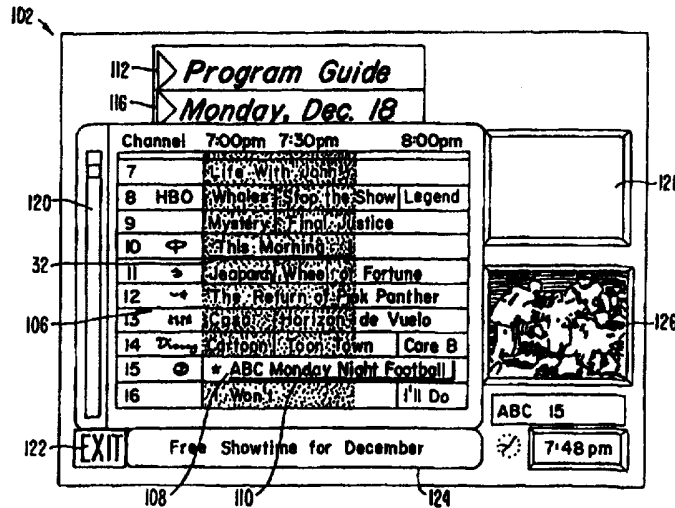




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p><b>(51) International Patent Classification <sup>6</sup> :</b> <b>H04N 7/10, 7/14, 5/445</b></p>	<b>A1</b>	<p><b>(11) International Publication Number:</b> <b>WO 97/49242</b></p> <p><b>(43) International Publication Date:</b> 24 December 1997 (24.12.97)</p>																								
<p><b>(21) International Application Number:</b> PCT/US97/09337</p> <p><b>(22) International Filing Date:</b> 28 May 1997 (28.05.97)</p> <p><b>(30) Priority Data:</b></p> <table style="width:100%; border: none;"> <tr> <td style="width:30%;">60/020,280</td> <td style="width:40%;">17 June 1996 (17.06.96)</td> <td style="width:30%;">US</td> </tr> <tr> <td>60/023,651</td> <td>17 June 1996 (17.06.96)</td> <td>US</td> </tr> <tr> <td>08/847,726</td> <td>28 April 1997 (28.04.97)</td> <td>US</td> </tr> <tr> <td>08/847,731</td> <td>28 April 1997 (28.04.97)</td> <td>US</td> </tr> </table> <p><b>(60) Parent Applications or Grants</b></p> <p><b>(63) Related by Continuation</b></p> <table style="width:100%; border: none;"> <tr> <td style="width:30%;">US</td> <td style="width:40%;">60/028,651 (CIP)</td> <td style="width:30%;"></td> </tr> <tr> <td>Filed on</td> <td>17 June 1996 (17.06.96)</td> <td></td> </tr> <tr> <td>US</td> <td>60/020,280 (CIP)</td> <td></td> </tr> <tr> <td>Filed on</td> <td>17 June 1996 (17.06.96)</td> <td></td> </tr> </table> <p><b>(71) Applicant (for all designated States except US):</b> STARSIGHT TELECAST INCORPORATED [US/US]; 3rd floor, 39650 Liberty Street, Fremont, CA 94538 (US).</p> <p><b>(72) Inventors; and</b></p> <p><b>(75) Inventors/Applicants (for US only):</b> SCHEIN, Steven [US/US]; 1326 Hoover Street #10, Menlo Park, CA 94025 (US). LEFTWICH, James [US/US]; Suite F, 131</p>		60/020,280	17 June 1996 (17.06.96)	US	60/023,651	17 June 1996 (17.06.96)	US	08/847,726	28 April 1997 (28.04.97)	US	08/847,731	28 April 1997 (28.04.97)	US	US	60/028,651 (CIP)		Filed on	17 June 1996 (17.06.96)		US	60/020,280 (CIP)		Filed on	17 June 1996 (17.06.96)		<p>Hawthorne Avenue, Palo Alto, CA 94301 (US). FOLKER, David [US/US]; 39505 Gallaudet Drive, No. 362, Fremont, CA 94538 (US). HUNWICH, Keith [US/US]; 928 Wright Avenue #1006, Mountain View, CA 94043 (US). ALBA, Theresa [US/US]; 36370 Carnation Way, Fremont, CA 94536 (US). KING, Molly [US/US]; 37978 - 2nd Street, Fremont, CA 94536 (US).</p> <p><b>(74) Agents:</b> RAFFLE, John, T. et al.; Townsend and Townsend and Crew LLP, 8th floor, Two Embarcadero Center, San Francisco, CA 94111-3834 (US).</p> <p><b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> <i>With international search report.</i></p>
60/020,280	17 June 1996 (17.06.96)	US																								
60/023,651	17 June 1996 (17.06.96)	US																								
08/847,726	28 April 1997 (28.04.97)	US																								
08/847,731	28 April 1997 (28.04.97)	US																								
US	60/028,651 (CIP)																									
Filed on	17 June 1996 (17.06.96)																									
US	60/020,280 (CIP)																									
Filed on	17 June 1996 (17.06.96)																									

**(54) Title:** SYSTEM AND METHOD FOR USING TELEVISION SCHEDULE INFORMATION



**(57) Abstract**

A television schedule system (60) and method for displaying television schedule information on a television screen (80) includes a program guide (102) having a schedule information area (106) that depicts the programs that are being presented on each channel at each time during the day. An input device (2) allows the viewer to browse through the schedule information area (106) and/or obtain more information about programs of particular interest. In one aspect, the viewer may watch a program on the currently-tuned channel, while browsing through the other channels on a portion of the television screen (80). In another aspect, the viewer may watch programs currently being shown on the television (80), while he or she browses through the program guide (102). In yet another aspect, the system includes a database, a processor (68) and associated software for automatically customizing the television schedule guide (102) to an individual viewer or a group of viewers to facilitate use of the television schedule.

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

<b>AL</b>	Albania	<b>ES</b>	Spain	<b>LS</b>	Lesotho	<b>SI</b>	Slovenia
<b>AM</b>	Armenia	<b>FI</b>	Finland	<b>LT</b>	Lithuania	<b>SK</b>	Slovakia
<b>AT</b>	Austria	<b>FR</b>	France	<b>LU</b>	Luxembourg	<b>SN</b>	Senegal
<b>AU</b>	Australia	<b>GA</b>	Gabon	<b>LV</b>	Latvia	<b>SZ</b>	Swaziland
<b>AZ</b>	Azerbaijan	<b>GB</b>	United Kingdom	<b>MC</b>	Monaco	<b>TD</b>	Chad
<b>BA</b>	Bosnia and Herzegovina	<b>GE</b>	Georgia	<b>MD</b>	Republic of Moldova	<b>TG</b>	Togo
<b>BB</b>	Barbados	<b>GH</b>	Ghana	<b>MG</b>	Madagascar	<b>TJ</b>	Tajikistan
<b>BE</b>	Belgium	<b>GN</b>	Guinea	<b>MK</b>	The former Yugoslav Republic of Macedonia	<b>TM</b>	Turkmenistan
<b>BF</b>	Burkina Faso	<b>GR</b>	Greece			<b>TR</b>	Turkey
<b>BG</b>	Bulgaria	<b>HU</b>	Hungary	<b>ML</b>	Mali	<b>TT</b>	Trinidad and Tobago
<b>BJ</b>	Benin	<b>IE</b>	Ireland	<b>MN</b>	Mongolia	<b>UA</b>	Ukraine
<b>BR</b>	Brazil	<b>IL</b>	Israel	<b>MR</b>	Mauritania	<b>UG</b>	Uganda
<b>BY</b>	Belarus	<b>IS</b>	Iceland	<b>MW</b>	Malawi	<b>US</b>	United States of America
<b>CA</b>	Canada	<b>IT</b>	Italy	<b>MX</b>	Mexico	<b>UZ</b>	Uzbekistan
<b>CF</b>	Central African Republic	<b>JP</b>	Japan	<b>NE</b>	Niger	<b>VN</b>	Viet Nam
<b>CG</b>	Congo	<b>KE</b>	Kenya	<b>NL</b>	Netherlands	<b>YU</b>	Yugoslavia
<b>CH</b>	Switzerland	<b>KG</b>	Kyrgyzstan	<b>NO</b>	Norway	<b>ZW</b>	Zimbabwe
<b>CI</b>	Côte d'Ivoire	<b>KP</b>	Democratic People's Republic of Korea	<b>NZ</b>	New Zealand		
<b>CM</b>	Cameroon			<b>PL</b>	Poland		
<b>CN</b>	China	<b>KR</b>	Republic of Korea	<b>PT</b>	Portugal		
<b>CU</b>	Cuba	<b>KZ</b>	Kazakstan	<b>RO</b>	Romania		
<b>CZ</b>	Czech Republic	<b>LC</b>	Saint Lucia	<b>RU</b>	Russian Federation		
<b>DE</b>	Germany	<b>LI</b>	Liechtenstein	<b>SD</b>	Sudan		
<b>DK</b>	Denmark	<b>LK</b>	Sri Lanka	<b>SE</b>	Sweden		
<b>EE</b>	Estonia	<b>LR</b>	Liberia	<b>SG</b>	Singapore		

5

## SYSTEM AND METHOD FOR USING TELEVISION SCHEDULE INFORMATION

### CROSS-REFERENCE TO RELATED APPLICATION

10 This application derives priority from U.S. Patent  
Application Serial No. Unassigned, filed April 28, 1997  
(Attorney Docket No. 14774-004010) and U.S. Patent Application  
Serial No. Unassigned, filed April 28, 1997 (Attorney Docket  
No. 14774-005510), which are continuation-in-part of U.S.  
15 Provisional Patent Application Serial No. 60/023,651, filed on  
June 17, 1996 (Attorney Docket No. 14774-005500) and U.S.  
Provisional Patent Application Serial No. 60/020,280, filed  
June 17, 1996 (Attorney Docket No. 14774-004000),  
respectively. This application is also related to U.S. Patent  
20 Application Serial No. Unassigned, filed on April 11, 1997  
(Attorney Docket No. 14774-004410), and its Appendices A, B,  
and C, of which are also incorporated herein by reference for  
all purposes.

25

### BACKGROUND OF THE INVENTION

The present invention generally relates to  
television schedule information, and more particularly to a  
system and method for displaying a television program guide on  
30 a television screen.

As the number of television stations in a  
metropolitan area or on a cable network has increased, the  
number of programs of potential interest that are presented to  
a viewer has risen dramatically. With the use of dish  
35 antennas capable of receiving direct satellite signals, the  
multitude of programs available to the viewer has further  
increased. Consequently, television schedule systems that are  
provided directly on the viewer's television screen have been

developed to assist the viewer in sorting through these various programs and determining which programs to watch or record. One such television schedule system is disclosed in commonly assigned U.S. Patent No. 5,353,121 (Young et al.),  
5 the complete disclosure of which is hereby incorporated by reference. In one embodiment of Young, the television schedule includes a series of menu screens having an array of cells corresponding to different television programs. The viewer may scroll through the cells to view which television  
10 programs are being presented on various channels at various times. In addition, the viewer may select certain cells to obtain more information on the associated program or to pull up other submenus with additional options.

The recent development of television schedule  
15 systems, such as the above described patent to Young, have created many new challenges. One such challenge is providing a system and method that allows the viewer to quickly and efficiently navigate through the various menus and submenus of the schedule guide and to interact with the items contained  
20 therein. Ideally, the system and method would provide the viewer with the ability to browse through the television guide and/or perform various actions, while still displaying the currently-tuned program on the television screen so that the viewer can keep track of the program. In addition, it would  
25 be desirable to provide a system that can be customized for an individual and/or a group of viewers.

#### SUMMARY OF THE INVENTION

30 The present invention provides a system and method for displaying schedule information on a visual interface, such as a television screen, a computer monitor or the like. The present invention also provides a system and method for allowing the viewer to navigate and interact with a program  
35 guide that is displayed, for example, on the viewer's television screen. The program guide will usually include a schedule information area that depicts the programs that are being presented on each channel at each time during the day.

With an input device, such as a remote control device, pointing device, mouse, keyboard, microphone or the like, the viewer can browse through the schedule information area and/or obtain more information about programs of particular interest.

5           In one aspect of the invention, a system and method is provided for allowing the viewer to watch a program on the currently-tuned channel of a television, while browsing through the other channels on a portion of the television screen. The system includes a browsing window for displaying  
10 program information over a portion of the television screen in conjunction with the primary display. The browsing window is usually smaller than the main program guide and located in a convenient place on the television screen, e.g., in a corner, so that the viewer can simultaneously view the primary display  
15 and the browsing window. The browsing window includes an active window for displaying programs on channels other than the currently-tuned channel, and an input device for switching the program that is displayed on the active window. In a preferred configuration, the browsing window further includes  
20 an information window for allowing the viewer to access a television schedule program guide and to obtain more information on the program that is shown in the active window.

          In another aspect of the invention, a system and method is provided for allowing the viewer to watch programs  
25 currently being shown on the television, while the viewer browses through the program guide. In this embodiment, the program guide includes a smaller, active window for displaying a program that is currently being shown on a television channel. The input device has a controller for interacting  
30 with the active window to control the program that is shown therein. For example, the active window may show the program on the currently-tuned channel, i.e., the channel that the viewer was watching prior to activating the program guide. Alternatively, the active window may show the programs that  
35 the viewer selects in the program information area. In this embodiment, each program title is contained within a cell or window. As the controller moves a cursor, for example, to each cell within the program information area, the program

displayed on the active window will change so that the program displayed on the active window corresponds to the program title within the cell containing the cursor.

5 In yet another aspect of the invention, a system and method are provided for indicating the amount of time left in each program in the program guide. In this embodiment, the program guide includes a matrix of cells, with each cell containing information associated with a television program, and having a length that is proportional to a length of the television program. Each cell will include a visual display for displaying an amount of time left in the associated television program. For example, the visual display can be a physical icon indicating the amount of time left in the program. Alternatively, each cell can be highlighted in such a way that either the highlighted or non-highlighted portion of the cell represents the amount of time left in the associated television program. In the latter embodiment, the highlighted or non-highlighted portion of the cell will be reduced with time to continuously indicate the amount of time left in the associated program.

15 In yet another aspect of the invention, a system and method is provided for automatically or manually customizing the television schedule guide to an individual viewer or a group of viewers, e.g., a family. In this embodiment, the program guide includes a matrix of cells, with each cell containing information associated with a television program. The input device includes a controller for moving a cursor to each cell and for selecting the television program associated with each cell. The system further includes a memory for storing the television programs that have been selected by the viewer. The programs can be selected for a variety of reasons, such as designating the program as a favorite, placing a reminder to watch the program or, when the television schedule system includes a recording device, placing an automatic reminder to the program guide to record the program.

20 In a specific configuration, the system further includes a visual display, such as a physical icon within the

program's cell, for indicating that a program has been selected. In addition, the program guide includes a selection window that displays some or all of the programs that have been selected by the viewer. The input device will allow the viewer to activate and deactivate the selection window, and to move between each program within the selection window and activate programs to obtain information associated with the selected program.

In a preferred embodiment, the system includes a database containing each program within the television schedule. The database may be included within a computer integrally combined with the television (e.g., PCTV), a computer that is coupled to the television through suitable lines, or the database may be accessed from a remote computer, e.g., via the internet or other communication medium. Within the database, each program is associated with a variety of criteria or features, such as particular actors, actresses, directors, the type of movie (e.g., action, comedy) and the like. When the viewer selects a program as a favorite, for example, he or she will have the option of designating the criteria or reason(s) that the program is a favorite (i.e., actor, director, etc.). In an exemplary embodiment, the computer will include a processor and suitable software for automatically searching the database for other programs having the same criteria. The processor may then place the programs that include the designated criteria into the selection window and provide visual indication of each program in the matrix of cells in the program guide. In this way, the program guide will automatically customize itself to the individual viewer to facilitate use of the television schedule.

