ersten Teilmenge des Medieninhalts ist, und
- Mittel zum Bestimmen der Menge des Anteils an konsumierten Medieninhalt, wenn vorhanden; und zum Speichern eines nachfolgenden Anteils des Medieninhalts, der die zweite Teilmenge darstellt, welcher der Menge des Anteils des Medieninhalts entspricht, der in der Wiedergabevorrichtung konsumiert wurde.

10. Vorrichtung nach Anspruch 9, wobei die Mittel zum Speichern einer ersten Teilmenge des Inhalts Mittel zum automatischen Speichern eines neuesten Segments eines sich dynamisch verändernden, bestimmten Inhalts umfassen.

11. Vorrichtung nach Anspruch 10, wobei das Segment von dem Benutzer wählbar ist.

12. Vorrichtung nach Anspruch 9, wobei die Mittel zum Speichern einer ersten Teilmenge des Inhalts weiter umfassen:

- Mittel zum Bestimmen einer Länge eines ausgewählten Segments;
- Mittel zum Bestimmen eines ausgewählten, bestimmten Inhalts; und
- Mittel zum Speichern eines Segments des ausgewählten bestimmten Inhalts in der Wiedergabevorrichtung, mit einer Länge der Länge des ausgewählten Segments.

13. Vorrichtung nach Anspruch 9, wobei die Mittel zum Speichern einer ersten Teilmenge des Inhalts Mittel zum automatischen Speichern einer neuesten Episode einer Reihe von Episoden umfassen.

14. Vorrichtung nach Anspruch 9, wobei die Mittel zum Speichern einer ersten Teilmenge des Inhalts weiter umfassen:

- Mittel zum Bestimmen eines Programms mit einer Reihe von Episoden;
- Mittel zum Abrufen einer neuesten Episode in der Reihe von Episoden; und
- Mittel zum Speichern der neuesten Episode in einer Wiedergabevorrichtung.

15. Vorrichtung nach Anspruch 9, wobei die Mittel zum Speichern einer ersten Teilmenge des Inhalts Mittel zum automatischen Speichern eines neuesten Segments in dem statischen Inhalt umfassen.

16. Vorrichtung nach Anspruch 9, wobei die Mittel zum Speichern einer ersten Teilmenge des Inhalts weiter umfassen:

- Mittel zum Auswählen eines statischen Inhalts;
- Mittel zum Speichern eines Abschnitts des statischen Inhalts in einer Wiedergabevorrichtung;

- Mittel zum Bestimmen einer Menge des Abschnitts des konsumierten statischen Inhalts, wenn vorhanden; und
- Mittel zum Speichern eines nachfolgenden Anteils des statischen Inhalts, welcher der Menge des Anteils des statischen Inhalts entspricht, der in der Wiedergabevorrichtung konsumiert wurde.

17. Computerlesbares Medium, auf dem mehrere Abfolgen von Anweisungen gespeichert sind, einschließlich Abfolgen von Anweisungen die, wenn sie auf einem Prozessor ausgeführt werden, bewirken, dass der Prozessor:

- digitalen Medieninhalt von einer Bibliothek abruft;
- den Medieninhalt zur nachfolgenden Wiedergabe speichert;
- eine erste Teilmenge des Medieninhalts in einer Wiedergabevorrichtung auf Grundlage der Benutzer-Vorgabe bereitstellt;
- die erste Teilmenge in der Wiedergabevorrichtung speichert;
- ermöglicht, dass ein Anteil der ersten Teilmenge des Medieninhalts derart konsumiert wird, dass sich ein konsumierter Anteil von beliebiger Länge der ersten Teilmenge des Medieninhalts und ein unkonsumierter Anteil der ersten Teilmenge des Medieninhalts ergeben; und
- eine zweite Teilmenge des Medieninhalts automatisch ausgewählt, um den konsumierten Anteil der ersten Teilmenge des Medieninhalts in der Wiedergabevorrichtung gemäß der Vorgabe des Benutzers zu ersetzen, sodass der unkonsumierte Anteil der ersten Teilmenge des Medieninhalts und die zweite Teilmenge des Medieninhalts zusammen einen aktualisierten Abschnitt von unkonsumiertem Inhalt bereitstellen, der eine Wiedergabezeit aufweist, die ungefähr gleich einer Wiedergabezeit der ersten Teilmenge des Medieninhalts ist,

durch

- Bestimmen der Menge des Anteils an konsumierten Medieninhalt, wenn vorhanden; und
- Speichern eines nachfolgenden Anteils des Medieninhalts, der die zweite Teilmenge darstellt, welcher der Menge des Anteils des Medienanteils entspricht, der in der Wiedergabevorrichtung konsumiert wurde.

18. Computerlesbares Medium nach Anspruch 17, wobei die Abfolge von Anweisungen zum Speichern einer ersten Teilmenge des Medieninhalts weiter bewirkt, dass der Prozessor ein neuestes Segment eines sich dynamisch verändernden, bestimmten Medieninhalts automatisch speichert.

19. Computerlesbares Medium nach Anspruch 17, wobei die Abfolge von Anweisungen zum Speichern einer ersten Teilmenge des Medieninhalts weiter bewirkt, dass der Prozessor:

- eine Länge eines ausgewählten Segments bestimmt;
- einen ausgewählten, bestimmten Medieninhalt bestimmt; und
- ein Segment des ausgewählten, bestimmten Medieninhalts in der Wiedergabevorrichtung speichert, mit einer Länge der Länge des ausgewählten Segments.

20. Computerlesbares Medium nach Anspruch 17, wobei die Abfolge von Anweisungen zum Speichern einer ersten Teilmenge des Medieninhalts weiter bewirkt, dass der Prozessor eine neueste Episode in einer Reihe von Episoden automatisch speichert.

