



US005907322A

United States Patent [19]

Kelly et al.

[11] **Patent Number:** 5,907,322
[45] **Date of Patent:** May 25, 1999

[54] TELEVISION EVENT MARKING SYSTEM

5,570,295	10/1996	Isenberg et al.	364/514 R
5,692,214	11/1997	Levine	348/906
5,694,163	12/1997	Harrison	348/552
5,778,182	7/1998	Cathey et al.	348/1

[75] Inventors: **Gregory H. Kelly; Kenneth Y. Goldberg**, both of San Francisco; **John S. Gee**, Auburn; **Philip D. Levinson**, Los Altos Hills; **Scott Fullam**, Mountain View, all of Calif.

OTHER PUBLICATIONS

“Joining Television and the Internet Using Java”, Internet Week, pp. 1–2, Apr. 1, 1996.

[73] Assignee: **Catch TV Acquisition Corp.**, Burlingame, Calif.

Primary Examiner—Chris Grant
Attorney, Agent, or Firm—Dennis & Irene Fernandez LLP

[21] Appl. No.: **08/731,525**

[57] ABSTRACT

[22] Filed: **Oct. 16, 1996**

A system for bookmarking viewer selected TV broadcast events and displaying a set of associated internet locations or website hotlinks, comprising the selection of a set of broadcast events using a remote control, and storing a set of event-identifier data associated with the set of selected broadcast events in an activity table, and then generating a set of associated internet locations or website hotlinks by comparing the set of event identifiers with a database of TV schedules, events and company information. The generated set of associated internet locations or website hotlinks can then be used by viewer for access to and display of the selected internet locations associated with the set of selected broadcast events.

[51] Int. Cl.⁶ **H04N 7/16**

[52] U.S. Cl. **345/327; 348/10; 348/734; 455/6.2**

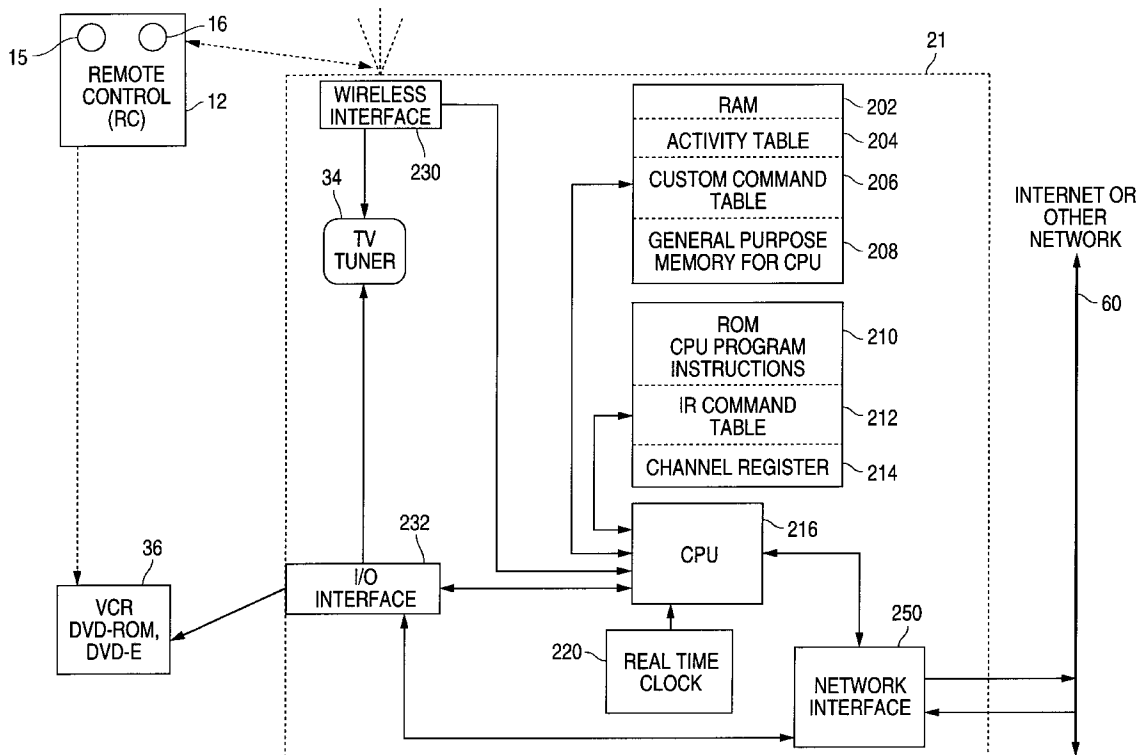
[58] **Field of Search** 348/906, 1, 6, 348/10, 11, 12, 13, 7, 734; 345/327; 455/4, 2, 5.1, 6.1, 6.2, 6.3; H04N 7/173

[56] References Cited

U.S. PATENT DOCUMENTS

4,706,121	11/1987	Young .	
5,438,355	8/1995	Palmer	348/1
5,444,499	8/1995	Saitoh	348/734

