

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
8 March 2001 (08.03.2001)

PCT

(10) International Publication Number  
WO 01/17238 A1

- (51) International Patent Classification<sup>7</sup>: H04N 5/445
- (21) International Application Number: PCT/US00/24121
- (22) International Filing Date: 31 August 2000 (31.08.2000)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
09/387,643 1 September 1999 (01.09.1999) US
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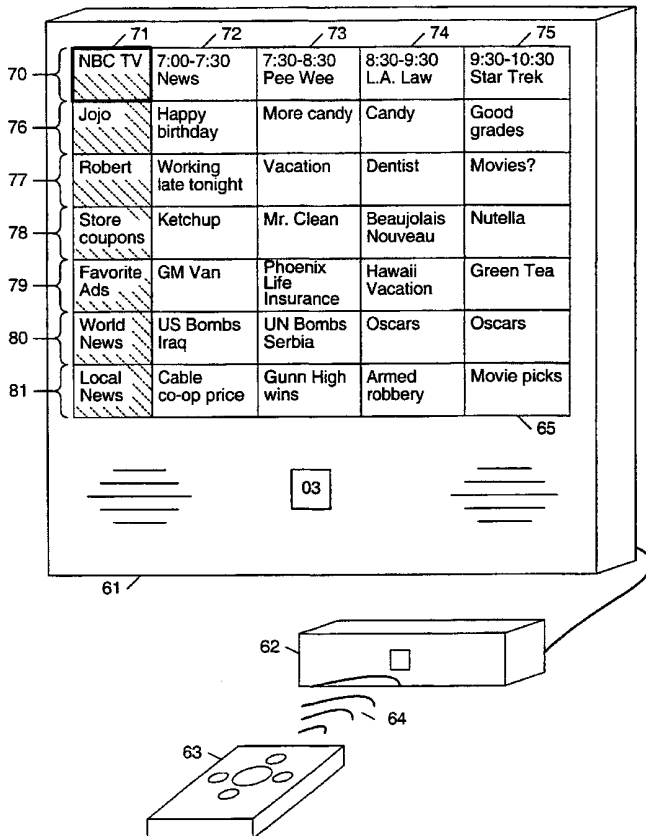
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

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Published:  
— With international search report.

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: UNIFIED SYSTEM FOR TELEVISION AND NON-TELEVISION SERVICE NAVIGATION



(57) Abstract: A unified navigation system for television and non-television services wherein operations of the non-television services are mapped to similar operations of the television service in order to provide a familiar interface to the user. In one embodiment, television channels and other, non-television services are displayed to the user as rows (70, 76, 77, 78, 79, 80, 81) of an electronic program guide (65). User input is provided through a remote control (63) having directional keys for moving a cursor to highlight (71) a selected item in the electronic program guide and one or more keys for activating the selected service. The user can thereby easily select any of the available services. The system can be configured to register newly available services and map their operations to the existing navigation controls. The system can be configured by a service provider or by the user and may incorporate user preferences and access controls.

WO 01/17238 A1

**TITLE: UNIFIED SYSTEM FOR TELEVISION AND NON-TELEVISION SERVICE NAVIGATION****BACKGROUND OF THE INVENTION**1. **Field of the Invention**

5                   The invention relates generally to interactive television systems and more particularly to a user interface for integrated navigation of television, electronic mail, electronic news and other services.

2. **Description of Related Art**

10                  Televisions have become a ubiquitous part of modern society. They are found in most homes, and many homes have two, three, or even more. Many televisions are configured to receive signals through cable or satellite broadcast systems that provide hundreds of channels which can be viewed by subscribers. These televisions may be capable of tuning to selected channels themselves, or they may be coupled to set-top boxes which provide this tuning capability.