21. Computerlesbares Medium nach Anspruch 17, wobei die Abfolge von Anweisungen zum Speichern einer ersten Teilmenge des Medieninhalts weiter bewirkt, dass der Prozessor:

- ein Medienprogramm mit einer Reihe von Episoden bestimmt;
- eine neueste Episode in der Reihe von Episoden abruft; und
- die neueste Episode in einer Wiedergabevorrichtung speichert.

22. Computerlesbares Medium nach Anspruch 17, wobei die Abfolge von Anweisungen zum Speichern einer ersten Teilmenge des Medieninhalts weiter bewirkt, dass der Prozessor ein neuestes Segment in einem statischen Medieninhalt automatisch speichert.

23. Computerlesbares Medium nach Anspruch 17, wobei die Abfolge von Anweisungen zum Speichern einer ersten Teilmenge des Medieninhalts weiter bewirkt, dass der Prozessor:

- einen statischen Medieninhalt auswählt;
- einen Abschnitt des statischen Medieninhalts in einer Wiedergabevorrichtung speichert;
- eine Menge des Abschnitts des konsumierten, statischen Medieninhalts bestimmt, wenn vorhanden; und
- einen nachfolgenden Anteil des statischen Medieninhalts speichert, welcher der Menge des Anteils von statischen Medien entspricht, die in der Wiedergabevorrichtung konsumiert wurden.

24. System zum Bereitstellen von personalisiertem, zeit-

versetzten Programminhalt, umfassend:

- eine Bibliothekszugriffsvorrichtung, die Zugang zu einer Bibliothek bereitstellt;
- eine Speichervorrichtung, die mit der Bibliothekszugriffsvorrichtung gekoppelt ist, die Inhalt speichert, der von der Bibliothek abgerufen wird; und
- eine Wiedergabevorrichtung mit einem Speicher und einer Schnittstelle, die mit der Speichervorrichtung gekoppelt ist;
- wobei die Wiedergabevorrichtung einen ausgewählten Inhalt speichert, der eine erste Teilmenge des Inhalts ist, der von der Speichervorrichtung gespeichert wird und wobei weiter, nach einer Konsumierung des ersten Anteils des ausgewählten Inhalts, der auf der Wiedergabevorrichtung gespeichert ist, eine zweite Teilmenge des Inhalts, der von der Speichervorrichtung gespeichert wird, zum automatischen Ersetzen des konsumierten Anteils des ausgewählten Inhalts verwendet wird, wobei der unkonsumierte Anteil des ausgewählten Inhalts und die zweite Teilmenge des Inhalts zusammen eine Wiedergabezeit bereitstellen, die ungefähr gleich einer Wiedergabezeit der ersten Teilmenge des Inhalts ist, wobei die Ersetzung ausgeführt wird durch:
- Bestimmen der Menge des Anteils an konsumierten Medieninhalt, wenn vorhanden; und
- Speichern eines nachfolgenden Anteils des Medieninhalts, der die zweite Teilmenge darstellt, welcher der Menge des Anteils des Medienanteils entspricht, der in der Wiedergabevorrichtung konsumiert wurde.

25. System nach Anspruch 24, wobei die Bibliothekszugriffsvorrichtung ein Personal Computer ist.

26. System nach Anspruch 24, wobei die Bibliothekszugriffsvorrichtung ein Internet-Endgerät ist.

27. System nach Anspruch 24, wobei die Bibliothekszugriffsvorrichtung eine dedizierte Audio-Bibliothekszugriffsvorrichtung ist.

28. System nach Anspruch 24, wobei die Speichervorrichtung eine Magnetscheibe ist.

29. System nach Anspruch 24, wobei die Speichervorrichtung eine optische Scheibe ist.

30. System nach Anspruch 24, wobei die Speichervorrichtung ein Flash-Speicher ist.

31. System nach Anspruch 24, wobei die Wiedergabevorrichtung einen Flash-Speicher umfasst.

Revendications

1. Procédé servant à fournir une programmation de support personnalisée décalée dans le temps comprenant :

la récupération d'un contenu de support numérique à partir d'une bibliothèque ;
le stockage dudit contenu de support pour une lecture ultérieure ;
la fourniture d'un premier sous-ensemble du contenu de support dans un dispositif de lecture sur la base d'une spécification de l'utilisateur ;
le stockage dudit premier sous-ensemble dans ledit dispositif de lecture ; **caractérisé par** le fait de

permettre à une partie du premier sous-ensemble de contenu de support d'être consommée tel qu'il résulte une partie consommée de longueur arbitraire du premier sous-ensemble de contenu de support et une partie non consommée du premier sous-ensemble de contenu de support; et
sélectionner automatiquement un second sous-ensemble dudit contenu de support pour remplacer la partie consommée du premier sous-ensemble du contenu de support dans le dispositif de lecture selon une spécification de l'utilisateur, tel qu'ensemble, la partie non consommée du premier sous-ensemble du contenu de support et le second sous-ensemble du contenu de support fournissent une section mise à jour de contenu non consommé ayant un temps de lecture approximativement égal à un temps de lecture du premier sous-ensemble du contenu de support, en déterminant la quantité de la partie du contenu de support consommée, si elle existe ; et en stockant une partie ultérieure du contenu de support représentant ledit second sous-ensemble correspondant à la quantité de la partie de contenu de support consommée dans le dispositif de lecture.

2. Procédé selon la revendication 1, dans lequel l'étape consistant à stocker un sous-ensemble du contenu de support comprend de stocker automatiquement un segment le plus récent d'un contenu audio particulier changeant de manière dynamique.