10 Claims, 9 Drawing Sheets



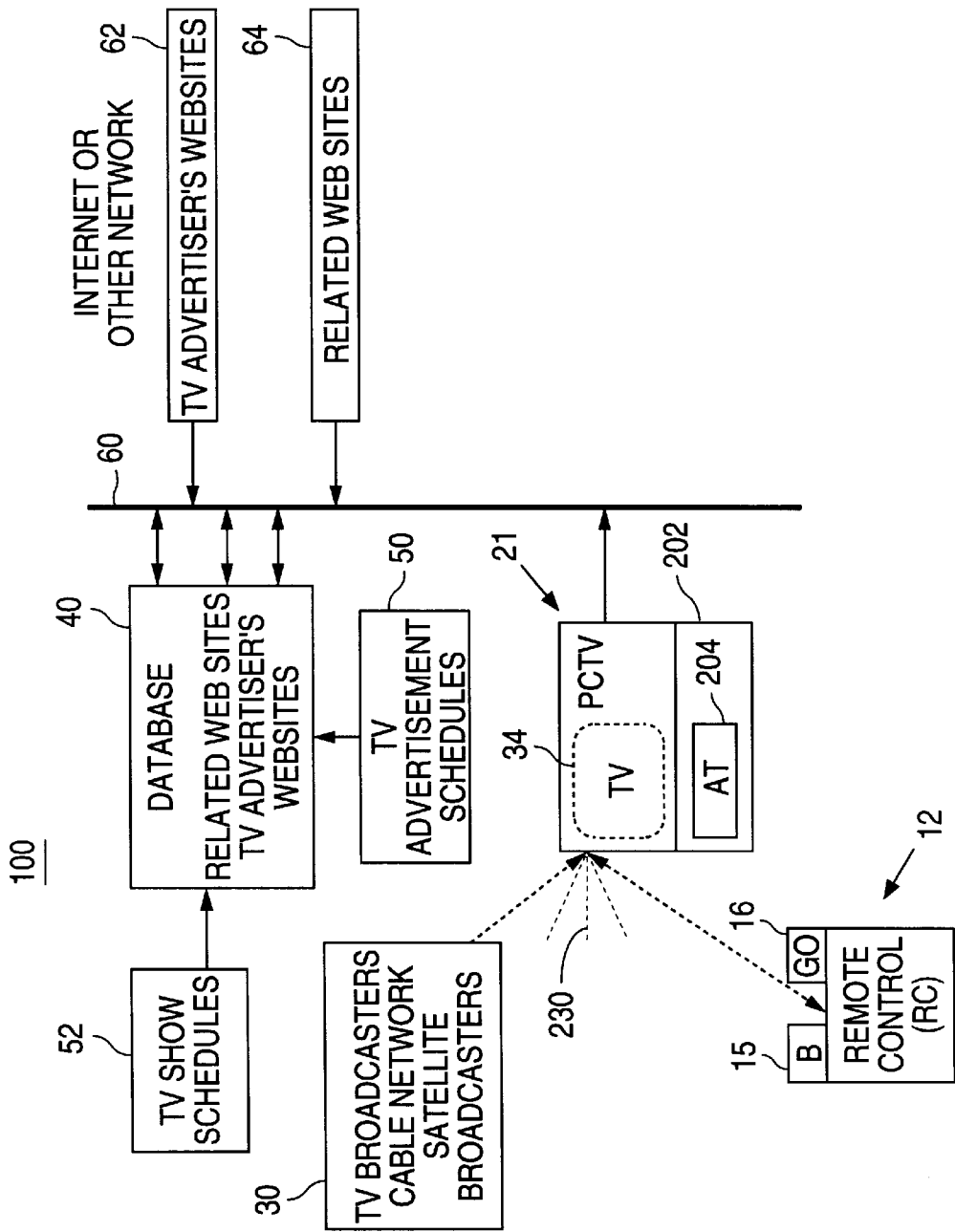


FIGURE 1

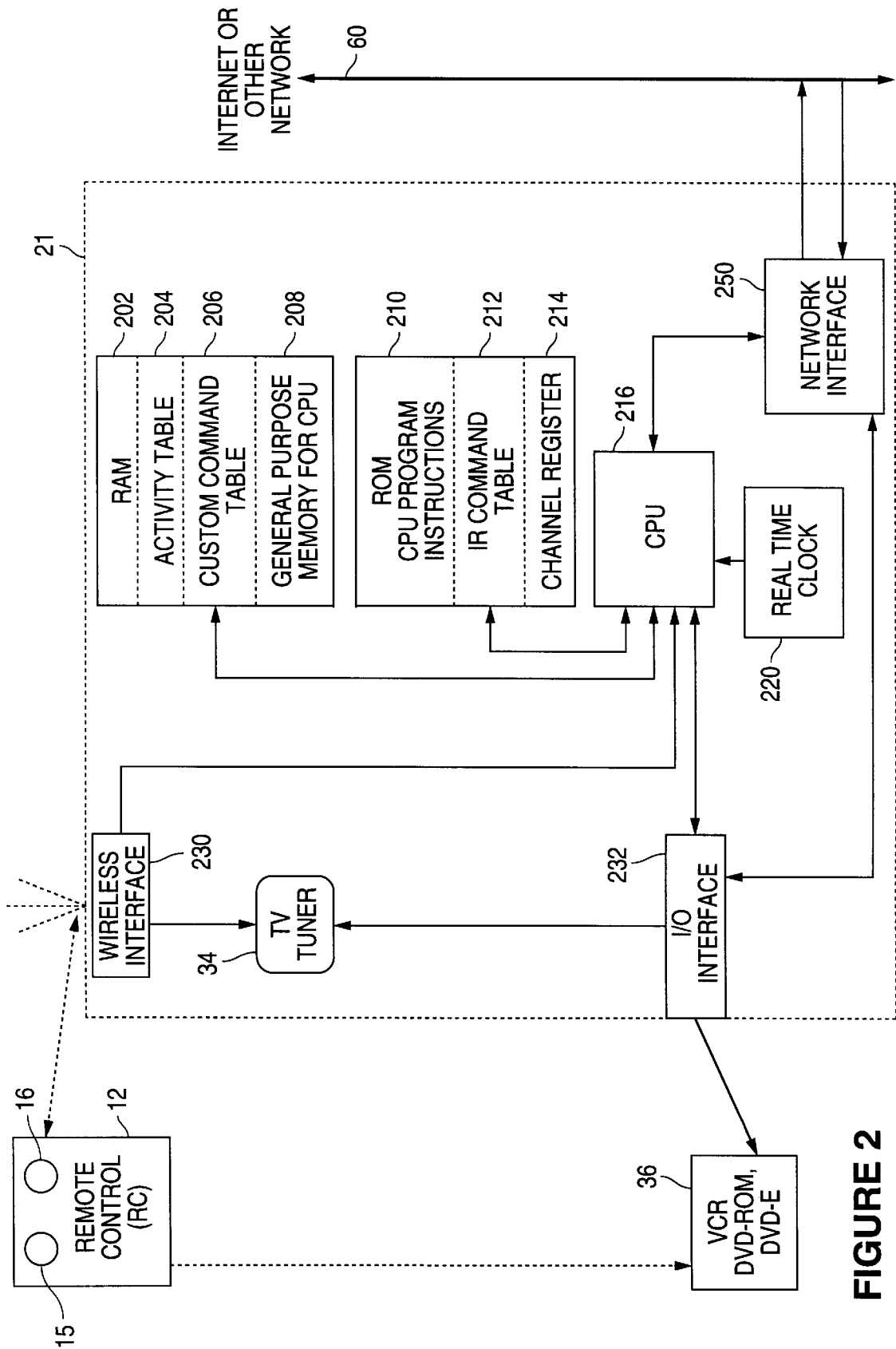
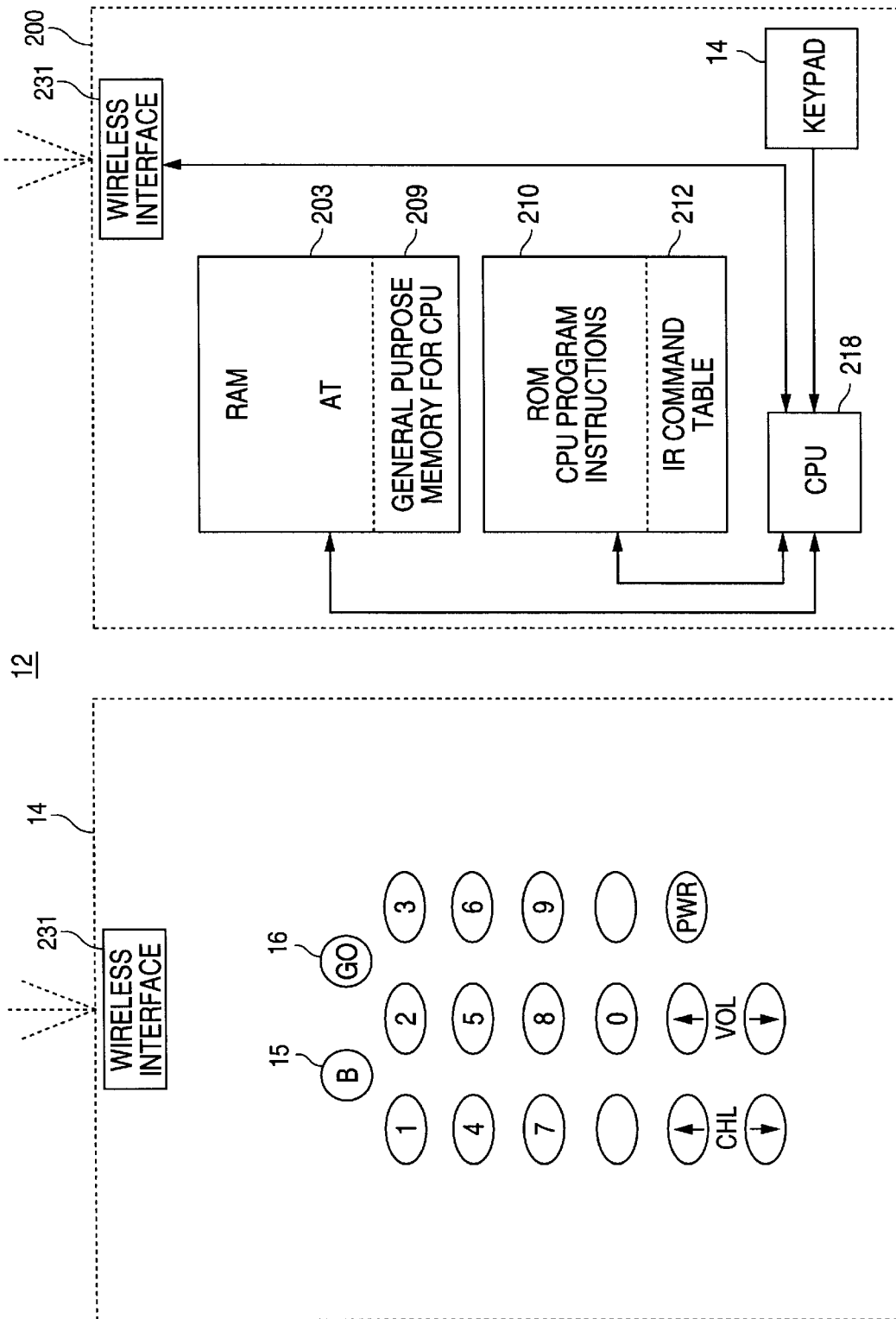