15                  As a result of the extremely large number of channels which can be provided to a viewer, navigation systems have been developed to allow the viewer to scan through the channels and select the one he or she wishes to view. When in use, these systems typically display a subset of the available channels on the television screen. A listing of the programs which will be broadcast on each of the channels at particular times may also be provided. This display of the channels and associated programs is sometimes referred to as an electronic program guide. A viewer can use cursor keys on a remote control to move a cursor from one channel to another. The  
20                  cursor typically consists of highlighting which is moved from channel to channel. The viewer can tune to the highlighted channel by pressing a "SELECT" key. When a channel is selected in this manner, the display of the available channels is removed from the screen and the selected channel is displayed.

25                  In addition to providing television programming, television systems may allow various services to be provided to viewers. These services may include internet access, electronic mail, electronic news, shopping, advertising and various other services. These services are intended to enhance the convenience with which the user can access them. The convenience, however, may be less than desired. Although the user gains access to additional services, utilizing these services may require that the user learn entirely new navigation systems. The new services are typically developed independently of the television system and incorporate independently developed user interfaces. These interfaces may be unfamiliar to the user and consequently may be difficult to  
30                  use. The user is therefore subject to a learning curve and it may be some time before use of the services becomes convenient to the user. Since each service may have its own navigation system, the overall operation of the system may require a substantial amount of the user's effort, and may simply be too complex for many users.

**SUMMARY OF THE INVENTION**

35                  One or more of the problems outlined above may be solved by various embodiments of the invention. One embodiment provides a unified system for navigation of different services which may be provided to a user through a television system (e.g., television programming and electronic mail.) The unified navigation system uses a television-style graphical user interface (GUI.) The concept of a channel is generalized and the channel navigation paradigm is applied to the other services. In this way, the unified navigation system leverages the  
40                  user's familiarity with television channel selection to provide a means for selecting items which are associated

with the different services. Because the services and the individual selections for each of the services are presented to the user in a television-style format, the user is able to navigate through the services and selections in the same manner as selecting a television channel.

5 In one embodiment, the available services and associated selections are displayed in a grid. Each row of the grid corresponds to a particular channel or service (a channel may also represent a subset of a service, such as a folder containing a particular group of emails.) The columns of the grid simply divide the rows into a plurality of cells. The leftmost cell of each row identifies the channel, service, folder or other category to which the remainder of the cells relate. The remaining cells identify individual entries associated with the channel, service, folder or category represented by the row. For example, for a particular row, the entry in the leftmost cell may  
10 read "NBC TV." Subsequent cells (from left to right) may identify television programs which will be broadcast on the NBC affiliate, starting at the current time and continuing until the cells of the row are filled. Another row may represent an email service. The leftmost cell in this row may identify an in-box for a particular user or a folder in which particular emails are stored. The subsequent cells in the row may identify individual messages from this in-box or folder which have been transmitted to the user.

15 When the navigation system is started, the grid of available channels and/or services is displayed with one of the cells highlighted. The highlighting is used as a cursor to indicate a chosen cell. The user presses cursor control keys on an input device such as a remote control to move the cursor to different cells in the grid. Attempting to move the cursor beyond the boundaries of the grid may cause the grid to scroll in the direction of the cursor's movement. When the user wishes to select a particular cell, he or she moves the cursor to highlight  
20 that cell. When the cell is highlighted, the user presses a "SELECT" key on the input device to initiate an action associated with that cell. If the cell represents an email message, the action may be displaying the message so that it can be read. If the cell contains a news headline, the action may be displaying an associated news story. If the cell represents a television program, the system may tune in to the selected channel at the selected time.

25 In another embodiment, the navigation system is displayed in the same manner as a banner application for a television system. In other words, a service may be displayed as a banner across the television screen. The banner is typically superimposed across the top or bottom of the television screen, leaving most of the screen available to view the currently selected channel or service. The user can press a key to move through the available channels or services, which are sequentially displayed in the banner. The displayed service can be  
30 to initiate an associated action (e.g., reading messages delivered via an email service.).