3. Procédé selon la revendication 2, dans lequel le segment est sélectionnable par l'utilisateur.

4. Procédé selon la revendication 1, dans lequel l'étape consistant à stocker un premier et un second sous-ensembles du contenu de support comprend en

outre les étapes consistant à :

déterminer une longueur du segment sélectionné ;
déterminer un contenu de support particulier sélectionné ; et
stocker un segment du contenu de support particulier sélectionné dans le dispositif de lecture ayant une longueur de la longueur du segment sélectionné.

5. Procédé selon la revendication 1, dans lequel l'étape consistant à stocker un premier sous-ensemble du contenu de support comprend de stocker automatiquement un épisode le plus récent dans une série d'épisodes.

6. Procédé selon la revendication 1, dans lequel l'étape consistant à stocker un premier sous-ensemble du contenu de support comprend en outre les étapes consistant à :

déterminer un programme de support ayant une série d'épisodes ;
récupérer un épisode particulier dans la série d'épisodes ; et
récupérer un épisode ultérieur à l'épisode particulier lorsque l'épisode particulier a été consommé.

7. Procédé selon la revendication 1, dans lequel l'étape consistant à stocker un premier sous-ensemble du contenu de support comprend de stocker automatiquement un segment le plus récent à partir d'une série de contenu audio ayant de multiples segments.

8. Procédé selon la revendication 1, dans lequel l'étape consistant à stocker un premier sous-ensemble du contenu de support comprend en outre les étapes consistant à :

sélectionner un segment du contenu de support ;
stocker une partie du contenu de support dans un dispositif de lecture ;
déterminer la quantité de la partie du contenu de support consommée, si elle existe ; et
stocker une partie ultérieure du contenu de support représentant ledit second sous-ensemble correspondant à la quantité de la partie de contenu de support consommée dans le dispositif de lecture.

9. Appareil servant à fournir une programmation personnalisée décalée dans le temps comprenant:

un moyen pour récupérer le contenu numérique à partir d'une bibliothèque;
un moyen pour stocker le contenu de support pour une lecture ultérieure ;
un moyen pour fournir un premier sous-ensemble du contenu de support dans un dispositif de lecture, sur la base des spécifications de l'utilisateur ;
un moyen pour stocker ledit premier sous-ensemble du contenu de support dans un dispositif de lecture;

caractérisé par
un moyen pour permettre à une partie de longueur arbitraire du premier sous-ensemble de contenu de support d'être consommée ;
un moyen pour sélectionner automatiquement un second sous-ensemble du contenu de support pour remplacer la partie consommée du premier sous-ensemble du contenu de support dans le dispositif de lecture selon une spécification de l'utilisateur, dans lequel ensemble, la partie non consommée du premier sous-ensemble du contenu de support et le second sous-ensemble du contenu de support fournissent une section mise à jour de contenu non consommé ayant un temps de lecture approximativement égal au temps de lecture du premier sous-ensemble du contenu de support, et un moyen pour déterminer la quantité de la partie du contenu de support consommée, si elle existe ; et pour stocker une partie ultérieure du contenu de support représentant ledit second sous-ensemble correspondant à la quantité de la partie de contenu de support consommée dans le dispositif de lecture.

10. Appareil selon la revendication 9, dans lequel le moyen pour stocker un premier sous-ensemble du contenu comprend un moyen pour stocker automatiquement un segment le plus récent d'un contenu particulier changeant de manière dynamique.

11. Appareil selon la revendication 10, dans lequel le segment est sélectionnable par l'utilisateur.

12. Appareil selon la revendication 9, dans lequel le moyen pour stocker un premier sous-ensemble du contenu comprend en outre :

un moyen pour déterminer une longueur de segment sélectionnée ;
un moyen pour déterminer un contenu particulier sélectionné ; et
un moyen pour stocker un segment du contenu particulier sélectionné dans le dispositif de lecture ayant une longueur de la longueur du segment sélectionné.

13. Appareil selon la revendication 9, dans lequel le moyen pour stocker un premier sous-ensemble du contenu comprend un moyen pour stocker automa-

tiquement un épisode le plus récent dans une série d'épisodes.

14. Appareil selon la revendication 9, dans lequel le moyen pour stocker un premier sous-ensemble du contenu comprend en outre :

un moyen pour déterminer un programme ayant une série d'épisodes ;
un moyen pour récupérer un épisode le plus récent dans la série d'épisodes ; et
un moyen pour stocker l'épisode le plus récent dans un dispositif de lecture.

15. Appareil selon la revendication 9, dans lequel le moyen pour stocker un premier sous-ensemble du contenu comprend un moyen pour stocker automatiquement un segment le plus récent dans le contenu statique.

16. Appareil selon la revendication 9, dans lequel le moyen pour stocker un premier sous-ensemble du contenu comprend en outre :

un moyen pour sélectionner un contenu statique ;
un moyen pour stocker une partie du contenu statique dans un dispositif de lecture ;
un moyen pour déterminer une quantité de la partie du contenu statique consommée, si elle existe ; et
un moyen pour stocker une partie ultérieure du contenu statique correspondant à la quantité de la partie de contenu statique consommée dans le dispositif de lecture.