In yet another aspect of the present invention the television schedule system comprises a remote control device having a casing, an input assembly on the exterior surface of the casing and a transmitter within the casing for receiving the viewer's input and transmitting associated signals to a television, VCR, computer or set top box, to control information presented on a television screen. The input assembly includes a variety of function buttons for performing

functions, such as changing channels and controlling the volume, and a local controller for displacing a movable cursor on the television display. The local controller may comprise a cursor controller, pointing device or trackball that allows the user to freely move a cursor in all directions on the television screen. Alternatively, the local controller may comprise a scrolling device for moving the user through specific areas or windows on the screen with a cursor or other visual indication. For example, when the remote control device is used in combination with a television schedule system having a matrix of cells or a menu of items, the local controller enables the viewer to move or scroll the cursor through the cells or items. The cursor may be a physical icon on the screen, or it may be represented by highlighting or otherwise changing the background color of cells or items that are scrolled through by the viewer.

In a specific configuration, the local controller includes a vertical scroll mechanism for scrolling vertically through a column of items on the television screen and a horizontal scroll mechanism for scrolling horizontally through a row of items across the screen. The vertical scroll mechanism is preferably a rolling cylinder rotatably coupled to the casing. The rolling cylinder is configured so that viewers, while naturally holding the remote control device between their thumb and forefingers, can rotate the cylinder with their thumb to move the cursor up and down on the television screen. The horizontal scroll mechanism preferably comprises one or more buttons located on either side of the rolling cylinder and configured so that depressing the buttons moves the cursor to the right or left across the screen. The horizontal scroll buttons are preferably positioned adjacent the rolling cylinder so that viewers may easily access these buttons with their thumb, if desired.

The local controller further includes a selector switch for selecting an item, activating the item, or pulling down the item's associated menu onto the television screen. Preferably, the selector switch is the rolling cylinder. In this manner, viewers may vertically scroll down a menu and



select an item without taking their thumb off the rolling cylinder. To move horizontally, the viewer simply moves his or her thumb to the left or right of the cylinder and presses on the horizontal scroll buttons. This elegant design allows the viewer to quickly and efficiently browse through the television guide, perform various actions, such as selecting or activating items, and interact with services related to the television programs without having to remove his/her eyes from the television.

In an exemplary configuration, the remote control device of the present invention further includes a global controller for navigating between different screen areas. In this configuration, the local controller is used to scroll through the cells or items within an individual screen area or window while the global controller globally moves the viewer to different windows on the television screen. In one embodiment, the global controller comprises an annular ring of one or more directional buttons surrounding the local controller. When a viewer wishes to move to an adjacent screen area, he or she simply presses the appropriate directional button. In another embodiment, the global controller is a trigger or clutch button on the remote casing. Pressing the clutch button switches the local controller into a different mode, where the rolling cylinder and horizontal scroll buttons can be used to move between different screen areas. This dual modality allows the viewer to both navigate between different windows and scroll and select items within an individual window with the same control device.

In another aspect of the invention, the remote control device includes a speech recognition input device, such as a microphone, for receiving spoken commands from the viewer and converting the spoken commands into audio signals and a transmitter within the casing for transmitting the audio signals from the viewer input to the television. This feature makes the device more efficient and viewer-friendly and may replace the local and global controller or other dedicated function buttons (i.e., channel and volume control buttons) on the remote control to allow hands-free control of the

television and/or the television schedule system. In this embodiment, the television system includes a processor that includes speech recognition circuitry for receiving the audio signals and performing various tasks based on the spoken  
5 commands. The processor will typically be contained within a computer or separate set top box, but may also be contained within the remote control device or the television set. Alternatively, speech recognition software may be accessed and downloaded from, for example, a web site on the internet.

10 In another aspect of the invention, the remote control device includes a identification device for receiving input associated with a viewer's identification and converting this input into signals that are transmitted to the television, VCR, computer, set top box or the like. In one  
15 embodiment, the identification device includes a slot on the exterior surface of the case for receiving a credit card or other identification card, and a recognition device for reading a code on the credit card and converting this information into signals representing the viewer's  
20 identification. This feature of the present invention facilitates the versatility of the remote control device by allowing the viewer to directly purchase products or services through the television schedule system.

#### 25 BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a remote control device according to the principles of the present invention.

30 Fig. 2 is an enlarged view of local and global controllers of the remote control device of Fig. 1.

Fig. 3 is a schematic view of a representative computer system coupled to a television system incorporating the remote control device of the present invention.

35 Figs. 4A and 4B are schematic views of a representative program guide and a channel guide, respectively, for use with the remote control device of Fig. 1 in a television schedule system.

Figs. 5A-5C are schematic views illustrating a method for selecting a program information menu, moving to the program guide of Fig. 4A and browsing through information menus from other programs with the remote control device of Fig. 1.

Figs. 6A-6D illustrate a method for navigating from the program guide to a mode menu and selecting a different mode.

Figs. 7A-7D illustrate a method for navigating from the program guide to a submode menu and selecting a different submode.

Figs. 8A-8D illustrate a method for opening an information menu, scrolling down to other options and opening an information submenu.

Figs. 9A-9F illustrate a method for selecting a favorite item.

Figs. 10A-10D illustrate a method for selecting a program reminder.

Figs. 11A-11E illustrate a Video On Demand menu and an associated submode menu.

#### DESCRIPTION OF THE SPECIFIC EMBODIMENTS

The present invention provides a schedule system and method for displaying schedule information on a visual interface, such as a television screen, computer monitor or the like. The system and method is particularly useful for use with television schedule information. The television schedule information will be presented in a program guide having a schedule information area depicting the program that are being shown on each channel for a period of time, e.g., a day, week or longer. In one aspect of the invention, the viewer may watch a program on the currently-tuned channel, while browsing through the other channels on a portion of the television screen. In another aspect of the invention, the viewer may watch programs currently being shown on the television, while he or she browses through the program guide. In yet another aspect of the invention, the system includes a

database, a processor and associated software for automatically customizing the television schedule guide to an individual viewer or a group of viewers, e.g., a family, to facilitate use of the television schedule.

5           The television schedule system will include an input device, such as a remote control device, pointing device, mouse, keyboard, microphone or the like, to allow the user to browse through the schedule information area and/or obtain more information about programs of particular interest. In a  
10 specific configuration, the input device will comprise a housing or casing and an input assembly on the exterior surface of the casing. The casing will usually resemble the generally rectangular shape of typical television remote control devices. However, the casing may also be similar to  
15 other convention input devices, such as a mouse, a joystick, a computer keyboard, etc., or the casing may have a specialized, non-conventional shape. The casing will include a controller for allowing the television viewer to move along the television screen either freely or through specific areas or  
20 windows on the screen. The controller may comprise a trackball, cursor controller, pointing device, a microphone for allowing voice activation, a number of keys or buttons that function to move the viewer around the screen, or the like. In the preferred embodiment, the controller comprises a  
25 scrolling mechanism for displacing a movable cursor through a matrix of cells or windows on the screen. The cursor may comprise a physical icon on the screen, or it may be represented by highlighting or other visual indications of the cells or windows that are scrolled through by the viewer.

30           Referring to the drawings in detail, wherein like elements are indicated by like numerals, a representative remote control device 2 for facilitating the use of television schedule system of the present invention is illustrated. Of course, it should be clearly understood that the remote  
35 controlle device shown in Figs. 1 and 2 is merely representative of one type of remote control device that may be used with the present invention.

As shown in Figure 1, remote control device 2 generally comprises a casing 4 having a viewer input assembly 6 for controlling a television, computer or VCR and for utilizing television schedule information on a television screen, as discussed below. Input assembly 6 generally includes a cursor control assembly 8 for displacing a cursor on a display screen, such as a television screen, and a plurality of dedicated function buttons 10 for performing various functions, such as changing channels, operating a VCR, changing the volume, etc. In addition, dedicated function buttons 10 may be used for other interactions requiring numeric input, such as inputting security codes, credit card numbers, etc.

As shown in Figure 3, remote control device 2 further includes an RF transmitter 12 for transmitting signals generated by the viewer through viewer input assembly 6 to, for example, a processor within a personal computer, a television or a VCR. RF transmitter 12 may be substituted with, for example, IR emitters, modulated light signals (i.e., a signal sent to optical fiber), or even a hardware connection. Remote control device 2 will also include a power source, such as a battery (not shown).

Referring to Figure 2, the cursor control assembly 8 of the present invention will now be described in detail. Cursor control assembly 8 includes a local controller 20 for moving the cursor within a designated screen area or window on the display screen and a global controller 22 for navigating among different windows on the display screen, as discussed in further detail below. Local controller 20 comprises a vertical scroll mechanism for scrolling cursor in the y-direction or vertically through an individual window or menu. The vertical scroll mechanism is preferably a rolling cylinder 24 rotatably mounted to casing 4 around an axis perpendicular to the longitudinal axis of casing 4. Rotation of cylinder 24 moves the cursor vertically through the window or menu of the display screen. In a preferred embodiment, the window will be made up of at least a vertical column of cells and cylinder button 24 will move the cursor up and down the column.

Rolling cylinder 24 preferably includes means for providing tactile feedback to the viewer so that cylinder 24 to facilitate operation of cylinder 24 without looking at remote control device 2 (i.e., so the viewer can look at the television screen). In the preferred configuration, cylinder 24 includes a plurality of detents or ridges 26 on its outer surface that indicate to the viewer, either by tactile feel or by sound, that the cursor is moving through each cell in the window or menu.

Local controller 20 further includes a horizontal scroll mechanism for moving the cursor in an "x" direction or horizontally across the display screen. As shown in Figure 2, the horizontal scroll mechanism preferably includes first and second buttons 32, 34 located on either side of rolling cylinder 24. Depressing buttons 32, 34 moves the cursor left or right across a row of items in an individual window of the display screen. Preferably, the viewer will be required to press one of the buttons 32, 34 for each item the cursor moves through in the horizontal direction. However, it should be noted that the invention is not limited to this configuration and buttons 32, 34 can be configured so that continuous depression of one button 32, 34 moves the cursor horizontally through a plurality of items. Alternatively, cylinder 24 may be configured for horizontal movement so that both horizontal and vertical movement can be carried out with a single button.

Cursor control assembly 8 further includes a selector switch for selecting an item on the display screen when the cursor is contiguous with that item. In a specific configuration, the selector switch is rolling cylinder 24. Depression of cylinder 24 will select or activate the item or pull down a menu associated with that item. This feature of the present invention allows viewers to both vertically scroll through items in a menu and select these items without moving their thumb from cylinder 24.

Global controller 22 preferably comprises a screen navigation ring 40 having a plurality of direction buttons 42 surrounding local controller 20. The exact number of direction buttons 42 in navigation ring 40 will typically

depend on the number and relative locations of the different information areas on the display screen. In a specific configuration, global controller 22 will include four buttons 42 controlling left, right, up and down movement of the cursor along the television screen.

As an alternative to navigation ring 40, remote control device 2 may include a trigger or clutch button 46, as shown in Fig. 1. Clutch button 46 can be depressed to provide dual modality for local controller 20. Specifically, pressing clutch button 46 will move local controller 22 between a first mode, where cylinder 24 and horizontal scroll mechanism 30 move the cursor between different items within a particular information area on the display screen, and a second mode, where cylinder 24 and horizontal scroll mechanism 30 move the cursor between different information areas on the screen. Clutch button 46 is preferably located on the back side of casing 4 so that the viewer can easily depress button 46 with his or her fingers when holding the device.

Referring again to Fig. 1, viewer input assembly 6 of remote control device 2 further includes a voice recognition device for receiving spoken commands from the viewer and converting the spoken commands into signals to facilitate use of television schedule information. Typically, the voice recognition device will include a microphone 50 on remote control device 2 for receiving the spoken commands and converting them into audio signals and a microprocessor (not shown) that includes speech recognition circuitry contained therein for receiving the audio signals and performing various tasks based on the spoken commands. The microprocessor may be contained within the remote control device or within a television set, a computer, VCR or the like. Alternatively, the speech recognition circuitry may be accessed from another computer or a datastream of information, such as a web site on the internet, and downloaded into the television schedule system.

The voice recognition device of the present invention may further include a trigger button (not shown) on remote control device 2 for activating or deactivating

microphone 50. This allows the viewer to speak to other people in the room without accidentally triggering commands through microphone 50. The trigger button is normally in the up position, which corresponds to microphone 50 being in the deactivated state. When the viewer wishes to input a spoken command, message or data to the VCR, television or computer, the viewer must depress button 52 which causes a signal to be sent to a processor (not shown) to activate microphone 50. Once microphone 50 is activated, it will input the received audio signals (e.g., spoken commands) to the processor.

Remote control device 2 further includes a mechanism for inputting and recognizing a viewer's identification (i.e., credit card number, social security number, etc.) for authorizing the viewer to purchase products or services from the television schedule system. In a preferred configuration, the identification mechanism is a slot 60 in casing 4 sized for receiving a credit card, data card, security card or other viewer identification card, as shown in Fig. 1. In this configuration, remote control device 2 includes a recognition device for reading a code on the credit card when the credit card is swiped through slot 60. A process will convert the credit card's code into signals representing the viewer's identification. Alternatively, the identification mechanism may comprise numeric or symbolic keys on casing 4, such as the numeric keys shown in Fig. 1. In this embodiment, the numeric keys may be used to input a security code, such as a credit card number, social security number or the like.

Figure 3 illustrates a representative television schedule system 60 for use with remote control device 2 of the present invention. As shown, system 60 includes a computer system 62 coupled to a television system 64. In the preferred embodiment, computer system 62 includes a standard computer 63 which is, for example, any personal computer, (e.g., IBM compatible, MacIntosh and the like). Computer 63 can also be located within a set top box (e.g., a DSS box), or the computer may be located remote from the viewer's home, e.g., an external server or host computer. In the latter embodiment, the television schedule system 60 will be capable



of accessing and downloading an application or applet from the computer through, e.g., the internet or other communication media. The computer contains a hard drive 66 and a processor 68. These units are usually automatically included in the computer 63. A disk input 70 is used to provide the computer 63 with various additional software. A data line 72 is connected to an available serial, parallel or other data port on the computer 63. This line 72 is used to connect other devices/components to computer.

In another embodiment, computer system 62 may be combined with television system 60 to form a PCTV. In this embodiment, the computer will usually include a processor that may be used solely to run the program guide and associated software, or the processor may be configured to run other applications, such as word processing, graphics, or the like. The computer will usually be incorporated into the television set so that the television display can be used as both a television screen and a computer monitor. Usually, the PCTV will include a number of input devices, such as a keyboard, a mouse and a remote control device, similar to the one described above. However, these input devices may be combined into a single device that inputs commands with keys, a trackball, pointing device, scrolling mechanism, voice activation or a combination thereof.