The present system can be generalized to virtually any type of television navigation system. In other words, the available services can be displayed, navigated and selected in the same manner as television channels. The present system thereby allows the user to navigate between and within the available services in an intuitive manner. Moreover, the navigation system is one with which the user is already familiar since it is based on the  
35 system's normal television navigation controls and functions. Desired items relating to the different services can be identified and selected, and the corresponding service started at the touch of a button. The system thereby reduces the user's learning curve for new services. The system may also perform other functions, such as managing folders or information, which further reduces the user's learning curve.

### BRIEF DESCRIPTION OF THE DRAWINGS

Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the accompanying drawings in which:

Fig. 1 is a block diagram illustrating a broadcast television system in accordance with one embodiment.

5 Fig. 2 is a block diagram of a set-top box in accordance with one embodiment.

Fig. 3 is a simple remote control incorporating directional and selection keys.

Fig. 4 is an illustration of an electronic program guide-style display of a unified navigation system in accordance with one embodiment.

10 Fig. 5 is an illustration of cursor movement corresponding to a RIGHT directional key in accordance with one embodiment.

Fig. 6 is an illustration of cursor movement corresponding to a DOWN directional key in accordance with one embodiment.

Fig. 7 is an illustration of text displayed in response to pressing a SELECT key in accordance with one embodiment.

15 Fig. 8 is an illustration of television programming displayed in response to pressing a SELECT key in accordance with one embodiment.

While the invention is susceptible to various modifications and alternative forms, specific embodiments thereof are shown by way of example in the drawings and will herein be described in detail. It should be understood, however, that the drawing and detailed description thereto are not intended to limit the invention to  
20 the particular form disclosed, but on the contrary, the intention is to cover all modifications, equivalents and alternatives falling within the spirit and scope of the present invention as defined by the appended claims.

### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

One embodiment is described in detail below. In this embodiment, a television system is configured to  
25 deliver television programming and other, non-television services to subscribers. The system has a navigation system that employs a graphical user interface (GUI) which resembles an electronic programming guide to simplify navigation of the various services and the individual selections within each service. In this embodiment, the navigation display comprises a grid having several rows of cells. Each row represents a particular channel or a particular service provided through the television system. The leftmost cell in each row identifies the associated  
30 channel or service, while the remainder of the cells identify particular items relating to that channel or service. For example, if the row represents a television channel, the cells may identify television programs which will be broadcast on that channel at particular times. If the row represents a service such as email, the cells may identify particular messages which have been received.

Referring to Fig. 1, a block diagram illustrating a broadcast television system in accordance with one  
35 embodiment is shown. In this figure, broadcast station 11 receives television programming and other services from sources 12, 13 and 14. The services provided from sources 12-14 may include television programming, pay-per-view movies, email, electronic news, software applications, music, advertising and shopping services, just to name a few. Broadcast station 11 combines the services and may provide means to filter, augment or control access to the services. Broadcast station 11 distributes the services via transmission medium 15 to one or more

set-top boxes 16 (only one of which is shown.) The services are then provided to the user through television 17. The user interacts with the system through input device 18.

Set-top box 16 is configured to execute a navigation application and generate the navigation system images which are displayed to the user. These images are transmitted by the set-top box to television 17, which displays them to the user. The navigation system images represent one or more of the services which are provided by broadcast station 11 to set-top box 16. Set-top box 16 is coupled to a user input device 18 such as a remote control to allow the user to view the different services and selection options presented by the navigation system. User input device 18 also allows the user to choose particular selection options and to initiate actions associated with the selection options, such as tuning to a corresponding channel or displaying corresponding text.

The information which broadcast station 11 receives from sources 12-14 is typically compressed and formatted into packets before it is transmitted to set-top box 16. The particular compression algorithm which is used may depend on the type of information being transmitted or the constraints of the system itself. The formatting of the information into packets is, in this embodiment, a requirement of the digital satellite transmission system which serves as the transmission medium. In other embodiments, the transmission system may not require that the information be formatted into packets. The packetizing of the information, however, may facilitate functions such as error checking, interleaving or multiplexing of data, and inclusion of application or control data. The information provided by sources 12-14, as well as information provided by broadcast station 11 itself, is time multiplexed in one embodiment and transmitted to the set-top boxes of one or more subscribers.