17. Support lisible par ordinateur où est stockée une pluralité de séquences d'instructions comprenant des séquences d'instructions qui, lorsqu'elles sont exécutées par un processeur, conduisent le processeur à :

récupérer un contenu de support numérique à partir d'une bibliothèque ;
stocker ledit contenu de support pour une lecture ultérieure;
fournir un premier sous-ensemble du contenu de support dans un dispositif de lecture sur la base d'une spécification de l'utilisateur ;
stocker ledit premier sous-ensemble dans ledit dispositif de lecture ;
permettre à une partie du premier sous-ensemble de contenu de support d'être consommée tel qu'il résulte une partie consommée de longueur arbitraire du premier sous-ensemble de contenu de support et une partie non consommée du premier sous-ensemble de contenu de support ; et
sélectionner automatiquement un second sous-ensemble dudit contenu de support pour remplacer la partie consommée du premier sous-ensemble du contenu de support dans le dispositif de lecture selon une spécification de l'utilisateur, tel qu'ensemble, la partie non consommée du premier sous-ensemble du contenu de support et le second sous-ensemble du contenu de support fournissent une section mise à jour de contenu non consommé ayant un temps de lecture approximativement égal au temps de lecture du premier sous-ensemble du contenu de support, en déterminant la quantité de la partie du contenu de support consommée, si elle existe ; et en stockant une partie ultérieure du contenu de support représentant ledit second sous-ensemble correspondant à la quantité de la partie de contenu de support consommée dans le dispositif de lecture.

18. Support lisible par ordinateur selon la revendication 17, dans lequel la séquence d'instructions pour stocker un premier sous-ensemble du contenu de support conduit en outre le processeur à stocker automatiquement un segment le plus récent d'un contenu de support particulier changeant de manière dynamique.

19. Support lisible par ordinateur selon la revendication 17, dans lequel la séquence d'instructions pour stocker un premier sous-ensemble du contenu de support conduit en outre le processeur à :

déterminer une longueur de segment sélectionné;
déterminer un contenu de support particulier sélectionné ; et
stocker un segment du contenu de support particulier sélectionné dans le dispositif de lecture ayant une longueur de la longueur du segment sélectionné.

20. Support lisible par ordinateur selon la revendication 17, dans lequel la séquence d'instructions pour stocker un premier sous-ensemble du contenu de support conduit en outre le processeur à stocker automatiquement un épisode le plus récent dans une série d'épisodes.

21. Support lisible par ordinateur selon la revendication 17, dans lequel la séquence d'instructions pour stocker un premier sous-ensemble du contenu de support conduit en outre le processeur à :

déterminer un programme de support ayant une série d'épisodes ;
récupérer un épisode le plus récent dans la série d'épisodes ; et

stocker l'épisode le plus récent dans un dispositif de lecture.

22. Support lisible par ordinateur selon la revendication 17, dans lequel la séquence d'instructions pour stocker un premier sous-ensemble du contenu de support conduit en outre le processeur à stocker automatiquement un segment le plus récent dans un contenu de support statique.

23. Support lisible par ordinateur selon la revendication 17, dans lequel la séquence d'instructions pour stocker un premier sous-ensemble du contenu de support conduit en outre le processeur à:

sélectionner un contenu de support statique;
stocker une partie du contenu de support statique dans un dispositif de lecture ;
déterminer une quantité de la partie du contenu de support statique consommée, si elle existe ; et
stocker une partie ultérieure du contenu de support statique correspondant à la quantité de la partie de support statique consommée dans le dispositif de lecture.

24. Système pour fournir une programmation personnalisée décalée dans le temps comprenant :

un dispositif d'accès à une bibliothèque qui fournit un accès à une bibliothèque;
un dispositif de stockage associé au dispositif d'accès à une bibliothèque qui stocke le contenu récupéré à partir de la bibliothèque ; et
un dispositif de lecture ayant une mémoire et une interface associées au dispositif de stockage ;

dans lequel le dispositif de lecture stocke un contenu sélectionné qui est un premier sous-ensemble du contenu stocké par le dispositif de stockage, et dans lequel en outre, sur la consommation d'une première partie du contenu sélectionné stocké sur le dispositif de lecture, un second sous-ensemble du contenu stocké par le dispositif de stockage est utilisé pour remplacer automatiquement la partie consommée du contenu sélectionné, dans lequel ensemble, la partie non consommée du contenu sélectionné et le second sous-ensemble du contenu fournissent un temps de lecture approximativement égal à un temps de lecture du premier sous-ensemble du contenu, dans lequel le remplacement est fait en déterminant la quantité de la partie du contenu de support consommée, si elle existe ; et en stockant une partie ultérieure du contenu de support représentant ledit second sous-ensemble correspondant à la quantité de la partie de contenu de support consommée dans le dispositif de lecture.

25. Appareil selon la revendication 24, dans lequel le dispositif d'accès à une bibliothèque est un ordinateur personnel.

26. Appareil selon la revendication 24, dans lequel le dispositif d'accès à une bibliothèque est une borne internet.

27. Appareil selon la revendication 24, dans lequel le dispositif d'accès à une bibliothèque est un dispositif d'accès à une bibliothèque dédié à l'audio.