FIGURE 2



RC CIRCUIT

RC KEYPAD

FIGURE 3

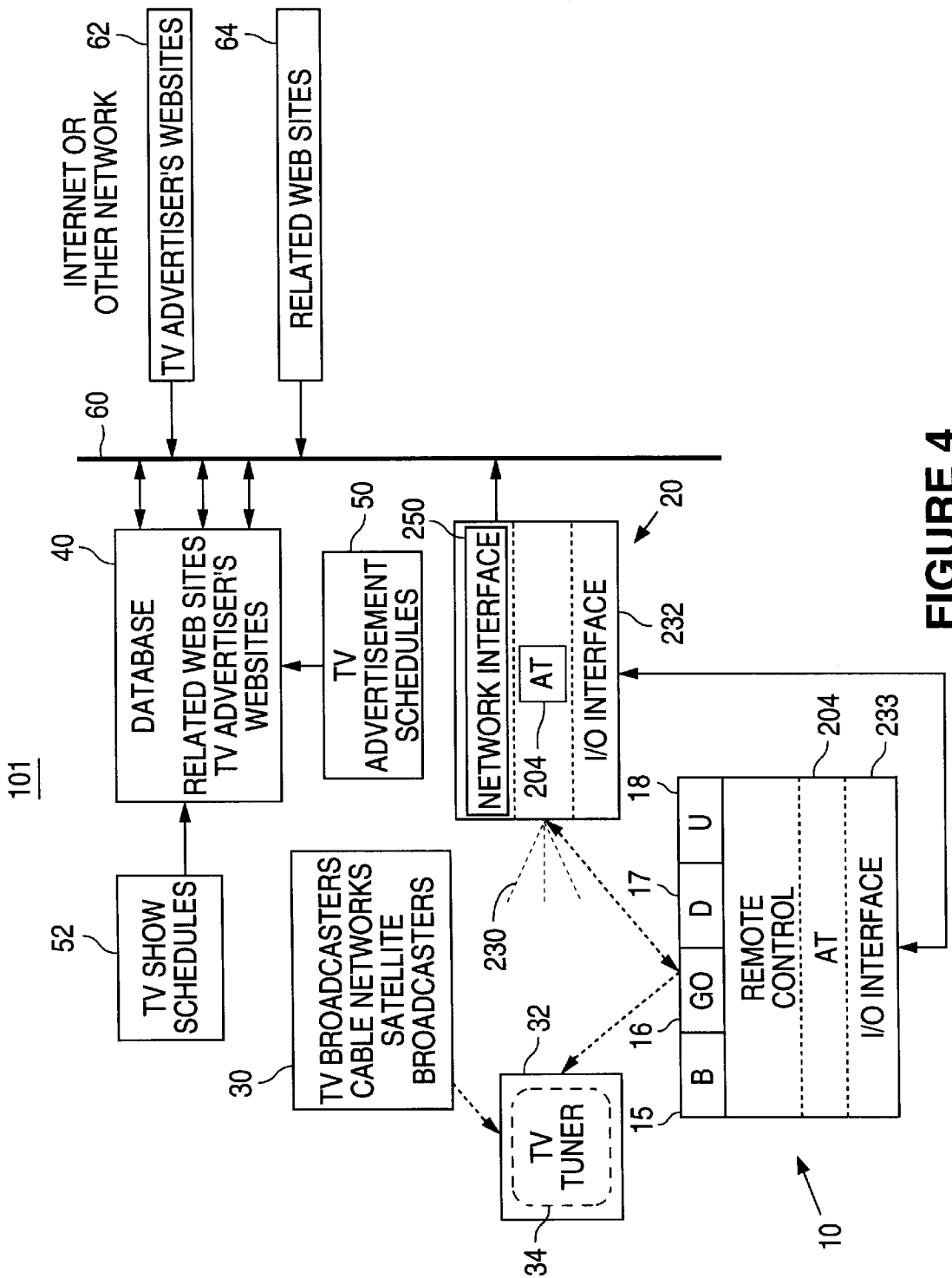
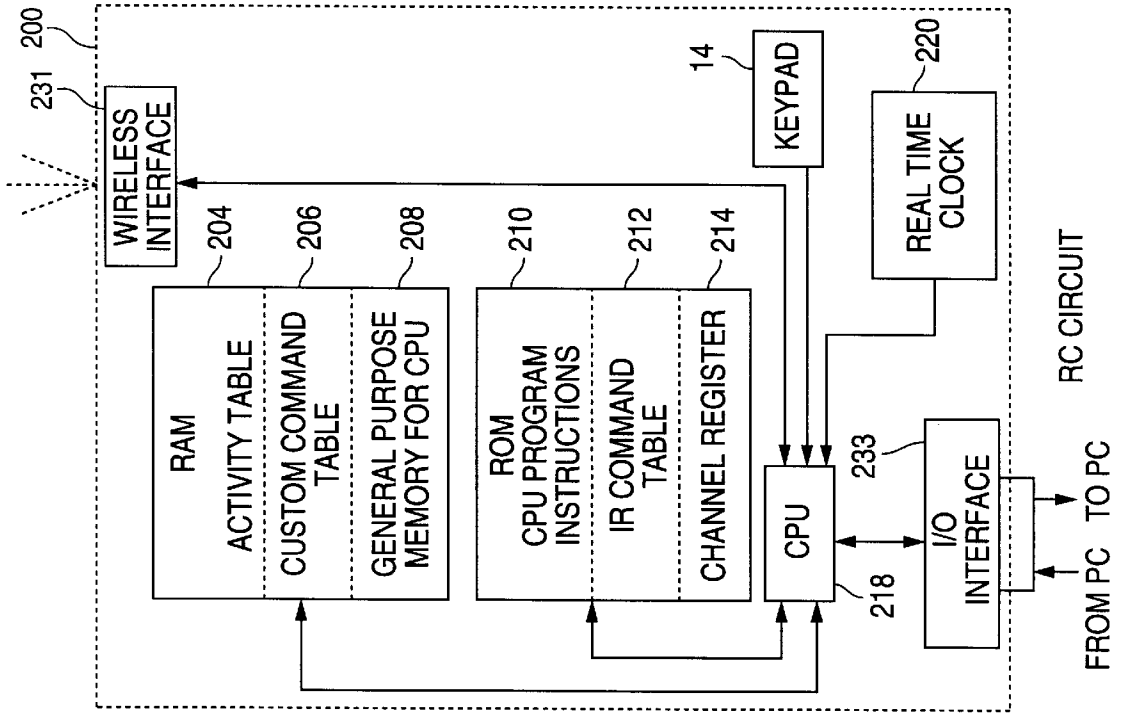
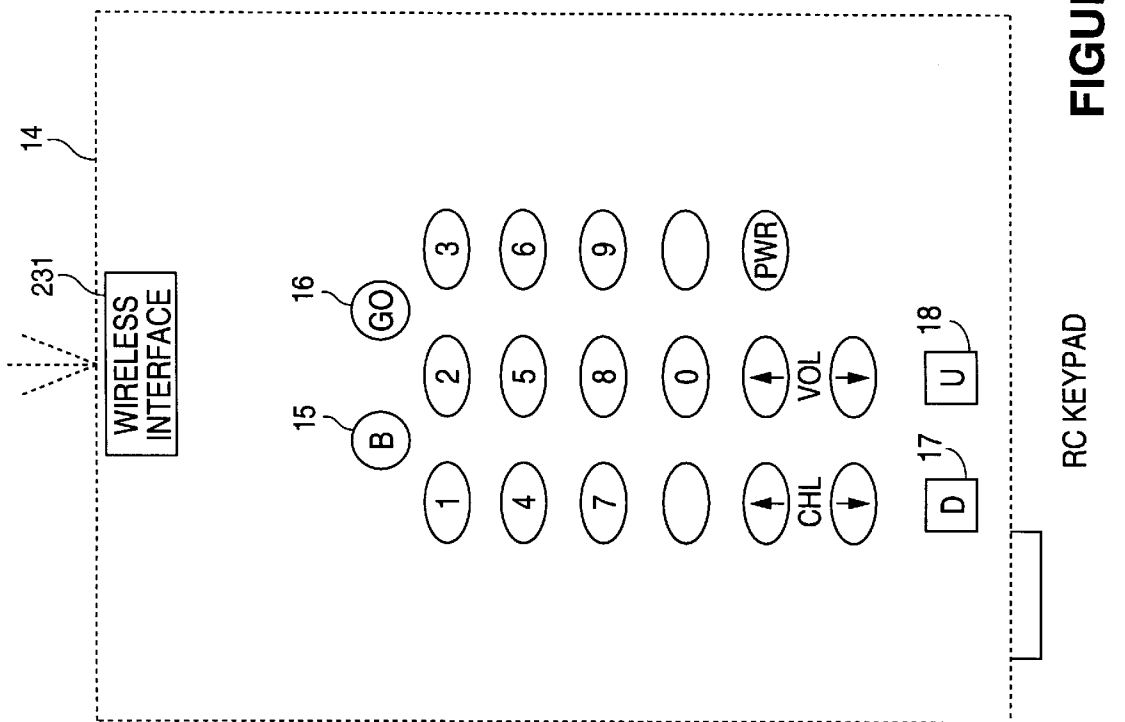