Television system 64 includes a television 80 which may be any commercially available television. Television system 64 may or may not include a videotape recorder (VCR). In this embodiment, a VCR 82 is coupled to television. This VCR can be, for example, any commercially available VCR or any other type of recording device (analog or digital). Computer 63 and television 80 can be directly connected by a line 84 or remotely connected so that computer 63 and television 80 can be located in different rooms within a private residence or commercial building. In the preferred embodiment, a computer program provided on diskettes, CD Rom or other medium contains the software needed for receiving, organizing and displaying data for a television schedule guide (see Figs. 4-11). These diskettes are inserted into disk input 70 and the software for

these diskettes is stored within the computer 63 on the hard drive or on another mass storage location. This action can be performed by, for example, the viewer or service person. The computer program can also be provided, for example, via  
5 downloading from a satellite, transmission through the internet or other on-line service, or transmission through another type of land line. A more detailed description of a preferred computer system for use with the present invention is described in commonly assigned, co-pending U.S. Patent  
10 Application Serial Number 08/537,650, filed October 2, 1995 (Attorney Docket No. 14774-003400), the complete disclosure of which is hereby incorporated by reference.

In another embodiment, computer system 62 may be combined with television system 60 to form a PCTV. In this  
15 embodiment, the computer will usually include a processor that may be used solely to run the program guide and associated software, or the processor may be configured to run other applications, such as word processing, graphics, or the like. The computer will usually be incorporated into the television  
20 set so that the television display can be used as both a television screen and a computer monitor. Usually, the PCTV will include a number of input devices, such as a keyboard, a mouse and a remote control device, similar to the one described above. However, these input devices may be combined  
25 into a single device that inputs commands with keys, a trackball, pointing device, scrolling mechanism, voice activation or a combination thereof.

In this embodiment, remote control device 2 will send input to computer 60, which then transmits signals, via  
30 an appropriate RF transmitter or the like (not shown), to television system 64. The data for the television schedule system can be obtained from a variety of databases. For example, on-line providers (Prodigy, America On Line, CompuServe, MSN, At&T, etc) may provide access to a database  
35 which contains the television schedule information. These on-line information providers can transmit data to television 80. To accomplish this, television 80 or computer 63 will include a modem, which can be connected to a telephone line, cable

modem, ISDN line, DSS channel or the like, and software for searching and providing the data to computer 63.

5           Figures 4-11 illustrate a television schedule system and method according to the present invention. In Appendix B, which is attached to co-pending U.S. Patent Application Serial No. Unassigned, filed April 11, 1997 (Attorney Docket No. 14774-004410), of which has been incorporated by reference, entitled "Starsight Interactive Television Program Guide, Phase III", that further illustrates the representative  
10 television program guide. Appendix A, which is also attached to co-pending U.S. Patent Application Serial No. Unassigned, filed April 11, 1997 (Attorney Docket No. 14774-004410), of which has been incorporated by reference, entitled "Using Starsight 2", to illustrate an alternative television program  
15 guide according to the present invention.

          Figures 4A and 4B illustrate a program guide 102 and a channel guide 104, respectively, for the television schedule system of the present invention. The program guide 102, which is the primary mode in the television schedule system,  
20 includes a number of screen information areas or windows in a particular screen where the viewer operates an input device, such as the remote control device 2 described above, to move around vertically and horizontally and to interact with that screen area's function. Preferably, the currently active  
25 screen area will be indicated to the viewer, for example, by changing the background color from a light greyscale metallic to a brighter, active color. Within each screen area are one or more items, typically arranged in a matrix or grid so that the viewer can scroll through the grid. The items can be  
30 selected or activated with the input device. Activation of an item will invoke a Submenu, a Dialog, a Panel, invoke an action or the like. In an exemplary configuration, device 2 is configured so that double clicking on cylinder 24 will invoke an item's associated menu or Submenu and automatically  
35 activate the default menu item. In addition, device 2 may include further shortcuts, such as mediated signals that are accomplished by simultaneously holding in clutch button 46 and cylinder 24.

As shown in Fig. 4A, program guide 102 preferably includes a schedule information area 106 having a program matrix 108 of cells or items that depict the shows that are being presented on each channel at each time during the day. Program guide 102 conveniently lists the channels in a vertical column to the left of the program matrix 108 and the times in a horizontal row above matrix 108. As shown, the viewer may vertically scroll through a particular time or horizontally scroll through a channel. As the viewer scrolls through matrix 108, a cursor 110 will indicate the viewer's location within the matrix 108. Alternatively, the item may be automatically highlighted with a brighter color to indicate the viewer's location. Preferably, program matrix 108 will also be shaded to indicate the portion of each show that has already been presented. For example, as shown in Fig. 4A, the shading extends to 7:48 (the current time as indicated at the bottom right of program guide 102) to indicate which portion of the show the viewer has already missed.

As shown in Fig. 4A, program guide 102 includes a number of other information areas. For example, program guide 102 includes a mode menu area 112 that indicates the currently active mode (i.e., program guide 102) and allows the viewer to pull down a mode menu 114 (see Fig. 6B). Program guide 102 also includes a date area 116 that indicates the date reflected in program matrix 106 and allows the viewer to pull down a date submenu 118 (see Fig. 7B) to change the date. In other submodes, the submenu will display options for ordering or displaying lists that are appropriately related to the submode. A proportional scroll bar 120 located to the left of program matrix 106 is visually proportional to the total information in program matrix 106 to provide visual feedback as the viewer vertically scrolls through matrix 106. In addition, scroll bar 120 may be used for large-scale movement through hundreds of channels/sources by navigating to bar 120 and then vertically moving bar 120 upward or downward. An exit area 122 allows the viewer to immediately exit back to the television by navigating to exit area 122 clicking on exit area 122. A program area 126 depicts the currently tuned

program and a preview window area 128 can be used for all types of promotional, descriptive, or contextual video or graphics, such as a short preview of the show that is currently being highlighted in show matrix 106. Preview window area 128 may also be interactional similar to the other areas of guide 102.

In an exemplary configuration, program area 126 displays the currently tuned program "live" so that the viewer can browse through program matrix 106 without missing the action on the currently tuned program. This feature allows the viewer, for example, to keep track of the score of a football game while browsing through the program matrix or performing other interactions with the system, such as purchasing goods or services, searching for more information on a program, etc. In another configuration, the viewer may set program area 126 to change as the viewer browses through program matrix 106 so that area 126 depicts the highlighted program in the matrix. This allows the television viewer to quickly view each program without exiting from the program guide 102.

The program guide may also include a variety of additional areas to facilitate use of the television schedule system, present information to the viewer or advertise programs or other products. For example, a scrolling commercial message 124 may be located underneath program matrix 106 that advertises programs or products from program sponsors, etc. The viewer may navigate to message 124 and click on the input device to receive more information or to purchase the product or program. A two second delay or a suitable input from the viewer will open the scrolling message up into its info menu (not shown). This function of ordering items is not limited to videos. For example, the program may access other contextual linked services such as a commercial store, etc., to allow the purchaser to buy a wide variety of different services or goods directly or indirectly linked to a particular program. For example, an Info Menu for Monday Night Football may allow the viewer to scroll through submenus that allow the viewer to purchase Washington Redskins' caps,

Minnesota Vikings' caps or any NFL cap. The viewer has a choice to follow a program's link back to the commercial area where a larger selection of items and services are available. A product like the cap above may lead the viewer directly to  
5 an NFL proshop, whereas a link to a movie on demand may lead back to a commercial film library. A more complete description of a television schedule system incorporating contextual linked services is described in co-pending, commonly assigned U.S. Patent Application Serial No.

10 Unassigned, filed on April 11, 1997, to Schein et al., and its Appendices A, B, and C, (Attorney Docket No. 14774-004410), the complete disclosure of which are hereby incorporated by reference.

15 Figure 4B illustrates the television schedule system of the present invention in the channel guide mode. As shown, channel guide 104 is similar to program guide 102 except that it includes an information screen area 130 that is reversed from the information screen area 106 in the program guide. Thus, the viewer can scroll vertically to move forward and  
20 backward in time along one channel and horizontally to move from channel to channel.

A method for using the television schedule system of the present invention will now be described. Figures 5A-5C illustrate a method of accessing program guide 102 from a  
25 currently tuned program and browsing through other currently tuned programs. As shown in Figure 5A, the viewer is watching a television show on a display screen 132, such as a Monday Night Football game featuring the Washington Redskins versus the Minnesota Vikings. Clicking on the input device  
30 automatically causes a Program InfoMenu 130 to pop up on a portion of the television screen 132 (see Fig. 5B). Program InfoMenu 130 may allow the viewer to obtain more information about the currently tuned program, move to program guide 102, move to contextual linked services (discussed below), or exit  
35 InfoMenu 130 back to the television show. The viewer may vertically scroll through these options, and select one of the options. For example, clicking on the "Go to program guide"

section immediately transfers the viewer to the program guide, as shown in Figure 4A.

To browse other currently tuned programs, the viewer employs the channel controls (i.e., function buttons 10, see Fig. 1). This allows the viewer to browse through other information menus while viewing the currently tuned program (see Fig. 5C). Alternatively, clutch button 46 may be depressed to switch the modality of local controller 20 and allow the viewer to browse through the channels with cylinder 24. This allows the viewer to browse without taking his or her thumb off cylinder 24 and without looking at remote control device 2. In an exemplary configuration, InfoMenu 130 includes a browsing window 134 that displays ("live") the program in InfoMenu (Fig. 5C). This feature allows the viewer to actually view the programs as he/she browses through them. A single click of cylinder 24 would take the viewer to the browsed program. The remote control device may also include means for switching the sound between the currently tuned program and the program in the browsing window 134.

Figures 6A-6D illustrate a method for changing the mode of the television schedule system. As shown in Figure 6A, the viewer starts in program guide 102, which can be accessed through the Infomenu 130 of the currently tuned program as discussed above or by double clicking on cylinder 24 from the television screen (which will automatically select the default item within the Infomenu). The viewer may navigate to the Mode Menu, which will automatically pull down, allowing the viewer to scroll up and down the list of modes and to click on a menu item to select a different mode. For example, if the viewer wishes to see the Favorites and Reminders Menu 158, the viewer clicks on "Favorites and Reminders" and moves to this mode, as shown in Figure 6D. Note that the design of the representative remote control device 2 allows the viewer to easily scroll through the various menus of the program guide without looking at remote control device 2. In addition, the viewer can access various modes and scroll through the different menus simply by using his or her thumb.

Figures 7A-7D depict a method of navigating to a submode menu with the program guide 102. One of the advantages of the television schedule system of the present invention is that the submode menus dynamically change depending on the Mode. For example, if the viewer desires to view the programs on a different day (other than the current day), he or she navigates to date area 116 by pressing once on upper button 42 of global controller 22. This moves the viewer to date area 116, where a submode menu 118 automatically scrolls down, as shown in Figure 7B. The viewer may then scroll through the days of the week with rolling cylinder 24, which will become highlighted as the cursor moves through each day. To select another date, the viewer simply clicks on cylinder 24 and program matrix 106 jumps forward to another day, for example, Wednesday, as shown in Figure 7D.

Figures 8A-8D illustrate a method of opening up Item InfoMenus with remote control device 2. As the viewer is scrolling around program matrix 106, clicking on a selected item will open up its InfoMenu 130, as shown in Figure 8B. The InfoMenu 130 is a gateway to information about programs and items and services linked to them. For example, the viewer may scroll down InfoMenu 130 to the item "record this program". Once the item is selected, the viewer simply clicks on the item and a record submenu 152 appears where the viewer can specify how this program is to be added to the recording list (see Fig. 8C). The viewer can scroll up and down record submenu 152 and click on the desired choice. If the viewer scrolls up on the InfoMenu 130 instead of down, the info item will highlight in yellow and expand downward to review additional information about the program item, as shown in Figure 8D. This expanded info item 154 will collapse automatically when the viewer scrolls downward.

The system and method of the present invention may be configured to automatically or manually customize the television schedule guide to an individual viewer or a group of viewers, e.g., a family. In this embodiment, the remote control device may be used to select certain programs, and a memory stores the television programs that have been selected



by the viewer. The programs can be selected for a variety of reasons, such as a designated the program as a favorite, placing a reminder to watch the program or, when the television schedule system includes a recording device, placing an automatic reminder to the program guide to record the program. In a specific configuration, the system further includes a visual display, such as a physical icon within the cell, for indicating that a program has been selected. In addition, the program guide includes a selection window that displays some or all of the programs that have been selected by the viewer. The input device will allow the viewer to activate and deactivate the selection window, and to move between each program within the selection window and activate programs to obtain information associated with the selected program.

In an exemplary embodiment, the system includes a database containing each program within the television schedule. The database may be included within a computer integrally combined with the television (e.g., PCTV), a computer that is coupled to the television through suitable lines, or the database may be accessed from a remote computer, e.g., via the internet or other communication medium. Within the database, each program is associated with a variety of criteria or features, such as particular actors, actresses, directors, the type of movie (e.g., action, comedy) and the like. When the viewer selects a program as a favorite, for example, he or she will have the option of designating the criteria or reason(s) that the program is a favorite (i.e., actor, director, etc.). The computer will include a processor and suitable software for automatically searching the database for other programs having the same criteria. The processor will automatically place the programs that include the designated criteria into the selection window and provide visual indication of each program in the matrix of cells in the program guide. In this way, the program guide will automatically customize itself to the individual viewer to facilitate use of the television schedule.

Figures 9A-9F illustrate a method for designating a program as a favorite. For example, an Item InfoMenu 130 is opened and the viewer scrolls down to section (4), and selects "Put this program on my favorite list" by clicking cylinder 24. A Favorites submenu automatically appears with a panel asking the viewer why this program has been shown as a favorite. For example, Figure 9B illustrates a Favorites submenu 155 for a sitcom or program and Figure 9C illustrates a submenu 156 for a movie. Other types of programs will have other unique submenus. The viewer is given a choice to scroll down to choose reasons for selecting the program as a favorite, such as performers, categories, series as a whole, etc. This feature could also be utilized to allow the viewer to go to the database of his or her preferences. It would then be possible to link to other programs with matching criteria, thereby allowing the viewer to customize the system to his or her needs. For example, if the viewer selects "performers" (see Figure 9C), this would bring up a listing of known performers (or a similar appropriate listing) in this program. The viewer then identifies which ones are favorites. After specifying the criteria for being a favorite, a confirmation panel (not shown) may appear that allows the viewer to o.k. the action. When the viewer returns to the Items Info Menu, a favorite symbol has been added to the title and menu item (4) now gives the option to remove the program from the favorites list (see Figure 9D). This cursor functionality is found throughout this system and is the easiest way to add or remove items from the list. After the program has been selected as a favorite, it is added to the Favorites and Reminders list 158, as shown in Figure 9E. The system will then automatically search the guide to determine which programs include the specified performers. In addition, the system may be configured to continuously perform this search as new programs appear in the guide each day. Henceforth, some or all program items containing the viewer's specified performers would be marked with a star and appear on the "favorites" list.

Figures 10A-10D illustrate a method for utilizing television schedule system to create a program reminder. Similar to the "favorites" method discussed above, an Item's InfoMenu 130 is opened and the viewer scrolls down to item (5) "Reminding when the program airs" and selects this item. A reminder submenu 160 is then activated to provide the viewer with various items for the times and number of reminders, as shown in 10B. This reminder submenu 160 can vary depending on the program's type or scheduling configuration. After specifying the recording option, a confirmation panel (not shown) will appear, allowing the viewer to o.k. the action. When the viewer has returned to the Item's InfoMenu 130 (see Figure 10C), a reminder symbol has been added to the title and menu item (5) now gives the option to remove the program's reminder. After the program is scheduled for reminder, it is added to the "Favorites and Reminder" list, as shown in Figure 10D.