28. Appareil selon la revendication 24, dans lequel le dispositif de stockage est un disque magnétique.

29. Appareil selon la revendication 24, dans lequel le dispositif de stockage est un disque optique.

30. Appareil selon la revendication 24, dans lequel le dispositif de stockage est une mémoire flash.

31. Appareil selon la revendication 24, dans lequel la mémoire du dispositif de lecture comprend une mémoire flash.

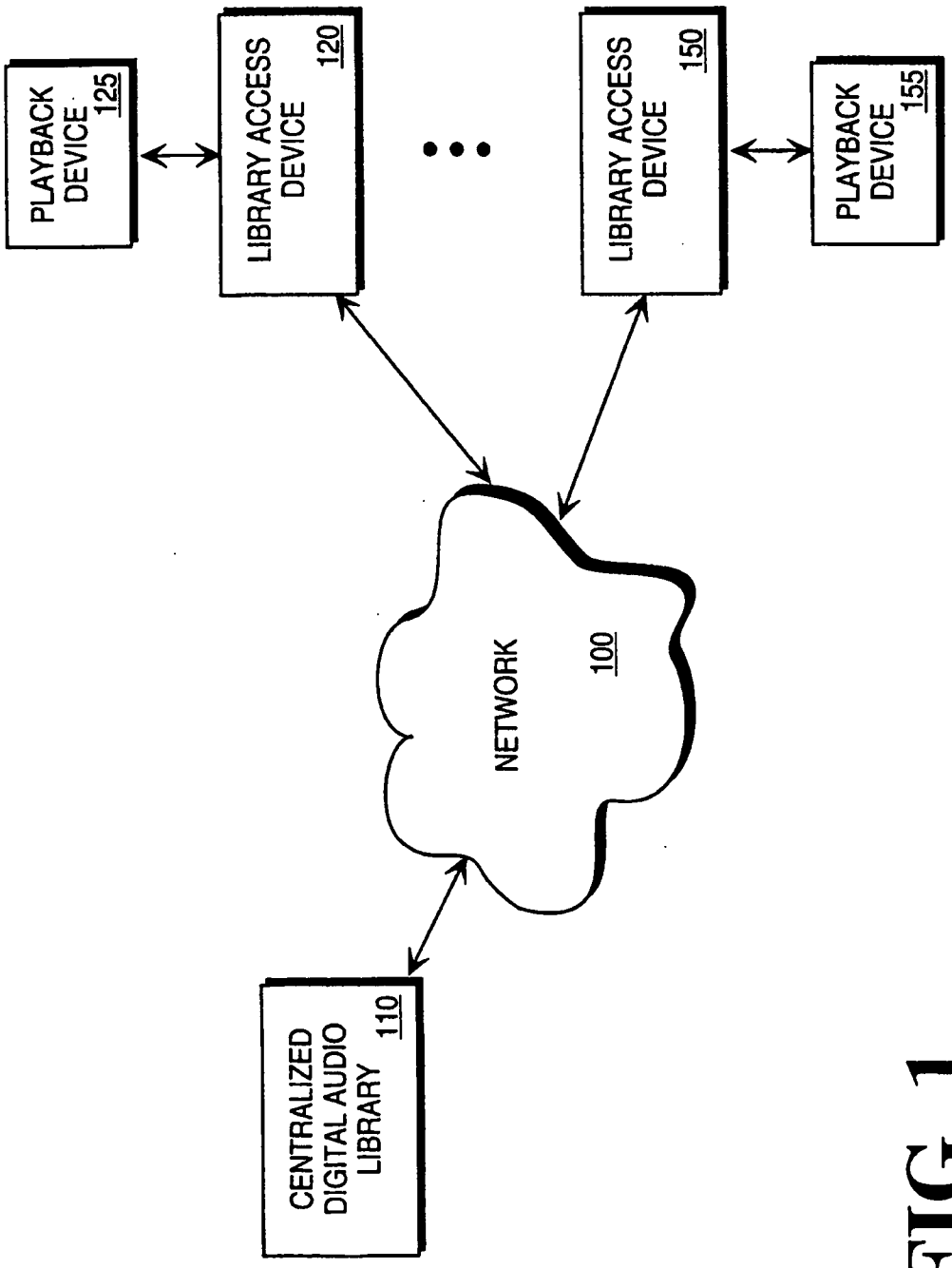
PLAYBACK DEVICE 125
LIBRARY ACCESS DEVICE 120
LIBRARY ACCESS DEVICE 150
PLAYBACK DEVICE 155
NETWORK 100
CENTRALIZED DIGITAL AUDIO LIBRARY 110

FIG. 1

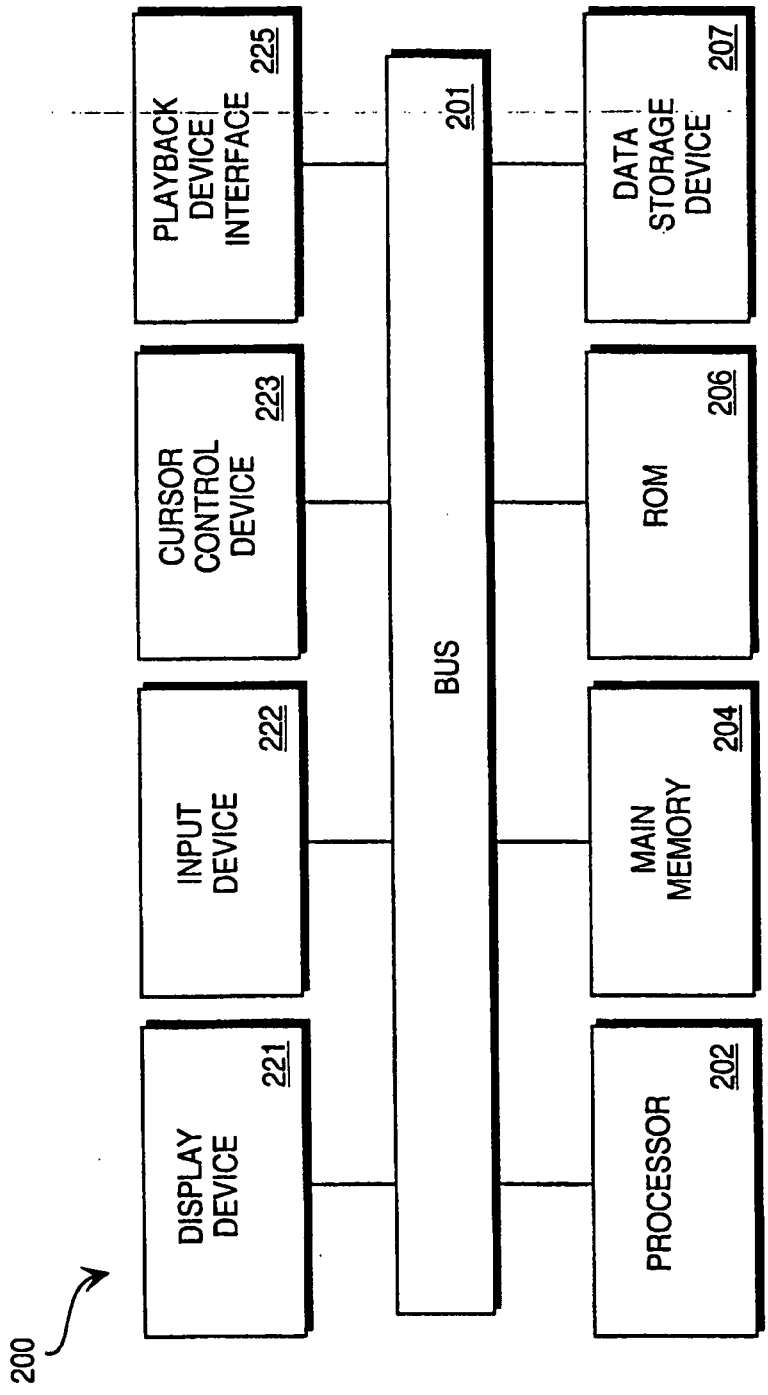
200
DISPLAY DEVICE 221
INPUT DEVICE 222
CURSOR CONTROL DEVICE 223
PLAYBACK DEVICE INTERFACE 225
BUS 201
PROCESSOR 202
MAIN MEMORY 204
ROM 206
DATA STORAGE DEVICE 207