FIGURE 4



10

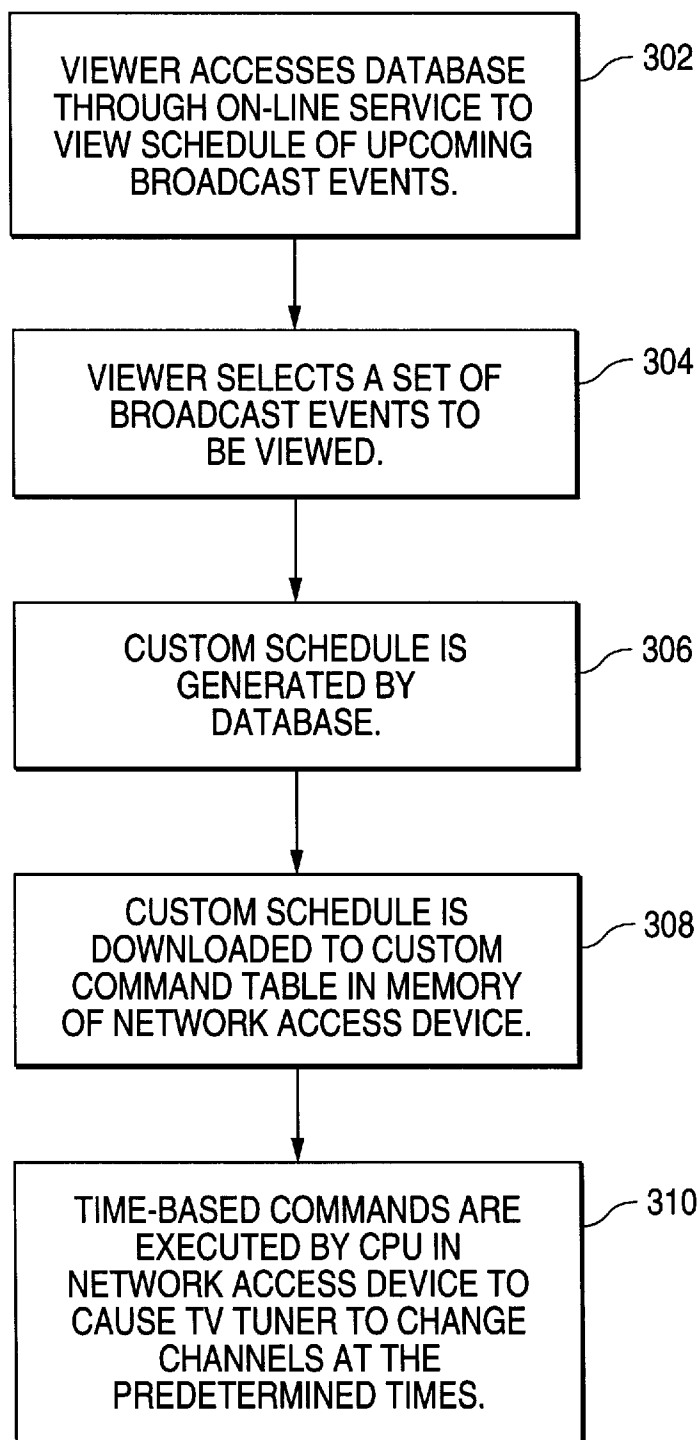


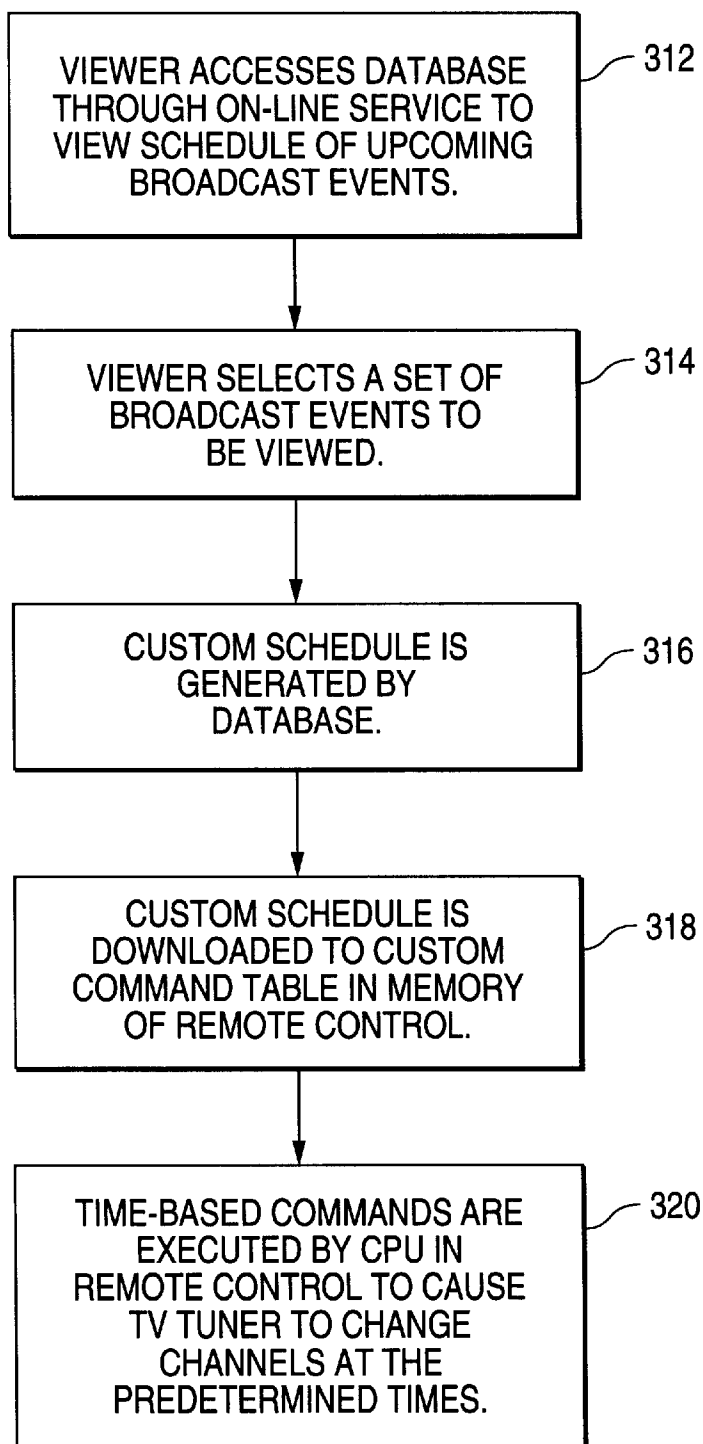
RC CIRCUIT

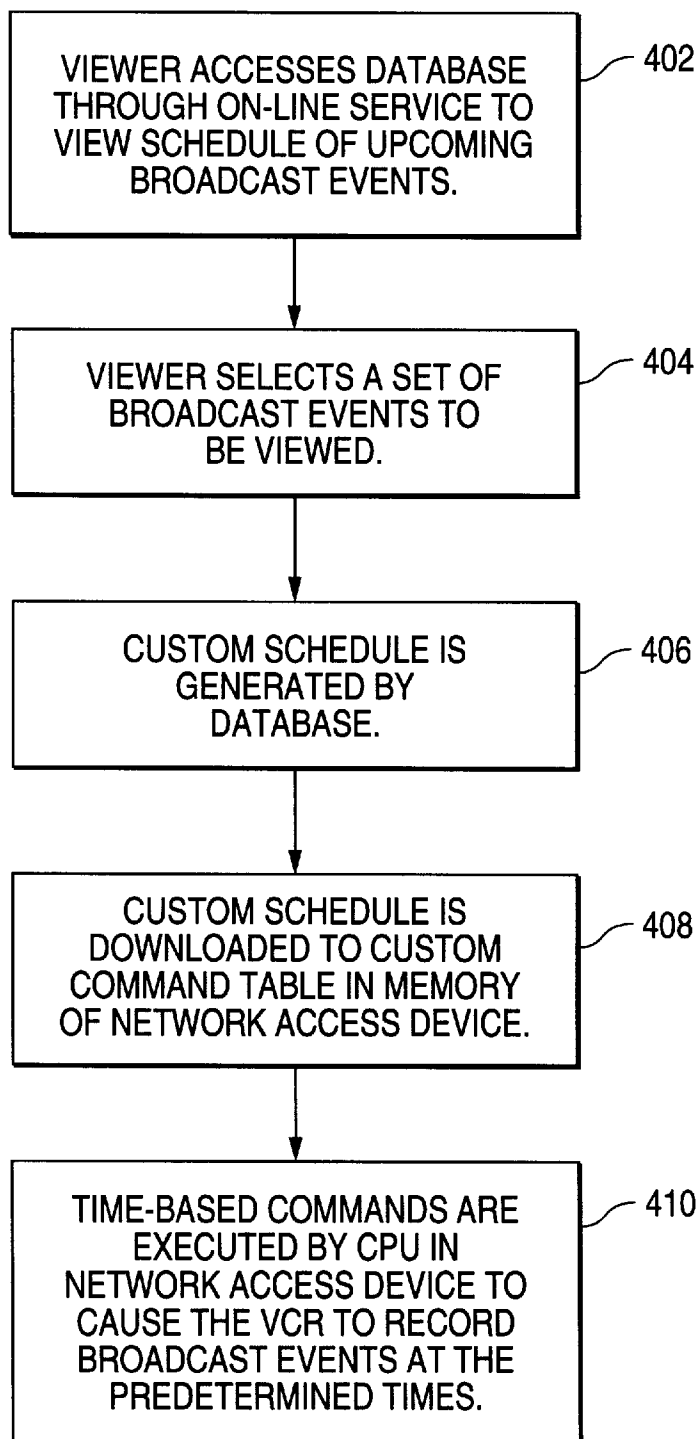
FROM PC TO PC

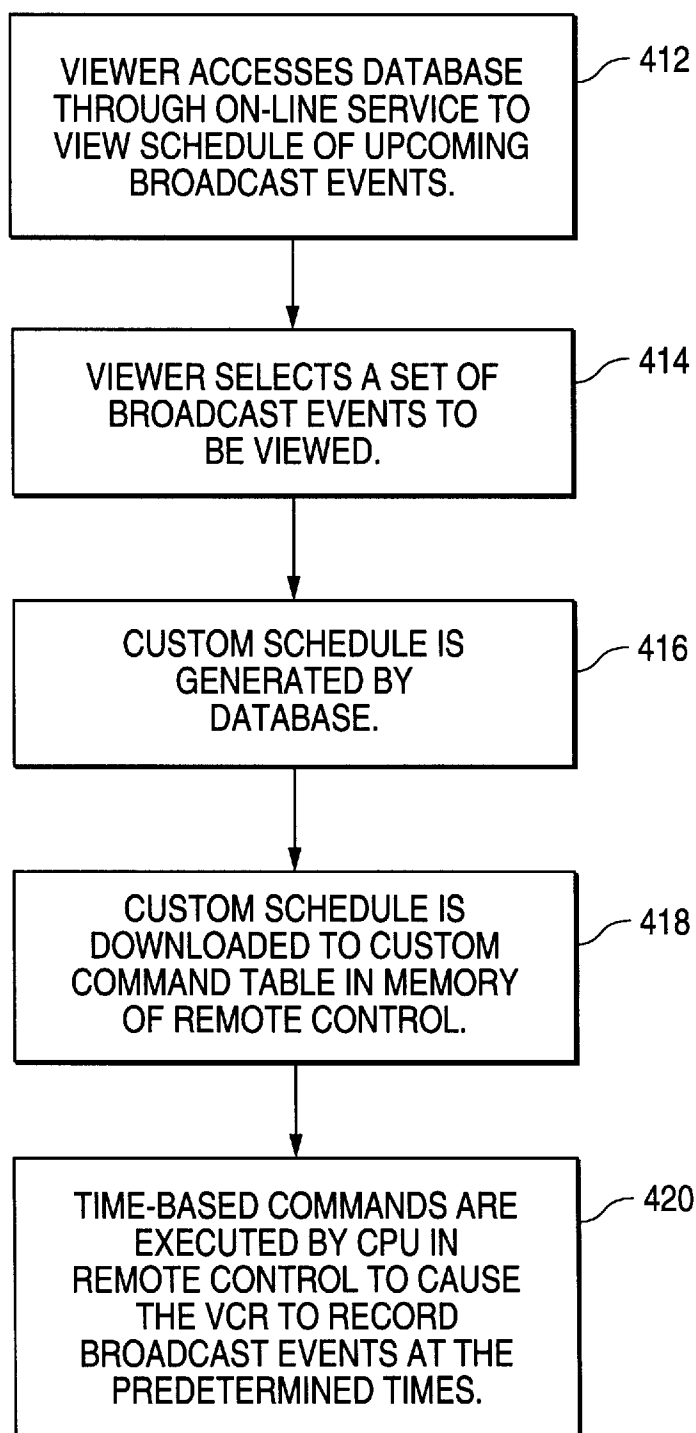
RC KEYPAD

FIGURE 5

300**FIG. 6**

**FIG. 7**

400**FIG. 8**

**FIG. 9**

TELEVISION EVENT MARKING SYSTEM

FIELD OF THE INVENTION

This invention relates to systems for navigating, marking and displaying viewer-selected television broadcast events and the on-line information and content associated with the selected broadcast events.

BACKGROUND OF THE INVENTION

As television (TV) viewers become more familiar with on-line services, such as the internet and the World Wide Web, they are demanding access to on-line information and content related to the TV content and TV-advertised companies and products. This information is becoming more readily available to the internet user. An increasing number of TV broadcasters, advertisers, and organizations have created their own internet locations (i.e., websites), and many have begun to display their web site address, (i.e., their Universal Resource Locator (URL) on TV ads and programs (broadcast events) to encourage viewers to access their website for more information. However, viewers typically cannot easily recall or identify an associated URL for a particular broadcast event because the broadcast URLs are typically displayed on TV for only a brief time and, in many cases, the relevant URL is not broadcast at all. A tool is needed to allow the viewer to easily access URLs, to immediately navigate to the desired URL, i.e., switch to the displayed website as if it were a TV channel, or to "bookmark" the broadcast event, i.e., to mark one or more broadcast TV events so the viewer can later recall these events and access all the websites associated with these events.

Familiar to most people, traditional bookmarks are those used to mark a page in a book to which the reader wants to later return. In the personal computer and World Wide Web environment, an analogous feature allows a typical net browser application running on the computer to "bookmark" web pages, i.e., select a button from a pull-down menu on the browser tool, allowing the user to store a URL associated with a website for rapid, one-step return access, without requiring the user to recall or re-enter the URL of that particular website. However, because there is no similar "bookmarking" tool that exists for viewers to use with their TVs, there is a resulting need for a user-friendly, automated system to "bookmark" TV broadcast events and the URLs associated with these events for subsequent viewer use. Additionally, once the events are bookmarked, it is also desirable to provide a system for viewers to easily retrieve and display the websites and website "hotlinks" (i.e., buttons programmed in hypertext markup language displayed on the internet that connect directly to specific websites) associated with these bookmarked events.