Figures 11A-11E illustrate a method of ordering video on demand. As shown in 10A, the viewer opens up the program's InfoMenu 130 and thumb scrolls down to the "order videos" item. The viewer is then presented with an easily scrollable matrix or menu (not shown) of movies or other programs that may be ordered. To facilitate this process, the system may include a text or feature searching program that allows the viewer to search for a particular movie, a particular type of movie, movies having a certain actor or actress, etc. Once a program has been selected, the viewer will be taken to a menu 162 associated with this program, as shown in Figure 11B. The menu will allow the viewer to directly order the program, or order other programs, such as interviews, specials, etc., that are associated with the program. Some, denoted with a dollar sign, are purchasable. Free items would be instantly accessible to the viewer. The viewer may be prompted to a simple procedure to specify when the movie is to be delivered. When the viewer selects a particular program requiring a financial transaction, a purchasing sequence unfolds. As shown in Figure 11C, the viewer is prompted to enter the master password/access code

via the remote keypad or other means. For example, the viewer could swipe his or her credit card through slot 60 (Fig. 1). If the password/access code is accepted, the viewer is given a final opportunity to review the purchase and/or either confirm  
5 or return to the previous item menu (see Figure 11D). When the viewer confirms his or her purchase and/or order, a receipt 170 is shown (Fig. 11E). The viewer is given the choice of returning to the previous item menu or, as always, at the very bottom item "0", to return to the program guide.

10 Although the foregoing invention has been described in detail for purposes of clarity, it will be obvious that certain modifications may be practiced within the scope of the appended claims. For example, the system may be configured for sorting, mixing and preparing a special customized line-up  
15 of channels within program guide 102. In addition, the viewer can automatically tune to a desired program or can select different programs for automatic recording. A detail description of suitable systems for automatic tuning and  
20 automatic recording can be found in commonly assigned U.S. Patent No. 4,706,121 and application Serial No. 08/423,411, the complete disclosure of which is incorporated herein by reference.

WHAT IS CLAIMED IS:

1           1.    A schedule system for displaying schedule  
2 information on a visual interface on which is displayed a  
3 primary display for showing a program on a currently-tuned  
4 channel, the schedule system comprising:  
5            a browsing window for displaying program information  
6 over a portion of the visual display in conjunction with the  
7 primary display, the browsing window including an active  
8 window for displaying programs on channels other than the  
9 currently-tuned channel; and  
10          an input device for activating and deactivating the  
11 browsing window, the input device including a controller for  
12 moving through channels to change the program displayed on the  
13 active window.

1           2.    The system of claim 1 wherein the schedule  
2 information is television schedule information and the visual  
3 interface is a television screen, and wherein the browsing  
4 window further includes an information window having one or  
5 more items, the controller including means for moving between  
6 the items and activating each item.

1           3.    A television schedule system for displaying  
2 television schedule information on a television screen on  
3 which is displayed a primary display for showing a program on  
4 a currently-tuned channel, the television schedule system  
5 comprising:  
6            a program guide for displaying television schedule  
7 information over the television screen, the program guide  
8 including a matrix of cells containing the television schedule  
9 information and an active window for displaying a program that  
10 is currently being shown on a television channel; and  
11          an input device for activating and deactivating the  
12 program guide, the input device including a controller for  
13 interacting with the active window to control the program that  
14 is shown therein.

1           4.    The system of claim 3 wherein the active window  
2 displays the program on the currently-tuned channel.

1           5.    The system of claim 3 wherein each cell within  
2 the matrix of cells depicts a program title, the controller  
3 being configured to move a cursor to each cell, the system  
4 further including means for changing the program displayed on  
5 the active window in response to movement of the cursor  
6 through each cell such that the program displayed on the  
7 active window corresponds to the program title within the cell  
8 containing the cursor.

1           6.    The system of claim 5 wherein the controller  
2 includes a toggle switch for toggling between a first mode, in  
3 which the active window displays the program on the currently-  
4 tuned channel, and a second mode, in which the program  
5 displayed on the active window corresponds to the program  
6 title within the cell containing the cursor.

1           7.    The system of claim 3 wherein the program guide  
2 includes a message area for displaying commercial messages to  
3 the viewer, and wherein the controller includes means for  
4 moving to the message area and means for activating the  
5 message area to obtain more information associated with the  
6 commercial messages.

1           8.    A television schedule system for displaying  
2 television schedule information on a television screen, the  
3 television schedule system comprising:

4           a program guide for displaying television schedule  
5 information over the television screen, the program guide  
6 including a matrix of cells, with each cell containing  
7 information associated with a television program and having a  
8 length that is proportional to a length of the television  
9 program;

10          an input device for activating and deactivating the  
11 program guide, the input device including a controller for  
12 moving a cursor to each cell; and

13 visual display means within each cell for displaying  
14 an amount of time left in the associated television program.

1 9. The system of claim 8 wherein the visual  
2 display means comprises means for highlighting a portion of  
3 each cell, the highlighted portion of each cell representing  
4 the amount of time left in the associated television program,  
5 the system further comprising means for reducing a length of  
6 the highlighted portion of each cell to continuously indicate  
7 the amount of time left in the associated program.

1 10. A schedule system for displaying schedule  
2 information on a visual interface, the schedule system  
3 comprising:

4 a program guide for displaying schedule information  
5 over the visual interface, the program guide including a  
6 matrix of cells, with each cell containing information  
7 associated with a program being displayed on the visual  
8 interface;

9 an input device for activating and deactivating the  
10 program guide, the input device including a controller for  
11 moving a cursor to each cell and for selecting the program  
12 associated with each cell; and

13 a memory, operatively coupled to the program guide,  
14 for storing programs that have been selected by the viewer.

1 11. The system of claim 10 further comprising a  
2 database containing each program within the television  
3 schedule, the database including a plurality of criteria, with  
4 each program being associated with one or more criteria.

1 12. The system of claim 11 further comprising means  
2 for designating one or more criteria for each program that is  
3 selected and means for searching the database to determine  
4 other programs that include the designated criteria.

1 13. The system of claim 12 wherein the searching  
2 means comprises a processor configured to automatically search

3 the database for programs within the designated criteria,  
4 wherein the processor automatically places the programs that  
5 include the designated criteria into the selection window and  
6 provides visual indication of each program within the  
7 designated criteria in the matrix of cells in the program  
8 guide.

1 14. A method for displaying schedule information on  
2 a visual interface on which is displayed a primary display for  
3 showing a program on a currently-tuned channel, the method  
4 comprising:

5 activating a browsing window over a portion of the  
6 visual interface in conjunction with the primary display;

7 displaying the program on channels other than the  
8 currently-tuned channel in an active window of the browsing  
9 window; and

10 changing the program displayed on the active window.

1 15. The method of claim 14 further comprising:  
2 displaying an information window in the browsing  
3 window;

4 moving between items within the information window;

5 and

6 selecting one of the items.

1 16. The method of claim 14 wherein the selecting  
2 step includes activating a program guide containing television  
3 schedule information and displaying the program guide on the  
4 television screen.

1 17. The method of claim 14 wherein the selecting  
2 step includes activating an information item and displaying  
3 information associated with the program in the browsing  
4 window.

1 18. A method for displaying television schedule  
2 information on a television screen on which is displayed a



3 primary display for showing a program on a currently-tuned  
4 channel, the method comprising:

5           activating a program guide with television schedule  
6 information to display the program guide on the television  
7 screen; and

8           displaying a program that is currently being shown  
9 on a television channel on an active window in the program  
10 guide.

1           19. The method of claim 18 further comprising  
2 displaying the program on the currently-tuned channel in the  
3 active window.

1           20. The method of claim 18 further comprising:  
2           displaying program titles within a matrix of cells  
3 in the program guide;  
4           moving to one of the cells; and  
5           changing the program displayed on the active window  
6 to correspond to the program title within said one of the  
7 cells.

1           21. The method of claim 18 further comprising:  
2           displaying a commercial message in a message area of  
3 the program guide;  
4           moving to the message area;  
5           activating the message area to obtain more  
6 information associated with the commercial message.

1           22. A method for displaying television schedule  
2 information on a television screen, the method comprising:  
3           activating a program guide with television schedule  
4 information to display the program guide on the television  
5 screen;  
6           selecting a program within the television schedule  
7 information; and  
8           storing the selected program within a memory.

1           23. The method of claim 22 further comprising:

2 storing a plurality of criteria within a database;  
3 associating each program within the program guide  
4 with one or more of the criteria;  
5 designating one of the criteria for each program  
6 that is selected and searching the database to determine other  
7 programs that fall within the designated criteria; and  
8 wherein the searching step is carried out by a  
9 processor that automatically searches the database for  
10 programs falling within the designated criteria.

1 24. A television schedule system comprising:  
2 a television having a screen display for presenting  
3 television schedule information to a viewer;  
4 a user input device for inputting data, the device  
5 comprising a controller for displacing a moveable cursor on  
6 the screen display and a transmitter for transmitting signals  
7 from the controller; and  
8 a memory for storing information associated with the  
9 television schedule information and the signals received from  
10 the user input device.

1 25. The television schedule system of claim 24  
2 further comprising a processor coupled to the memory and  
3 configured to use a computer program to organize the  
4 television schedule information.

1 26. The television schedule system of claim 24  
2 wherein the controller is configured to displace the cursor in  
3 the X and Y directions on the screen display, wherein the user  
4 input device further comprises a selector for activating an  
5 item on the screen display.

1 27. The television schedule system of claim 24  
2 wherein the user input device further comprises means for  
3 receiving input associated with a viewer's identification and  
4 converting the input into associated signals.

1           28. The television schedule system of claim 24  
2 wherein the user input device further comprises a speech  
3 recognition input device for receiving spoken commands from  
4 the viewer and converting the spoken commands into signals.

1           29. The television schedule system of claim 24  
2 wherein the user input device comprises a local controller for  
3 displacing the cursor within a window on the screen display  
4 and a global controller for moving the cursor between  
5 different windows on the screen display.

1           30. The remote control device of claim 24 wherein  
2 the controller comprises a vertical scroll mechanism for  
3 moving the cursor in a Y direction on the television display,  
4 and a horizontal scroll mechanism for moving the cursor in an  
5 X direction on the television display, wherein the vertical  
6 scroll mechanism includes a selector switch for selecting an  
7 item on the television screen when the cursor is contiguous  
8 with said item.

1           31. The remote control device of claim 30 wherein  
2 the television display comprises a matrix of cells, the  
3 vertical scroll mechanism scrolling the cursor in the Y  
4 direction through the cells and the horizontal scroll  
5 mechanism scrolling the cursor in the X direction through the  
6 cells.

1           32. The remote control device of claim 30 wherein  
2 the casing defines a longitudinal axis, the vertical scroll  
3 mechanism comprising a thumb-operated cylinder rotatably  
4 mounted to the exterior surface of the casing about an axis  
5 substantially perpendicular to the longitudinal axis of the  
6 casing.

1           33. The remote control device of claim 32 wherein  
2 the controller comprises one or more thumb-operated buttons  
3 adjacent the cylinder for scrolling the cursor in the X-  
4 direction.

1           34. The remote control device of claim 24 wherein  
2 the controller further comprises one or more detents  
3 positioned adjacent the controller for provide tactile  
4 sensations to the viewer that correspond to movement of the  
5 cursor.

1           35. The remote control device of claim 24 wherein  
2 the television display comprises a plurality of screen areas,  
3 wherein the controller is a local controller for displacing  
4 the cursor within each screen area, the viewer input assembly  
5 further comprising a global controller for moving the cursor  
6 between the screen, wherein the global controller comprises an  
7 annular ring surrounding the local controller, the ring having  
8 a plurality of thumb-operated direction buttons configured  
9 such that pressing one of the direction buttons moves the  
10 cursor to one of the screen areas in a direction corresponding  
11 to the direction from the local controller to said one of the  
12 direction buttons.

1           36. The remote control device of claim 35 wherein  
2 the global controller comprises a clutch button located on the  
3 exterior surface of the casing, wherein pressing the clutch  
4 button alternates the local controller between a first mode,  
5 in which the local controller moves the cursor within one of  
6 the screen areas, and a second mode, in which the local  
7 controller moves the cursor between the screen areas.

1           37. The remote control device of claim 28 wherein  
2 the speech recognition input device comprises a microphone,  
3 the device further comprising a processor having a speech  
4 recognition function operatively coupled to the microphone for  
5 receiving the spoken commands and controlling a cursor on the  
6 television display in response to the spoken commands.

1           38. The remote control device of claim 37 wherein  
2 the user input assembly further includes a voice input device  
3 for activating and deactivating the microphone.

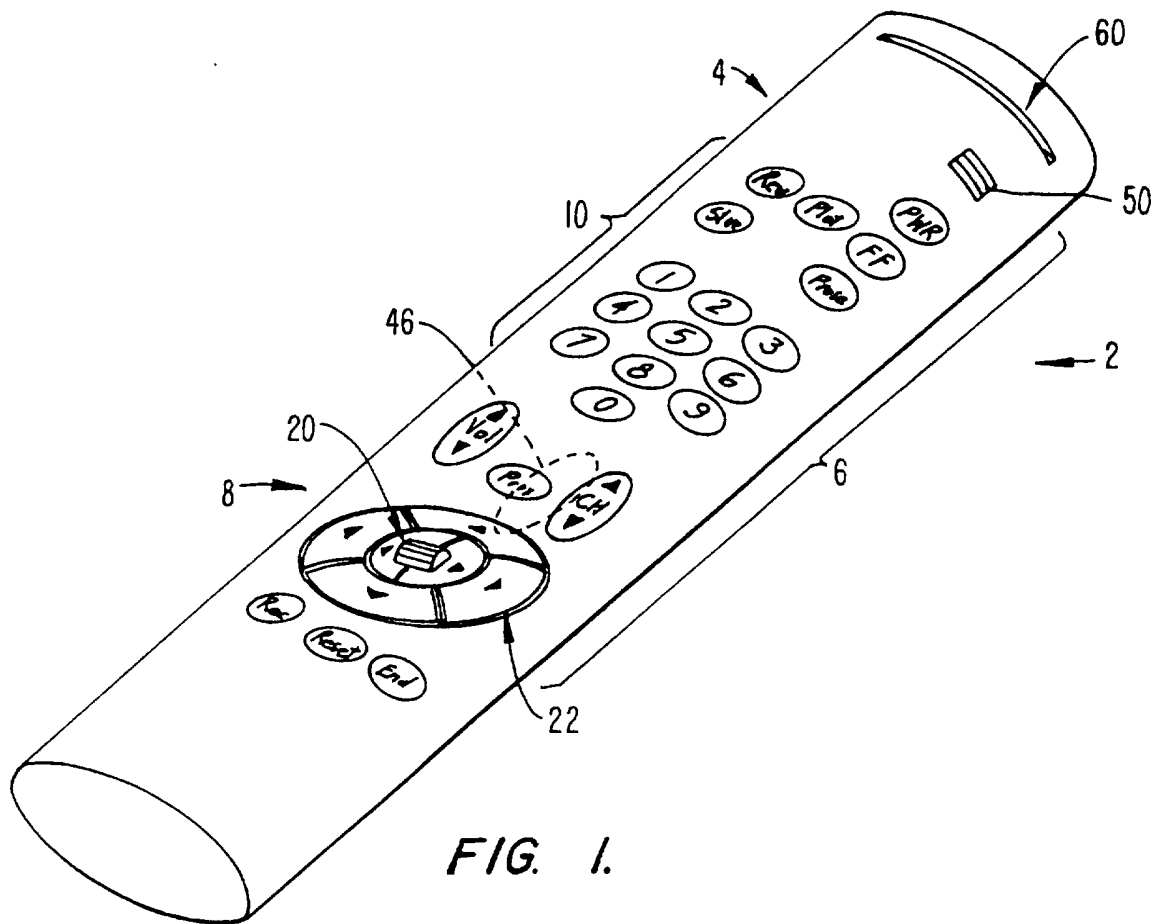


FIG. 1.