FIG. 2

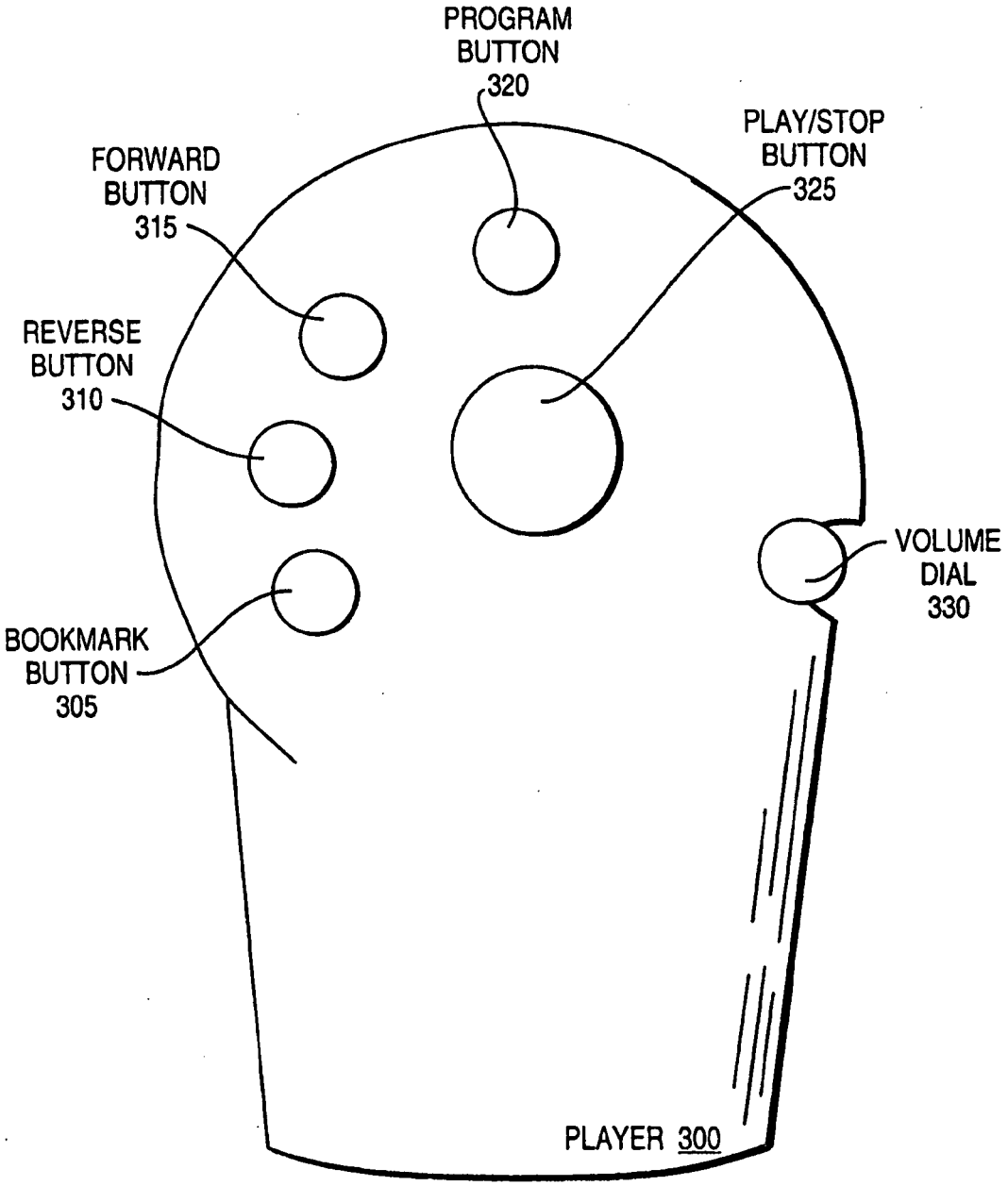
PROGRAM
BUTTON
320
PLAY/STOP
BUTTON
325
FORWARD
BUTTON
315
REVERSE
BUTTON
310
VOLUME
DIAL
330
BOOKMARK
BUTTON
305
PLAYER 300