SUMMARY OF THE INVENTION

This invention describes a system for marking viewer-selected TV broadcast events by selecting a one or more broadcast events using a remote control, and storing a set of data associated with each selected broadcast events as an activity record (AR) in an activity table (AT). The activity table with the set of event identifiers is transmitted to an on-line database having information relating to TV program schedules, TV and Web advertisements information and related website hotlinks to thereby generate a set of associated network locations, such as websites and website hotlinks. The generated set of associated internet locations or website hotlinks can be used by the viewer for access to and display of the generated set of internet locations or websites associated with viewer selected broadcast events.

It is also envisioned that this invention also provides a system to allow viewer to customize in advance event viewing schedule and to automate TV display of, or recording to a VCR of, viewer selected events.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a TV event marking system for marking viewer selected television events and displaying the associated internet hotlinks and locations corresponding with the selected events in accordance with the principles of this invention.

FIG. 2 illustrates a more detailed block diagram of the network access device shown in FIG. 1.

FIG. 3 illustrates a more detailed block diagram of the new remote control shown in FIG. 1.

FIG. 4 illustrates an alternative embodiment of the TV event marking system of FIG. 1.

FIG. 5 illustrates a more detailed block diagram of the new remote control in the TV event marking system of FIG. 4.

FIG. 6 illustrates an automated custom program scheduling and display method using TV event marking system of FIG. 1.

FIG. 7 illustrates an alternative embodiment of the automated custom program scheduling and display method using TV marking system of FIG. 4.

FIG. 8 illustrates an automated VCR programming method of viewer marked events using TV event marking system of FIG. 1.

FIG. 9 illustrates an alternative embodiment of the automated VCR programming method of viewer marked events using TV event marking system of FIG. 4.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 illustrates an embodiment of a low cost TV event marking system **100** for marking viewer selected TV broadcast events so that associated information such as websites can be retrieved from an on-line service **60**, such as the Internet, an intranet or other networks. In effect, this provides means to "bookmark" a televised event, marking that event for later recall, loosely analogous to placing a bookmark in a book to facilitate later recall. TV event marking system **100** allows a viewer to "bookmark" a set of selected TV events as they are broadcast, such as, but not limited to, a TV