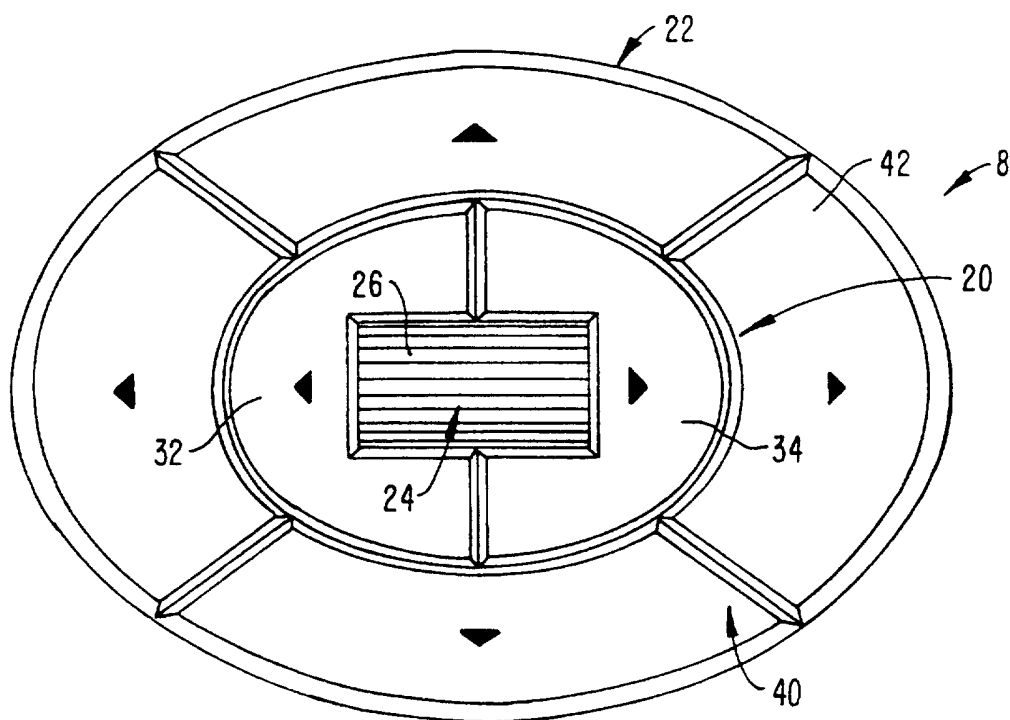


FIG. 2.

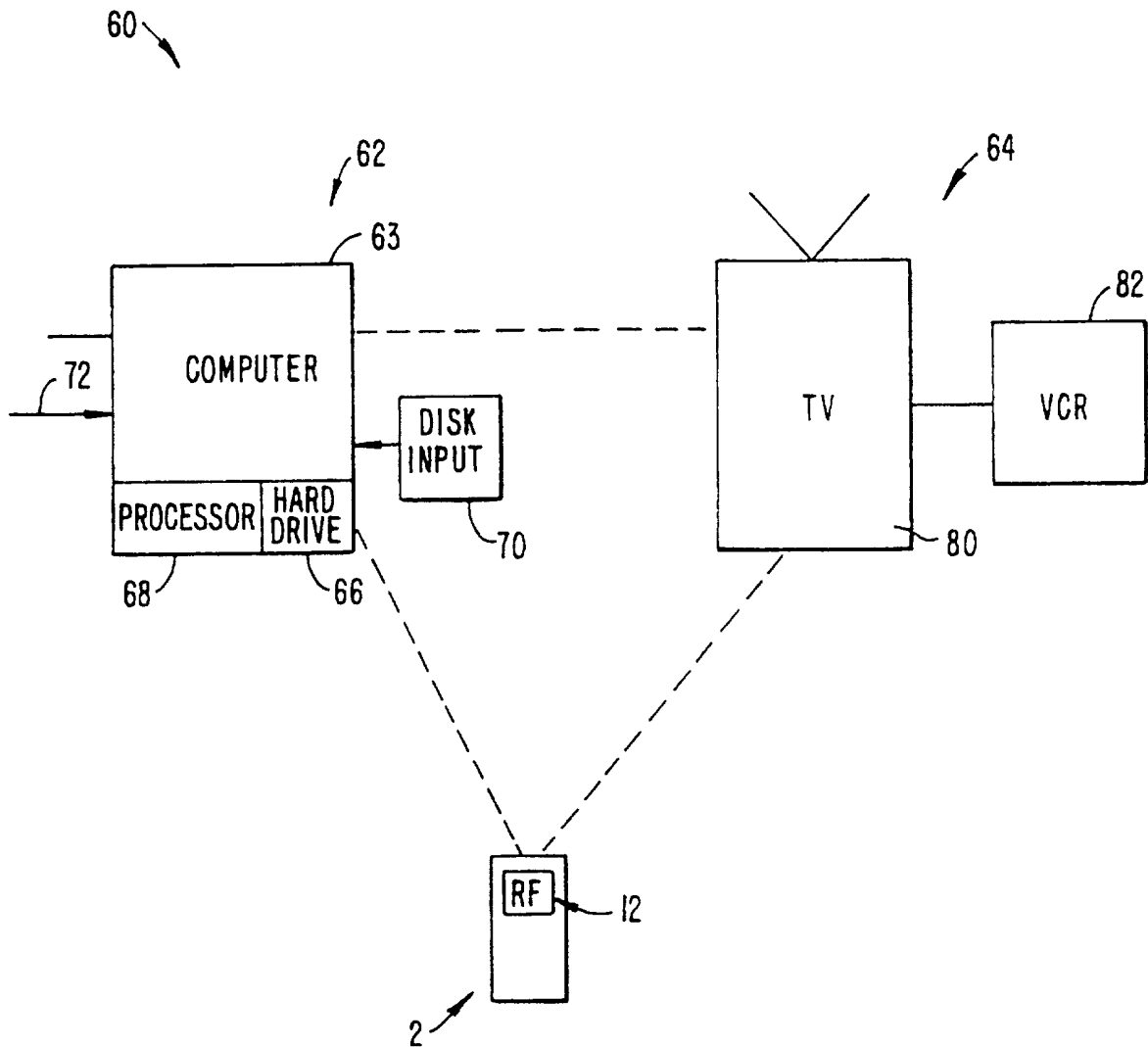
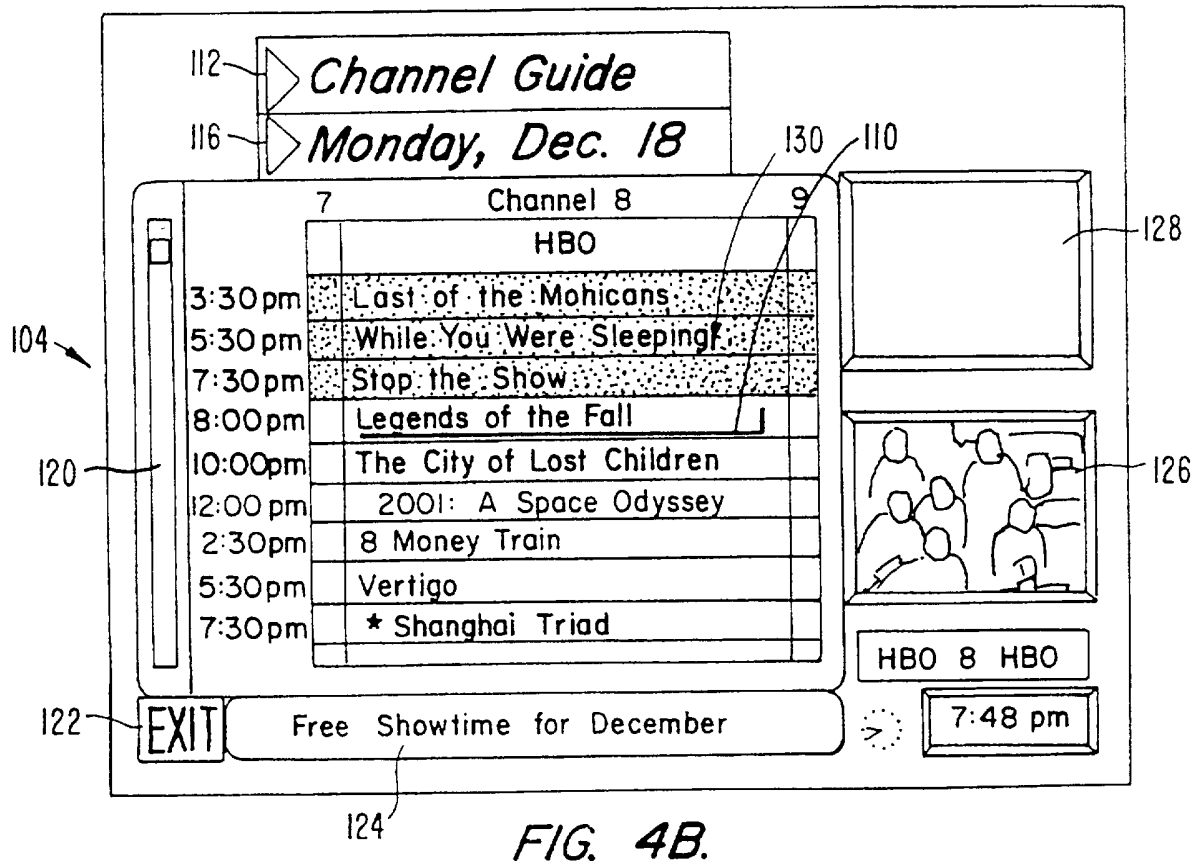
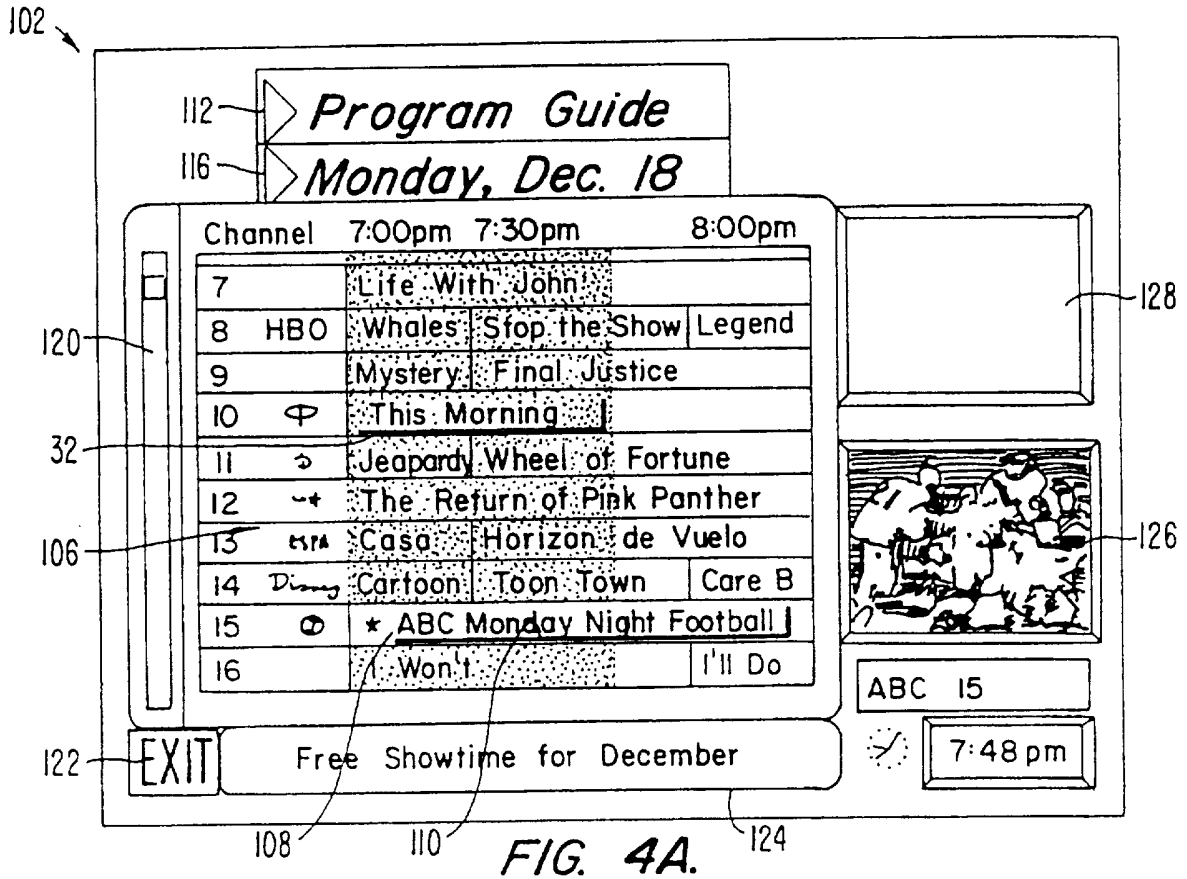


FIG. 3.

3/17

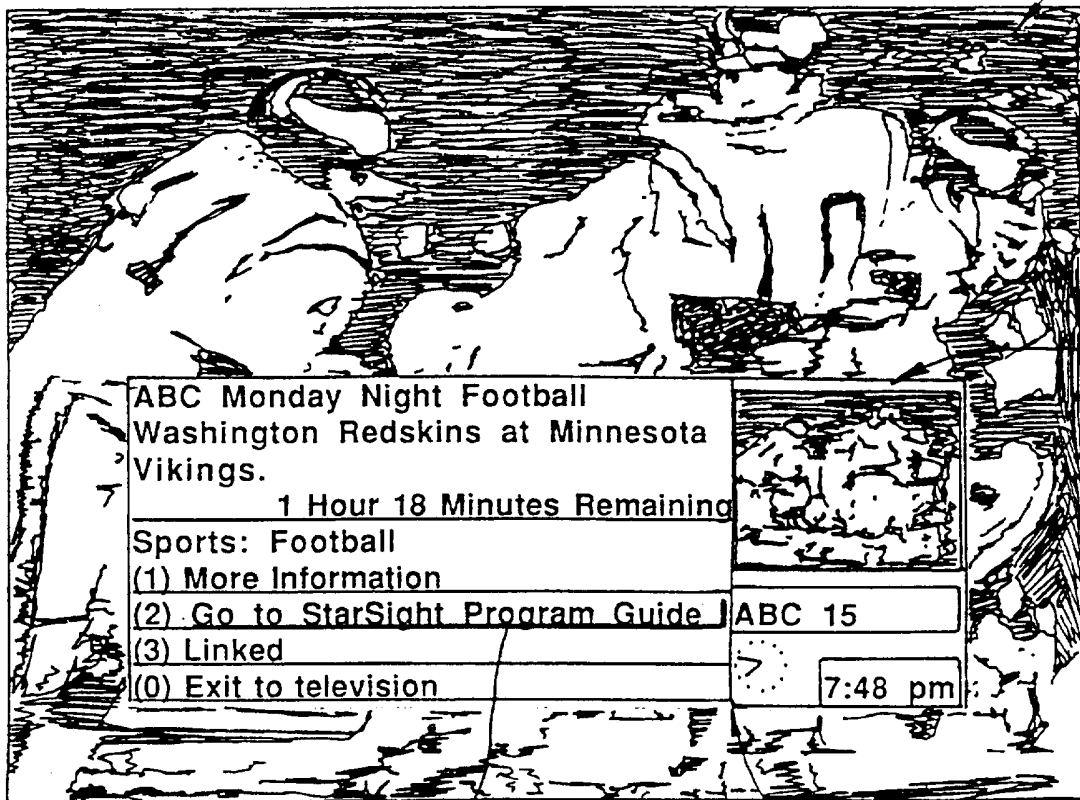


4/17



132

FIG. 5A.