FIG. 3

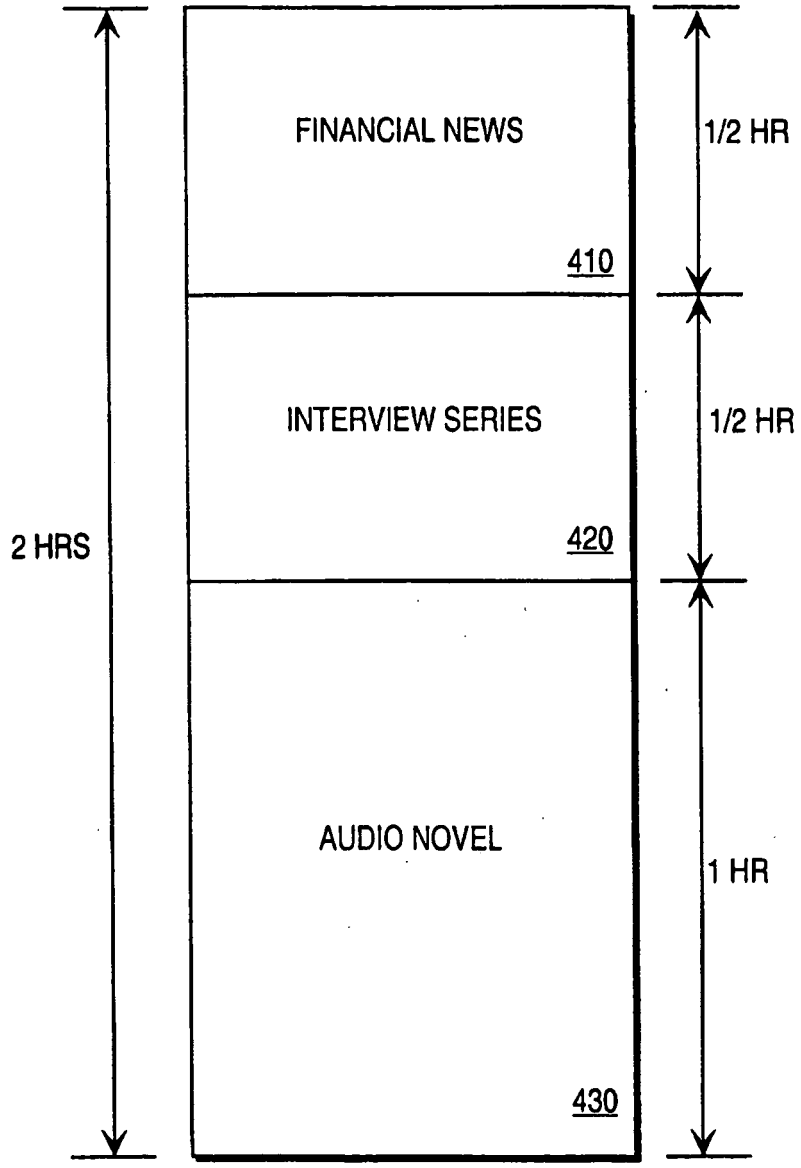
FINANCIAL NEWS
410
INTERVIEW SERIES
420
AUDIO NOVEL
430
2 HRS
1/2 HR
1/2 HR
1 HR

FIG. 4

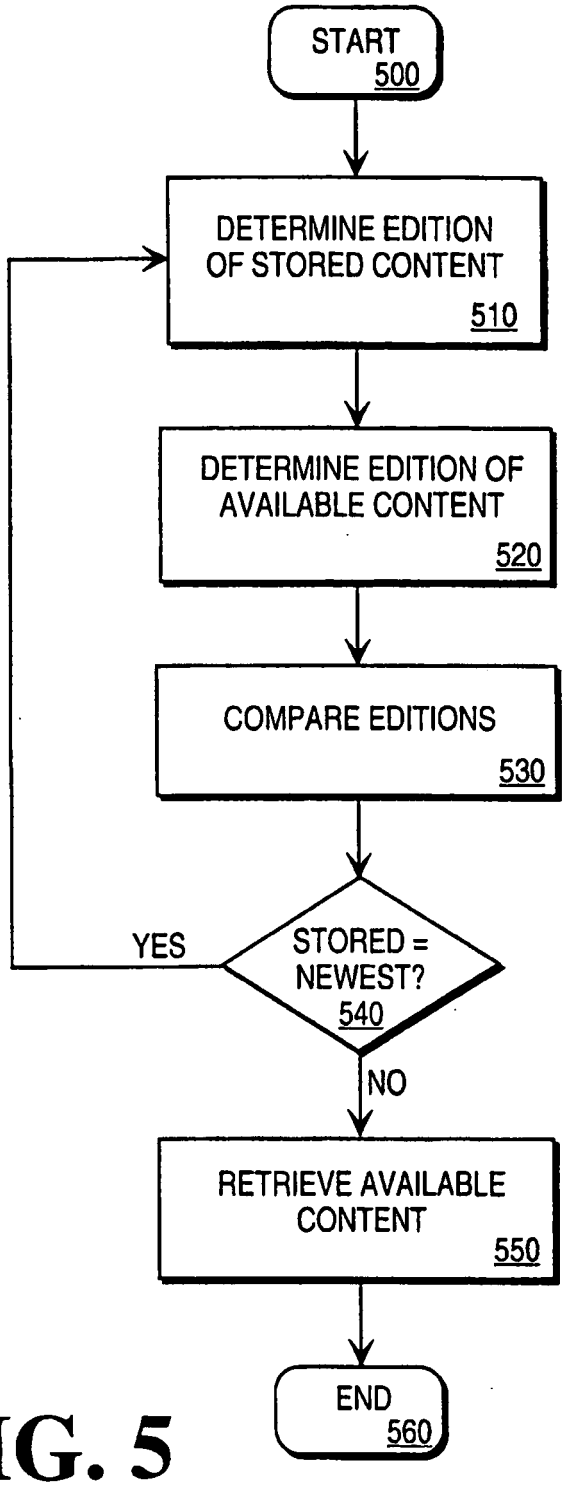
START
500
DETERMINE EDITION OF STORED CONTENT
510
DETERMINE EDITION OF AVAILABLE CONTENT
520
COMPARE EDITIONS
530
STORED = NEWEST?
540
YES
NO
RETRIEVE AVAILABLE CONTENT
550
END
560