advertisement, a TV news broadcast, a TV educational or entertainment program, or a TV job training show. TV event marking system **100** stores the set of selected events into computer memory so that on-line data associated with these events can be retrieved from a central database. In system **100**, the viewer can mark the specified broadcast event by activating a select button **15** on a remote control **12**. In this example, select button **15** is labeled "B" on remote control **12** to denote "Bookmark". Each time the viewer activates select button **15** to bookmark a particular broadcast event, an activity record (AR) entry comprises data describing the date, time and channel is stored into an electronic memory **202**. It is envisioned that TV event marking system **100** can also store an AR entry for each additional data relating to viewer preferences, such as for example, each time the channel is changed via remote control **12**, and other remote control operations indicating viewing preferences. We refer to a list of AR entries as an activity table (AT) **204** that is stored in electronic memory **202**.

Once the viewer has completed marking a selection of broadcast events, AT **204** is stored into a network access

device **21**, whether in the resident memory inside network access device **21** coupled to a TV tuner **34**, or in an alternative embodiment, in the resident memory of a personal computing device **20** (as in FIG. 4). When the viewer is ready to browse the websites associated with the selected broadcast events, either network access device **21**, or personal computing device **20** of FIG. 4, transmits activity table **204** comprising the AR entries and also viewer identifying data, such as a particular demographic data, for example, the postal code of the viewer's location, via on-line service **60** to a central database **40**. Database **40** comprises information compiled from various sources, such as TV advertisements schedules **50** associated with various TV shows, TV show schedules **52**, TV advertisers' websites **62** and other websites typically related to broadcast content **64**. AT **204** is then used to determine which data in the database **40** should be retrieved and presented to the viewer. For example, one of the AR entries in the AT might be (Sep. 1, 1996-19:30:32-CH7), indicating the date, time, and channel selected. This data, along with the viewer's regional information, is then compared to the TV advertisement schedule **50** in database **40** to determine the TV advertisements broadcast at the time of activating select button **15**. Database **40** then generates a custom list of data for the user which indicates bookmarks associated with the broadcast event. For example, this list of data could take the form of, but not limited to, a World Wide Web (www) page on the Internet. The viewer could then view these with a generic www browser.