132

134

ABC Monday Night Football  
Washington Redskins at Minnesota Vikings.  
1 Hour 18 Minutes Remaining  
Sports: Football  
(1) More Information  
(2) Go to StarSight Program Guide  
(3) Linked  
(0) Exit to television



ABC 15

7:48 pm

110

130

FIG. 5B.



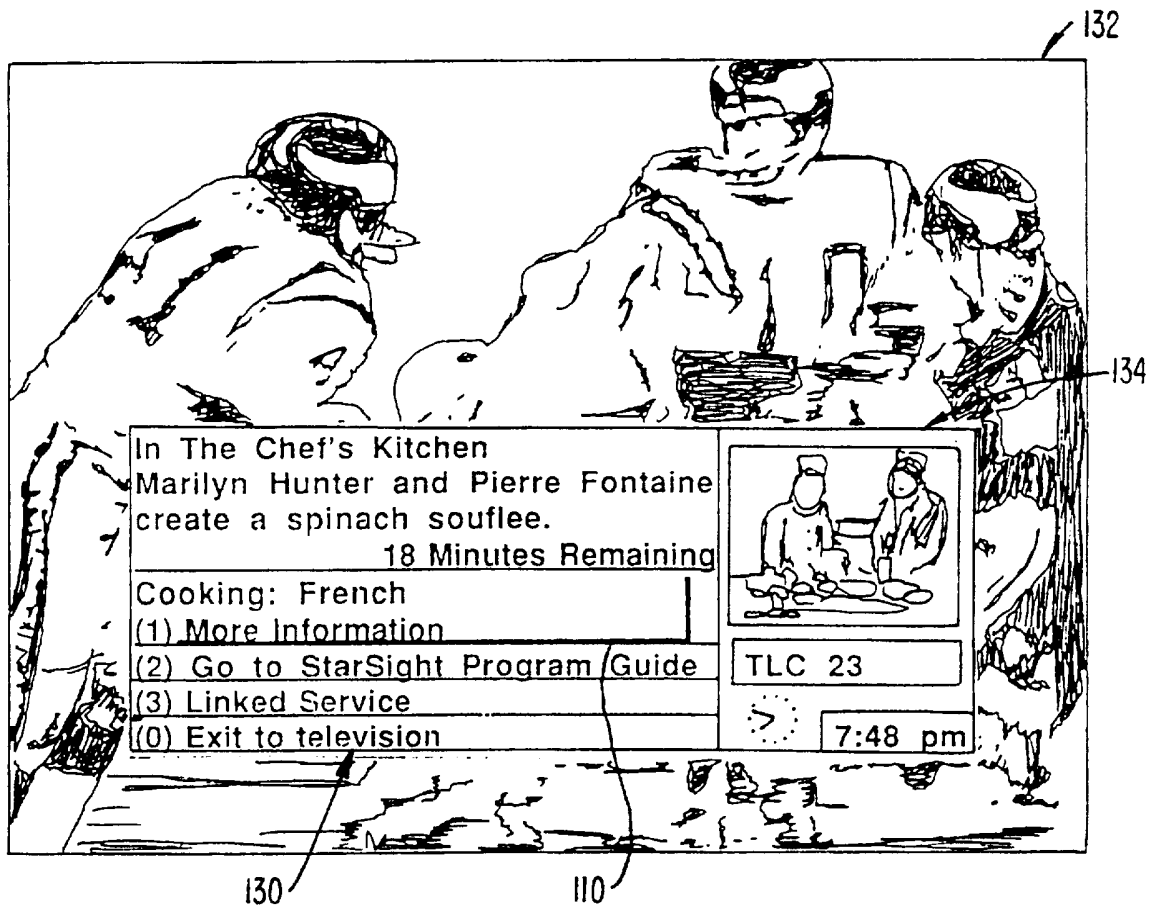


FIG. 5C.

6/17

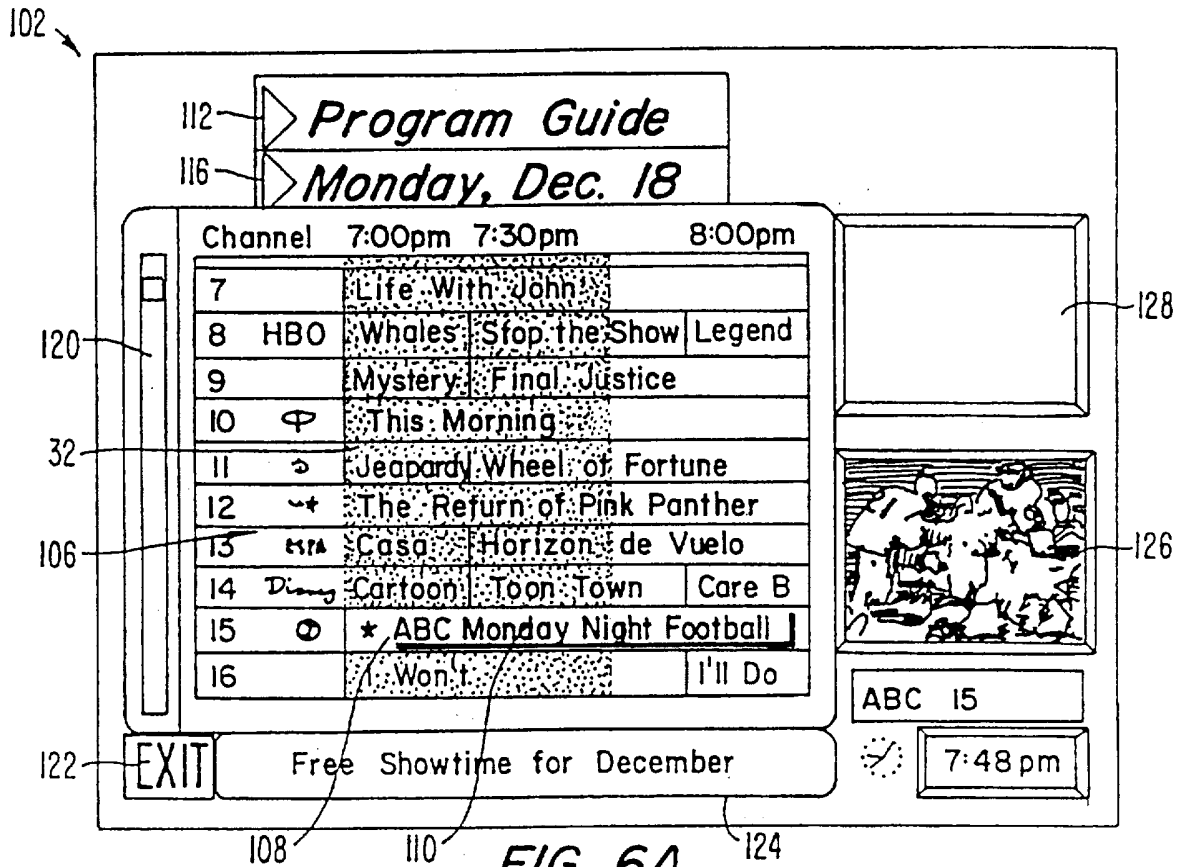


FIG. 6A.

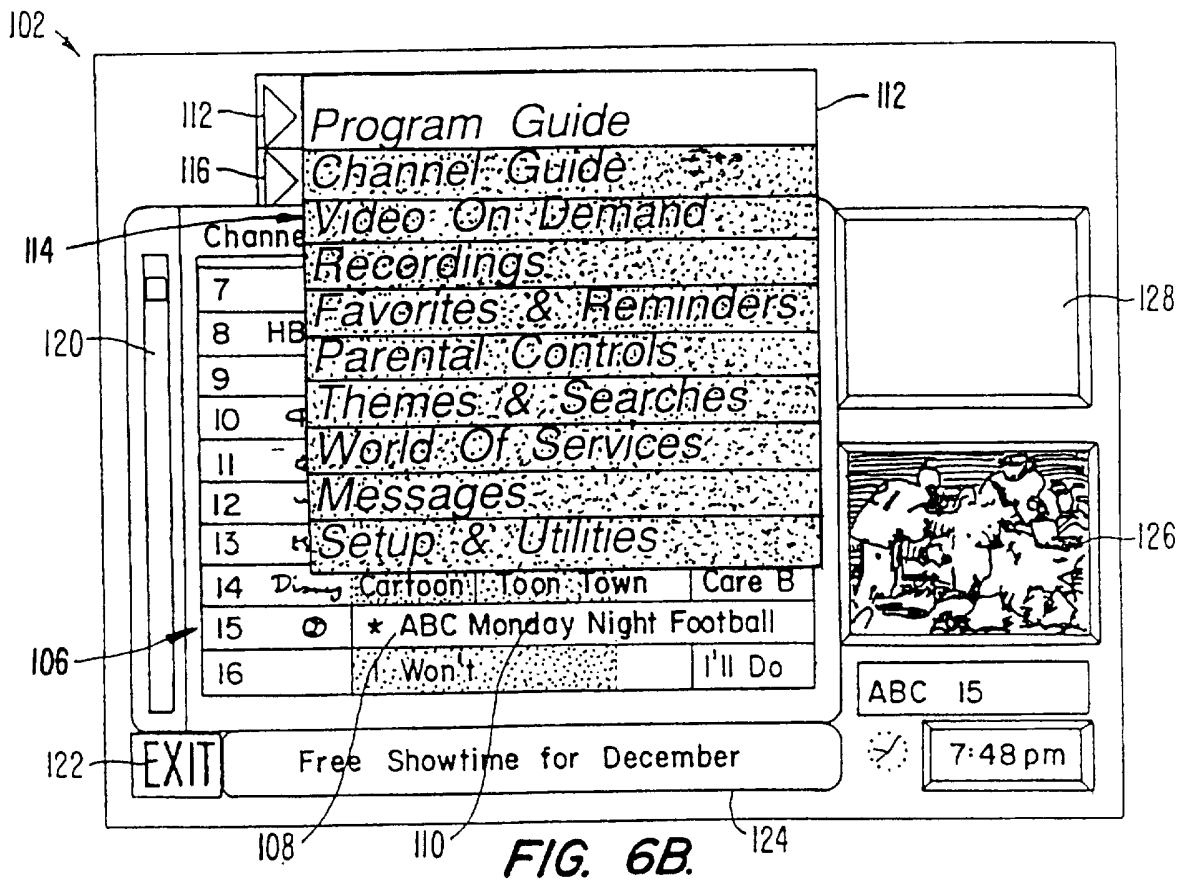


FIG. 6B.

7/17

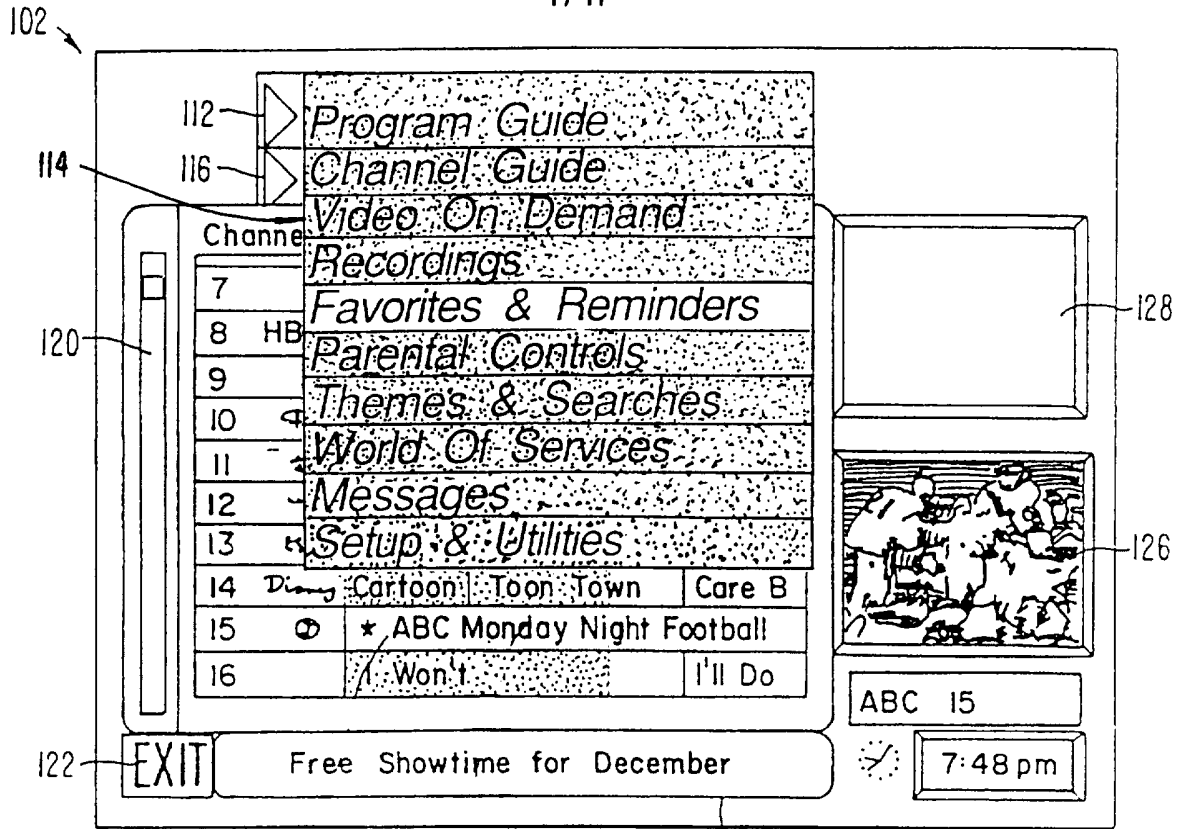


FIG. 6C.