FIG. 5

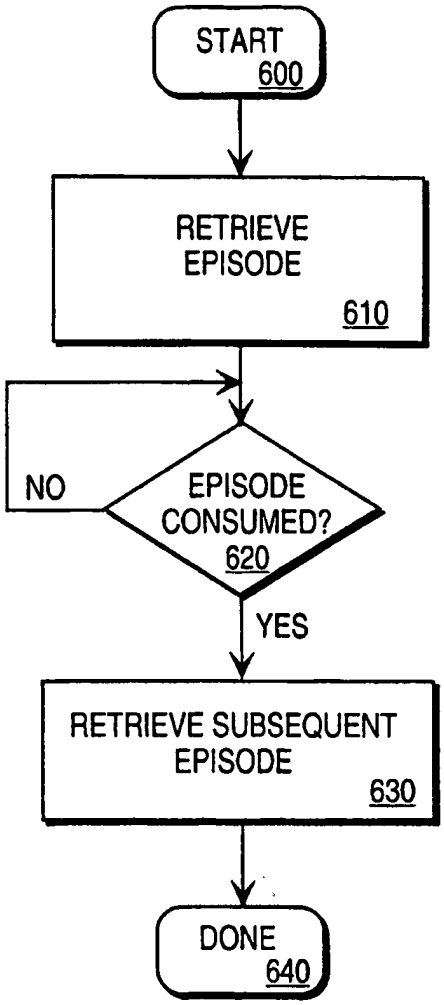
START
600
RETRIEVE
EPISODE
610
NO
EPISODE
CONSUMED?
620
YES
RETRIEVE SUBSEQUENT
EPISODE
630
DONE
640

FIG. 6

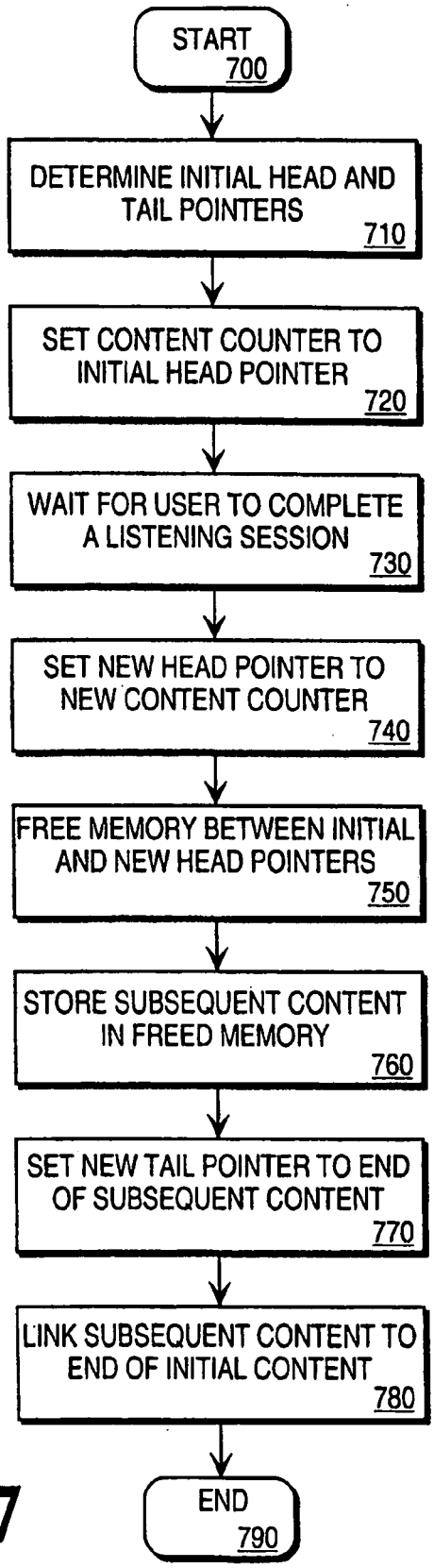
START
700
DETERMINE INITIAL HEAD AND TAIL POINTERS
710
SET CONTENT COUNTER TO INITIAL HEAD POINTER
720
WAIT FOR USER TO COMPLETE A LISTENING SESSION
730
SET NEW HEAD POINTER TO NEW CONTENT COUNTER
740
FREE MEMORY BETWEEN INITIAL AND NEW HEAD POINTERS
750
STORE SUBSEQUENT CONTENT IN FREED MEMORY
760
SET NEW TAIL POINTER TO END OF SUBSEQUENT CONTENT
770
LINK SUBSEQUENT CONTENT TO END OF INITIAL CONTENT
780
END
790

FIG. 7