FIG. 2 shows a more detailed block diagram of network access device **21** such as a set-top box comprising a computer system coupled to a conventional TV tuner **34**, or a specialized TV having computer processing capability (i.e., a PCTV), both having conventional network connection capabilities or other means for on-line access to the Internet or other networks **60**. CPU **216** controls among other functions, a wireless interface **230**, a custom command table **206**, communications with external devices via an I/O interface **232**. In the preferred embodiment, AT **204** is stored in electronic memory **202** inside network access device **21**. When Bookmark button **15** is pressed, remote control **12** sends a wireless signal comprising a command to CPU **216** to store an AR entry into AT **204** inside network access device **21**, thereby "bookmarking" the broadcast event for later lookup. It is also an objective of this invention that TV event marking system **100** can be programmed to automate custom display of, or to program a VCR to record viewer selected broadcasts according to viewer selected TV schedules and events of database **40**, as is later described with FIGS. 6-9. It is further envisioned that the principles of this invention can also be used to mark radio broadcast.

FIG. 3 illustrates a more detailed block diagram of remote control **12**. In the preferred embodiment, remote control **12** comprises a network access button **16** that interrupts a TV broadcast displayed on TV **34** and immediately display instead a selected associated website on TV **34**. In this example, network button **16** is labeled "Go" to denote "Go to selected site". Each time the viewer activates network button **16**, a request to view a particular website is initiated. Aside from the new features described herein, remote control **12** further comprises similar basic components and functions as in conventional remote controls, and thus it also provides the traditional operations of other conventional remote controls along with the event marking function buttons, such as provided by event selection button **15**, (labeled here, for example, as "B" for "Bookmarking"), network access button **16** (labeled "Go"), and in an alternative embodiment shown in FIG. 5, further described

below, download button **17** (labeled "D") and upload button (labeled "U"). It is understood that the labels provided herein for the function buttons on remote control **12** are merely examples in describing their respective embodiments and for ease of reference. It should be obvious that other labeling of function buttons **15-16** are envisioned as within the scope of this invention.

In operation, whenever the viewer activates event selection button **15** "B" on keypad **14** (FIG. 3), this activation contemporaneously triggers CPU **216** (FIG. 2) in network access device **21** to concurrently query real time clock **220** for the current date and time, and IR command table **212** for the current channel, in order to generate an AR to which it adds a flag indicating a "bookmark". The resulting activity record having a "bookmark" flag is then stored into AT **204** and, as an example, comprising information representative of:

Date-Time-Channel-Bookmark:

Sep. 1, 1996-19:30:32-7-B

It is also envisioned that TV event marking system **100** can also be used to provide data of user's viewing patterns, interests and preferences by generating an AR entry for each time the viewer changes channels via remote control **12**. Whenever the viewer activates the change of channel button on remote control **12**, the remote control sends to the TV, the VCR, etc., an infrared signal to change the channel, and also signals CPU **216** in network access device **21** to query real time clock circuit **220** for the current date and time, and also current channel register **214** for the current channel information. The resulting AR entry might comprise the following representative information:

Date-Time-Channel Change:

Sep. 1, 1996-19:30:32-CH7

Each change of channel by the viewer thereby produces a corresponding stored AR entry in AT **204**, the collective data of various AT **204** from each viewer can be used to evaluate viewer preferences and viewing patterns.

The number of AR entries stored in AT **204** is limited only by the available memory space in memory storage **202** or attached storage device. AT **204** is organized in a first-in, first-out (FIFO) sequence. When the available memory is full, the oldest ARs are deleted to accommodate the newest ARs. When the viewer wants to access the various websites associated with the selected broadcast events, the viewer activates network access button **16** ("Go") which causes peripheral device **21** to send the selected AT **204** to database **40**, whereupon database **40** will return to network access device **21** the network address of the selected websites. Network access device **21** (FIG. 2) then processes the network address for the selected website and retrieve it for the viewer. Thus the viewer can access selected websites with a single button.

FIG. 4 shows an alternative embodiment of network access device **20**, wherein the network access device need not be a set-top box, a PCTV, or a computer coupled to the TV for network access. In this embodiment, AT **204** is first stored in a remote control device **10** and later downloaded from remote control **10** to a personal computing device **20**, such as a standard personal computer that can communicate with remote control **10** via a wireless interface **230** and/or a standard I/O interface **232**. In this embodiment, personal computer **20** has a network connection or other means for on-line access to the Internet and other such networks **60**. As shown in FIG. 4, network interface **250** for controlling the access to network **60** resides in PC **20**, thereby eliminating the need for a TV to be coupled to a settop box or a personal computer.

In the alternative embodiment of TV event marking system **101** of FIG. **4**, the viewer periodically transfers AT **204** from remote control **10** to peripheral device **20** via standard wireless interface **231** or standard I/O interface **233** on remote **10** when viewer download button **17** is activated by the viewer. In this example, download button **17** is labeled "D" on remote control **10** to denote "Download Activity Table to PC". Each time the viewer activates download button **17** to transfer AT **204** to remote control **10**, AT **204** on personal computer **20** is thereby updated.

FIG. **5** illustrates a more detailed block diagram of remote control **10**, described in accordance with the principles of this invention. Aside from the additional features described herein, remote control **10** further comprises similar basic components as in conventional remote controls and thus also provide the traditional operations of other conventional remote controls together with event marking function buttons, such as provided by, event selection button **15**, (labeled here, for example, as "B" for "Bookmarking"), network access button **16** (labeled "Go"), download button **17** (labeled "D") and upload button (labeled "U"). Additionally, remote control **10** comprises a serial I/O interface **233** which is envisioned as an alternative means of interfacing remote control **10** to personal computing device **20**. It is envisioned that remote control **10** may be manufactured with or without I/O interface **232**.

In operation, whenever the viewer changes channels via remote control **10** by pressing the conventional channel change buttons, in addition to performing the function of sending to the TV set, VCR, etc. an infrared signal to change the channel, this action contemporaneously activates CPU **218** embedded in personal computing device **20** to concurrently query real time clock **220** for the current date and time, and current channel register **214** for the current channel, in order to generate an AR entry which is stored into AT **204**. The resulting AR comprises:

Date-Time-Channel:

Sep. 1, 1996-19:30:32-CH7

Whenever the viewer activates the event selection button **15** on keypad **14**, "bookmarking" a particular event, this activation contemporaneously triggers CPU **218** to concurrently query real time clock **220** for the current date and time, and an IR command table **212** for the current channel, in order to generate an AR to which it adds a flag indicating the "bookmark". IR command table **212** comprises stored infrared data that remote control **10** received via wireless interface circuit **231**, such as from the TV tuner or personal computing device **20**. The resulting AR entry is then stored into AT. The resulting AR entry with "bookmark" flag comprises the following information:

Date-Time-Channel-Bookmark Example:

Sep. 1, 1996-19:30:32-7-B

As described above in the preferred embodiment, AT **204** is organized in a FIFO sequence. Thus, when the available memory is full, the oldest ARs are deleted to accommodate the newest ARs. When the viewer wants to access the various websites associated with the selected broadcast events, the viewer then activates download button **17** to transfer stored AT **204** to personal computing device **20** via the wireless interface **231** or the I/O interface **233**. When viewer activates network access button **16** ("Go"), personal computing device **20** transmits AT **204** to database **40**, whereupon in response, database **40** transmits to personal computing device **20** the network address of the associated website correlating to viewer's selection. Personal computing device **20** will then process the network address to generate the selected website or website hotlinks for access

by the viewer. Thus the viewer can access desired websites activating a single button, "GO".