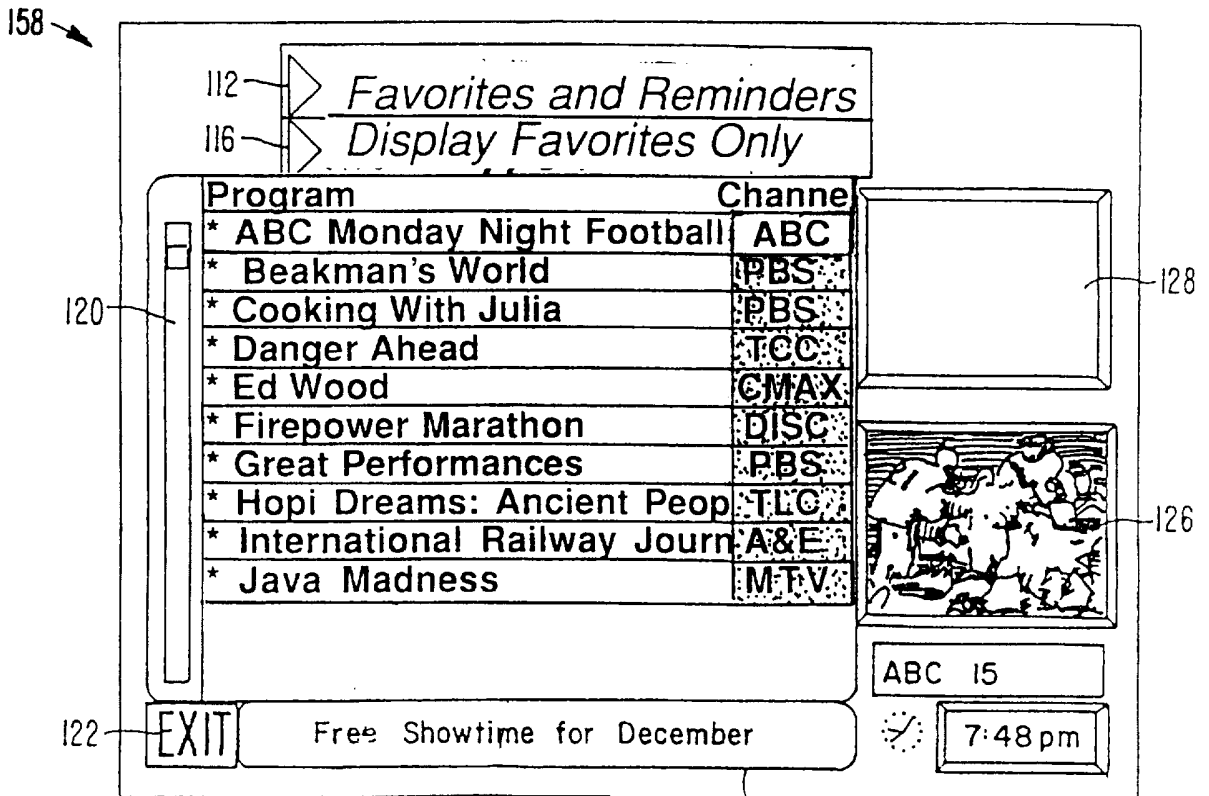
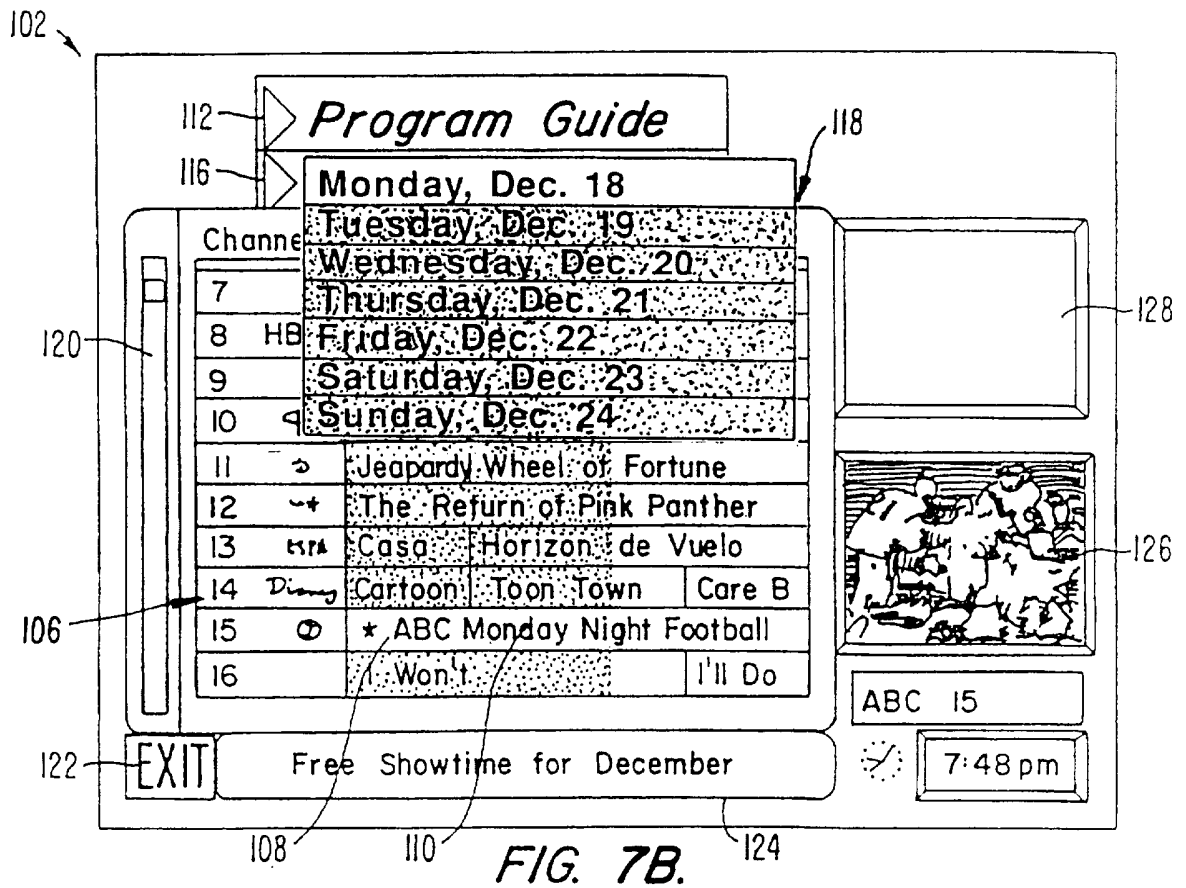
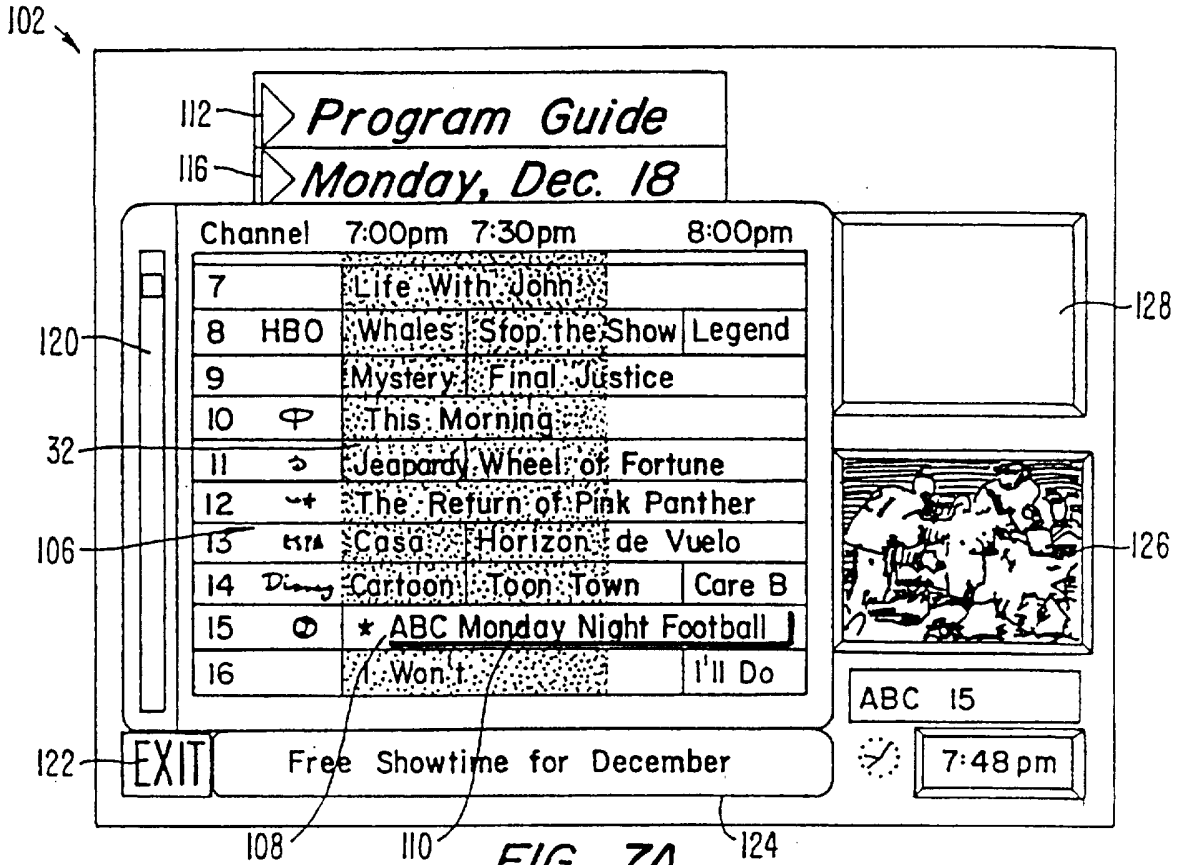
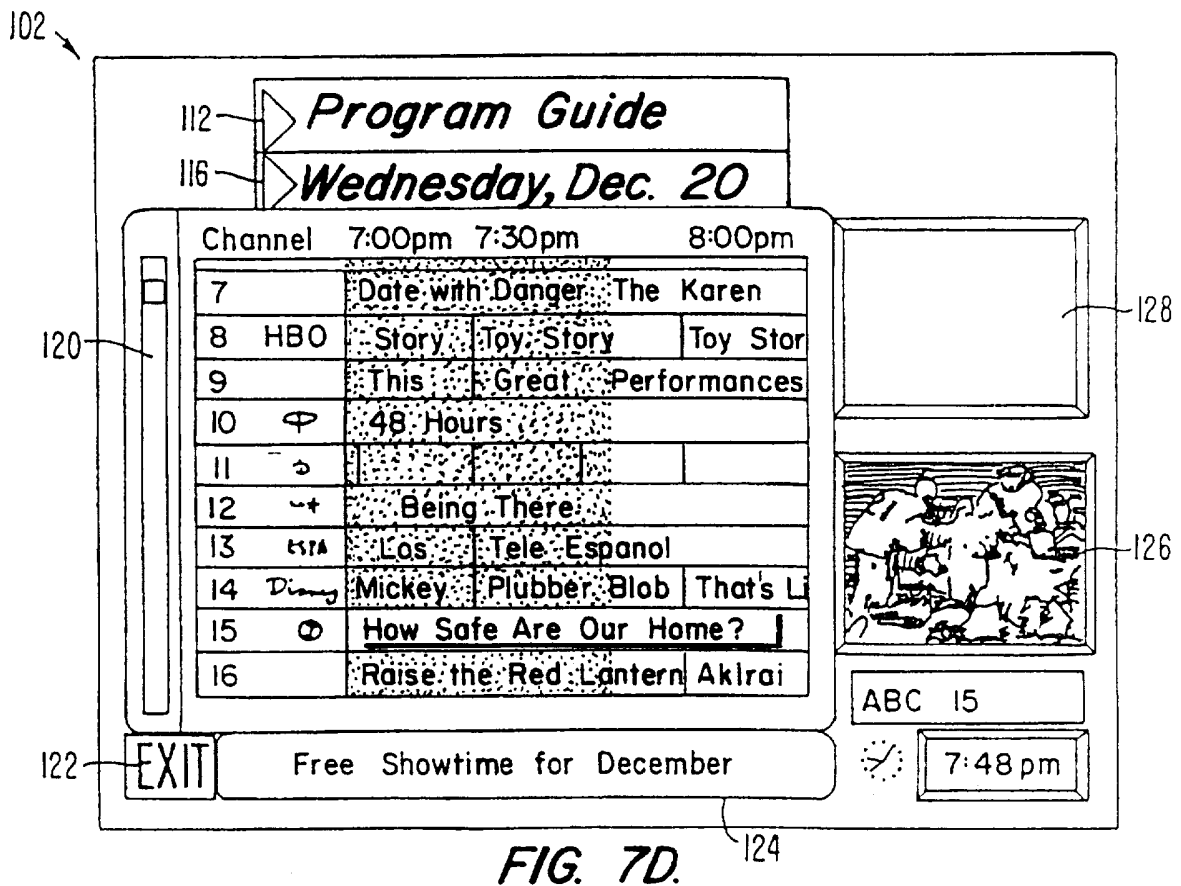
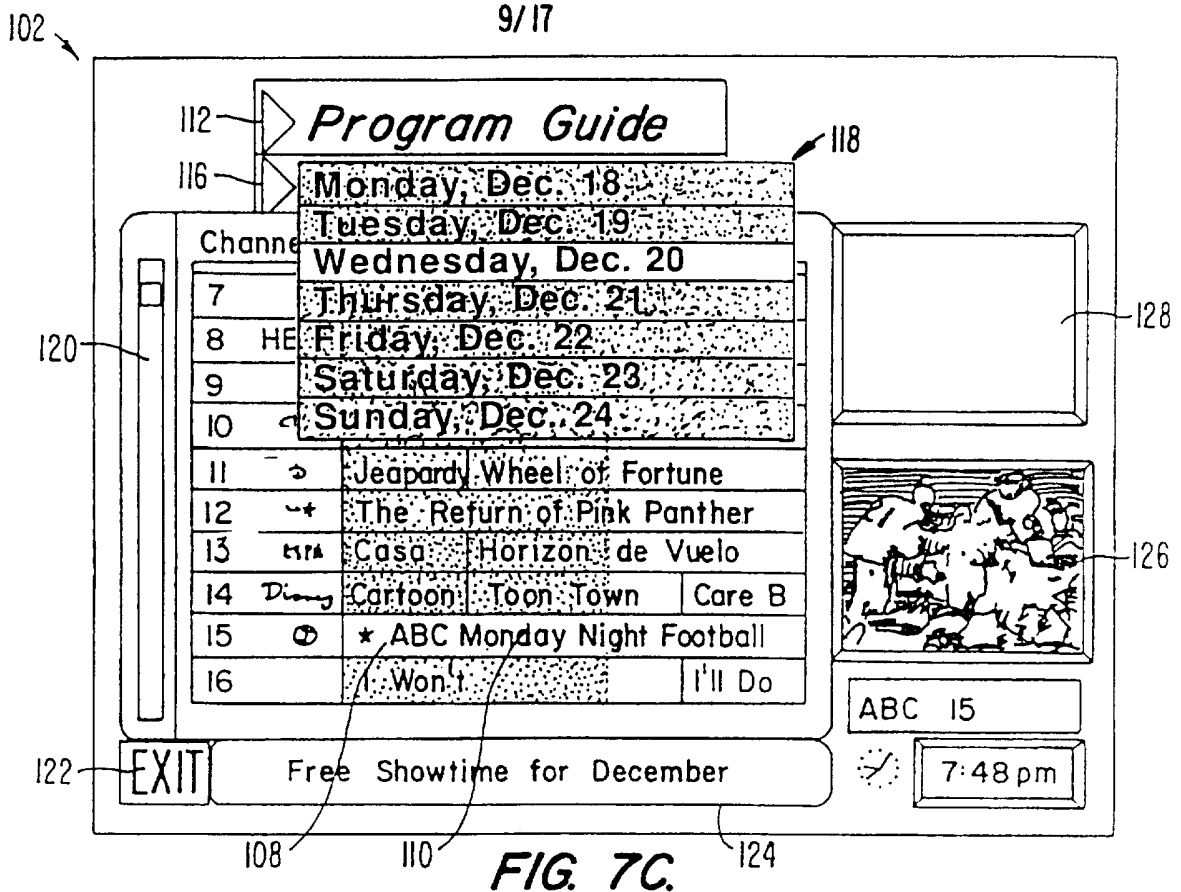
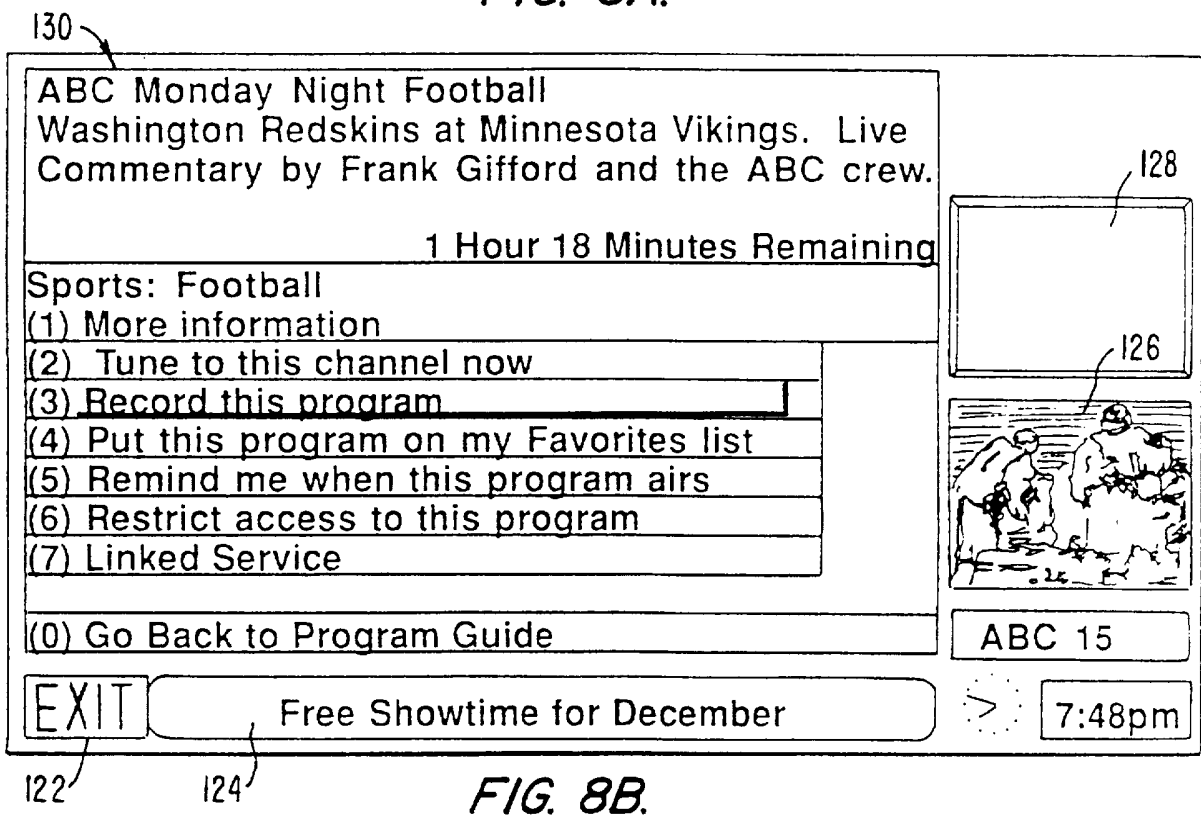
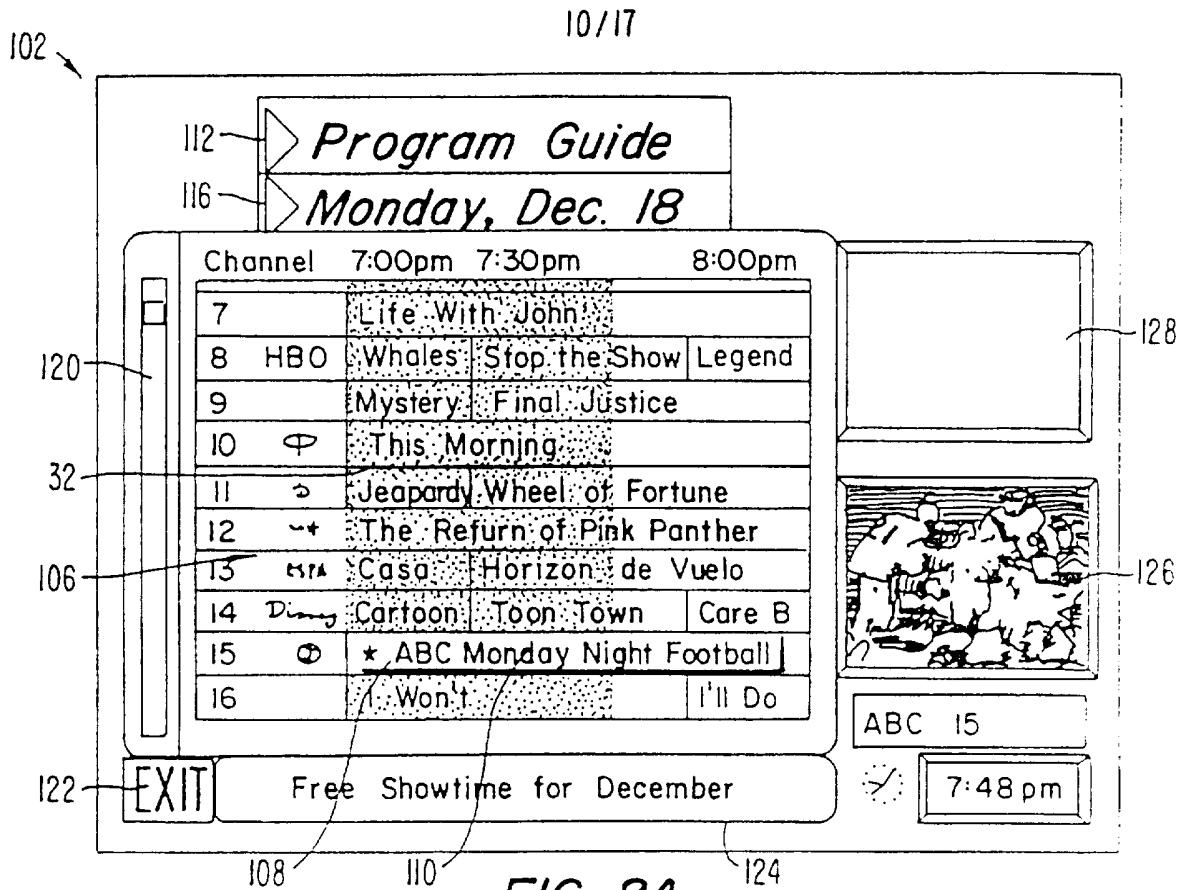