FIG. **6** illustrates an automated custom program scheduling method using TV event marking system **100** of FIG. **1**. Automated custom program schedule method **300** accesses on-line broadcast event listings in database **40** to allow viewer to bookmark in advance selected scheduled broadcast events or websites for automated TV viewing. Automated custom scheduling method **300** comprises a first step **302** of accessing database **40** via network accessing device **20** to view scheduled broadcast events. Then, in step **304**, viewer selects the set of broadcast events to be viewed. Once selection is completed, a corresponding custom schedule identifying selected the date, time and channel of all selected events is generated in step **306**. Then, in step **308**, the custom schedule is downloaded to custom command table **206** (see also FIGS. **1**) in memory **202** of network access device **21**. The custom command table **206** comprising a time-based command sequence is then executed by CPU **216** in network access device **21** in step **310** to instruct TV tuner **34** to automatically change channels in a time sequence provided in custom command table **206**. It is envisioned that remote controls **10** and **12** (FIG. **3** and **5**) comprises bi-directional I/O port and thus can be remotely programmed by personal computer system **20** or network access device **21**.

FIG. **7** shows an alternative embodiment of an automated custom program scheduling method using TV event marking system of FIG. **4**. Thus, automated scheduling method **330** comprises a first step **312** of accessing on-line broadcast event listings in database **40** to allow viewer to bookmark in advance selected scheduled broadcast events or websites for automated TV viewing. Then, in step **314**, viewer identifies the set of broadcast events to be viewed. Once selection is completed, a corresponding custom schedule identifying selected the date, time and channel of all selected events is generated in step **306**. Then, in step **308**, the custom schedule is downloaded to custom command table **206** in memory of remote control **10** (see FIG. **5**). Custom command table **206** comprising a time-based command sequence is then executed by CPU **218** remote control **10** in step **310** to instruct TV tuner **34** to automatically change channels in a time sequence provided in custom command table **206**.

In yet another embodiment, FIG. **8** illustrates an automated VCR programming method **400** using TV event marking system of FIG. **1** to access an on-line broadcast event listing in database **40** to allow viewer to bookmark scheduled broadcast events or websites for automated VCR recording. Automated programming method **400** comprises a first step **402** of accessing database **40** through on-line service **60** to view scheduled broadcast events. Then, in step **404**, viewer identifies the set of broadcast events to be recorded. Once selection is complete, database **40** then generates in step **406**, a corresponding custom schedule identifying selected the date, time and channel of all selected broadcast events to be recorded. Then, in step **408**, the custom schedule is downloaded to custom command table **206** in memory storage **202** of network access device **21**. The custom schedule is then executed by CPU **216** in network access device **21** in a time-based sequence in step **410** to instruct the VCR to automatically record a particular channel at a pre-determined time.

Shown in FIG. **9** is an alternative embodiment of automated VCR programming method **430** using TV event marking system of FIG. **4** comprising a first step **412** of accessing database **40** to view scheduled broadcast events. Then, in step **414**, viewer selects the set of broadcast events

to be recorded and viewed. Once the selection is complete, a corresponding custom schedule identifying selected the date, time and channel of all selected broadcast events is thereby generated in step 406. Then, in step 409, the custom schedule is downloaded to custom command table 206 in remote control 10 (see FIG. 5) via personal computer device 20. The custom schedule is then executed in step 420 by CPU 218 of remote control 10 in a time-based sequence so to instruct the VCR to automatically record a particular channel at a pre-determined time.

It is also envisioned as within the principles and scope of this invention to provide a method and means to develop viewer data patterns by uploading a plurality of AT 204 from multiple viewers. As described above, since it is envisioned that viewer channel selection can be stored as an AR entry in AT 204 each time the viewer makes a channel selection, activity table 204 can be uploaded from each viewer to identify patterns of TV viewing, such as, but not limited to, frequency of viewing of particular channels, broadcast events, volume patterns and other events and patterns.

Examples of the method and means to record and display viewer selected events and associated internet locations or website hotlinks are described herein in accordance with the principles of this invention. However, variations in embodiments of the principles of this invention are contemplated as within the scope of this invention and are thus also considered as taught by this invention.

We claim:

1. A method for marking and recording viewer-selected TV broadcast events comprising the steps of:

- selecting a set of broadcast events using a remote control, wherein the step of selecting a set of broadcast events comprises;
- activating by a viewer an event select button on the remote control; and
- detecting in response to the viewer activating the event select button an associated date and time data from a real time clock circuit and an associated channel data from a channel register corresponding to the selected event; and

storing a set of event-identifiers associated with the set of selected broadcast events, comprising storing the detected date and time data and the detected channel data as an activity record in an activity table.

2. The method of recording viewer selected broadcast events of claim 1 further comprising a viewer activating a direct network access button on the remote control for providing network access to an associated network location corresponding to viewer selected event the step of activating network access comprising downloading the stored activity table from the remote control to a network accessing device.

3. The method of recording viewer selected broadcast events of claim 2 wherein the network access device comprises a personal computer having network access interface, and the step of activating network access further comprises providing the stored activity table to a remote database via the personal computer, and transmitting in response thereto, a network address of an associated website correlating to viewer's selection from the database to the personal computer.

4. A system for recording viewer selected TV broadcast events and displaying a corresponding set of associated internet locations comprising:

a television for broadcasting a series of television events; and

a remote control for controlling the television, the remote control comprising an event selection button to allow a viewer to mark a set of selected broadcast events the event selection button coupled to a channel register to read channel data and a clock circuit to access a date and time data associated with each selected event; and a network accessing unit, wherein the network accessing unit having an activity table comprising event identifying data generated in response to the activation of the event selection button and transmits the activity table to an online central database for generating a set of internet locations associated with the set of selected broadcast events.

5. The system of recording viewer-selected broadcast events of claim 4 wherein the remote control further comprises a network access button to allow a viewer direct access to and for displaying websites of selected event.

6. The system of recording viewer-selected broadcast events of claim 4 wherein the remote control further comprises an upload function button to provide a transmission of the activity table from remote control to a network access unit.

7. A method for recording viewer selected TV broadcast events and displaying an associated set of internet locations comprising:

- selecting by a viewer a set of broadcast events using a remote control;
- storing in response to each viewer activation of an event select button on the remote control an activity record comprising a date and time data from a clock circuit and a channel data from a channel register, each activity record stored into an activity table associated with the set of selected broadcast events;
- transmitting the activity table through a network access unit to a central database on the net; and
- generating a set of internet locations and website hotlinks in response to each activity entry correlating to events identified by the activity table, wherein the set of internet locations and website hotlinks can be used by the viewer to access and display selected internet locations.

8. The method for recording viewer selected TV broadcast events of claim 7 wherein the network access unit comprises a personal computer.

9. The method for recording viewer selected TV broadcast events of claim 7 wherein the network access unit comprises a set top box.

10. A method for marking and recording listener-selected radio broadcast events comprising the steps of:

- selecting a set of broadcast events using a remote control, wherein the step of selecting a set of broadcast events comprises;
- activating by a listener an event select button on the remote control; and
- detecting in response to the listener activating the event select button an associated date and time data from a real time clock circuit and an associated channel data from a channel register corresponding to the selected event; and

storing a set of event-identifiers associated with the set of selected broadcast events, comprising storing the detected date and time data and the detected channel data as an activity record in an activity table.