FIG. 6D.

8/17







11/17

ABC Monday Night Football  
Washington Redskins at Minnesota Vikings. Live commentary by Frank Gifford and the ABC crew.

1 Hour 18 Minutes Remaining

Sports: Football

(1) More Information

152 → (2) Record once

(3) Record daily

(4) Record weekly

(<) Back to previous menu

(0) Go Back to Program Guide

FIG. 8C.

ABC Monday Night Football  
Washington Redskins at Minnesota Vikings. Live commentary by Frank Gifford and the ABC crew.

There is room for several additional lines of descriptive information.

154 → Sports: Football

(1) More Information

(2) Tune to this channel

(0) Go Back to Program Guide

FIG. 8D.

12/17

Legends of the Fall Three sons of a retired army officer return from World War I to pursue very different lives. Anthony Hopkins, Brad Pitt, Julia Ormond.	
	2 Hours
Movies: Drama	
(1) More information	
130 →	(2) Tune to this channel now
	(3) Record this program
	(4) <u>Put this program on my Favorite list</u>
	(5) Remind me when this program airs
	(6) Restrict access to this program
	(7) Linked service
	(0) Go Back to Program Guide

FIG. 9A.

155 →	(2) Individual program
	(3) Series as a whole
	(4) Performers
	(5) Category
	(6) Go to favorites list
	(<) Back to previous menu

FIG. 9B.

156 →	(2) Individual movie
	(3) Director
	(4) Performers
	(5) Category
	(6) Go to favorites list
	(<) Back to previous menu

FIG. 9C.

<u>Display all favorites &amp; reminders</u>
Display favorites only
Display reminders only
Clear my list of favorites
Clear my list of reminders
Show other user

FIG. 9F.



13/17

\* **Legends of the Fall**  
 Three sons of a retired army officer return from World War I to pursue very different lives.  
 Anthony Hopkins, Brad Pitt, Julia Ormond

---

Movies: Drama

(1) More Information

(2) Tune to this channel now

(3) Record this program

(4) *Remove this program from Favorites list...*

(5) Remind me when this program airs

(6) Restrict access to this program

(7) Linked Services

---

(0) Go Back to Program Guide

130 ↗

FIG. 9D.

▷ Favorites & Reminders

▷ Display all Favorites & Reminders

Program	Time
* ABC Monday Night Football	7:00pm
* Beakman's World	1:00pm
* Cooking With Julia	9:00pm
* A Danger Ahead	1:00pm
* Ed Wood	4:00pm
* Firepower Marathon	6:30pm
* Great Performances	9:00pm
* Hopi Dreams: Ancient People	5:00pm
* International Railway Journeys	6:00pm
* Legends of the Fall	8:00pm

  
**HBO 8 HBO**

**EXIT** Free Showtime for December  **7:48 pm**

158 ↗

FIG. 9E.

14/17

Legends of the Fall Three sons of a retired army officer return from World War I to pursue very different lives. Anthony Hopkins, Brad Pitt, Julia Ormond.	
	2 Hours
Movies: Drama (1) More Information	
130 ↗	(2) Tune to this channel now
	(3) Record this program
	(4) Put this program on my Favorites list
	(5) Remind me when this program airs...
	(6) Restrict access to this program
	(7) Linked Services
	(0) Go Back to Program Guide

FIG. 10A.

160 ↗	(2) Reminder Once
	(3) Reminder for weekly series
	(4) Go to reminders list
	(<) Back to previous menu

FIG. 10B.

✓ Legends of the Fall Three sons of a retired army officer return from World War I to pursue very different lives. Anthony Hopkins, Brad Pitt, Julia Ormond.	
	2 Hours
Movies: Drama (1) More Information	
130 ↗	(2) Tune to this channel now
	(3) Record this program
	(4) Put this item on my Favorites list
	(5) Remove this program's reminder
	(6) Restrict access to this program
	(7) Linked Services
	(0) Go Back to Program Guide

FIG. 10C.

Favorites & Reminders  
 Display all favorite & reminders

Program	Time
<input checked="" type="checkbox"/> ABC Monday Night Football	7:00pm
<input checked="" type="checkbox"/> Beskman's World	1:00pm
<input checked="" type="checkbox"/> * Cooking with Julia	9:00pm
<input checked="" type="checkbox"/> Danger Ahead	1:00pm
<input checked="" type="checkbox"/> * Ed Wood	4:00pm
<input checked="" type="checkbox"/> Firepower Marathon	6:30pm
<input checked="" type="checkbox"/> Great Performance	9:00pm
<input checked="" type="checkbox"/> Hopi Dreams Ancient People	5:00pm
<input checked="" type="checkbox"/> International Railway Journeys	6:00pm
<input checked="" type="checkbox"/> Legends of the Fall	6:00pm

EXIT    Free Showtime for December    7:48 pm

158 ↗

FIG. 10D.

Movies: Drama  
 (1) More Information  
 (2) Tune to this channel now  
 (3) Record this program  
 (4) Put this program on my Favorites list...  
 (5) Remind me when this program airs  
 (6) Restrict access to this program  
 (7) Linked Services...  
 (0) Go Back to Program Guide

130 ↗

FIG. 11A.

Movies: Drama  
 (1) More information  
 (2) \$ Order Movie when you like  
 (3) \$ HBO Interview Brad Pitt  
 (4) A Hopkins "Remains of the Day"  
 (5) \$ Universal Picture Online...  
 (6) \$ Universal Studios Family Ticket Offer  
 (<) Back to previous menu  
 (0) Go Back to Program Guide

162 ↗

FIG. 11B.

16/17

Entering Password

By entering your password, you are confirming a purchase or validation of your ID. Please enter your password to order this movie for the listed purchase price.

Help: Password

(1) Info on (Legends of the Fall) \$3.95

Enter Password for Delivery in 7 minutes @ 7:55pm Legends of the Fall - \$3.95 \* \* \* \* \*

(2) Accept Password... (<) Back to previous menu

(0) Go Back to Program Guide

FIG. 11C.

Confirming Your Purchase

You have successfully entered your password. Clicking on "Yes" item will finalize your purchase.

Help: Confirming Your Purchase

(1) Info on (Legends of the Fall) \$3.95

You have successfully entered your password. Are you sure you want to proceed to finalize your order?

(2) Yes (<) No (Back to previous menu)

(0) Go Back to Program Guide

FIG. 11D.

17/17

Legends of the Fall  
Three sons of a retired army officer return from World War I to pursue very different lives.  
Anthony Hopkins, Brad Pitt, Julia Osmond.

Video On Demand price - \$3.95

Movies: Drama  
(1) More information

170 ↗

Your Order Confirmed!

12.15.95	Or.#950384383	It.#345VODL
Account 234.85430		Purchase: \$3.95

(2) OK (back to previous menu)

(3) Go to your list of purchase

(0) Go Back to Program Guide

FIG. 11E.

INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US97/09337

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(6) :H04N 07/10, 07/14, 05/445 US CL :Please See Extra Sheet. According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) U.S. : Please See Extra Sheet. Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ---- Y	US 5,436,676 A(PINT et al) 25 July 1995, entire document, especially fig. 3 and fig. 2.	3-4 ---- 5-7
X,P ---- Y,P	US 5,594,509 A (FLORIN et al) 14 January 1997, col. 15, lines 28-61, col. 9, lines 42-60, fig. 12, col. 18, line 9 - col. 20, line 32, fig. 5a, col. 13, lines 11-15.	1-6, 10-13, 22-31 ---- 7-9, 32-38
X,P ---- Y,P	US 5,585,838 A (LAWLER et al) 17 December, 1996, entire document, especially fig. 3, fig. 8.	8, 14-20 ---- 9, 21
Y	US 5,313,282 A (HAYASHI) 17 May 1994, col. 5, line 57 - col. 6, line 4, fig. 1.	32-34
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: *A* document defining the general state of the art which is not considered to be part of particular relevance *E* earlier document published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed		*T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art *&* document member of the same patent family
Date of the actual completion of the international search 05 AUGUST 1997		Date of mailing of the international search report 02 SEP 1997
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230		Authorized officer <i>B. Hardw</i> LINUS H. LO Telephone No. (703) 305-4039

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US97/09337

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,247,580 A (KIMURA et al) 21 September 1993, abstract.	37-38
A,P	US 5,630,119 A (ARISTIDES et al) 13 May 1997, fig. 2, entire document.	1-23
X,P	US 5,557,338 A (MAZE et al) 17 September 1996, abstract, fig. 3b.	1-2
A	US 5,635,978 A (ALTEN et al) 03 June 1997, fig. 7b.	1-25

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US97/09337

**A. CLASSIFICATION OF SUBJECT MATTER:**

US CL :

348/564, 906, 13

**B. FIELDS SEARCHED**

Minimum documentation searched

Classification System: U.S.

348/564, 906, 13, 563, 564, 588, 589, 734, 6, 7, 10, 12, 13, 11; 455/6.2, 6.3, 4.2, 6.1, 5.1