The broadcast station is operatively connected to the set-top box by a broadcast channel. This broadcast channel can utilize various transmission media and is contemplated to include media such as satellite, CATV (cable), telco (telephone), MMDS (microwave) and terrestrial transmissions. The broadcast channel forms a transmission link between the broadcast station and the set-top box. The broadcast station and set-top box may also be connected by a return path. The return path typically consists of a pair of modems, one in the set-top box and one in the broadcast station, each connected to a standard telephone line. It is contemplated that the return path may also comprise other mechanisms, such as using a portion of the bandwidth of the broadcast transmission link.

Referring to Fig. 2, a block diagram of a set-top box is shown. The signal from the broadcast station is received and fed into receiver 31. Receiver 31 directs the packets in the received signal to processing unit 32. If necessary, receiver 31 may select a particular channel on which the broadcast signal is transmitted. Processing unit 32 demultiplexes the packets from the broadcast signal if necessary and reconstructs the various portions of the signal. These portions of the signal may embody any of the services supplied by the service provider, such as television programs, email or other services. The signal may alternately contain information on the available services, which may themselves be transmitted after a request from the user. The signals from the services are then decompressed by decompression unit 33. The audio and video information corresponding to television programs is then conveyed to display unit 34, which may perform further audio/video processing and conversion of the information into a suitable television format, such as NTSC or HDTV audio/video. Signals corresponding to other services may be routed to other components within the set-top box. For instance, emails may be routed to random access memory (RAM) 37 for later use, while interactive applications may be forwarded to microprocessor 35 for execution.

Microprocessor 35 executes a navigation application which is resident in the set-top box. The navigation application keeps track of the available services and items or events relating to each service. When the navigation application is active, microprocessor 35 functions as a display generator to produce the navigation display. Microprocessor 35 may comprise various types of microprocessors, micro-controllers, digital signal processors (DSPs), or other types of software instruction processing devices, as are appropriate to the particular design. RAM 37 may include memory units which are static (e.g., SRAM), dynamic (e.g., DRAM), volatile or non-volatile (e.g., FLASH), as required to support the functions of the set-top box. When power is applied to the set-top box, microprocessor 35 executes operating system code which is stored in ROM 36. The operating system code executes continuously while the set-top box is powered in the same manner the operating system code of a typical personal computer (PC) and enables the set-top box to act on control information and execute interactive and other applications. The set-top box also includes modem 38. Modem 38 provides both a return path by which viewer data can be transmitted to the broadcast station and an alternate path by which the broadcast station can transmit data to the set-top box.

The set-top box incorporates an input device interface 39 to enable it to be used in conjunction with an input device. In one embodiment, interface 39 is an infrared receiver configured to receive signals transmitted by a remote control. Infrared remote controls are commonly used to provide input to televisions and thereby control such functions as channel selection, speaker volume and displayed image adjustment. Other embodiments may utilize other types of input devices. While these remote controls may have many different designs and may incorporate controls for many specialized features, several controls are common to most remote controls: directional keys; and a SELECT key. A very simple remote control incorporating these keys or buttons is illustrated in Fig. 3. This figure will be discussed in more detail below.

Although the term "set-top box" is used herein, it is understood that this term refers to any receiver or processing unit for receiving and processing a transmitted signal and conveying the processed signal to a television or other monitor. The set-top box may be in a housing which physically sits on top of a television, it may be in some other location external to the television (e.g., on the side or back of the television or remotely located from the television), or it may be incorporated into the television itself. It is further understood that "television" may refer to a television, a video monitor employing any suitable television format (e.g., NTSC or HDTV), or related devices, such as video recorders.

As shown in Fig. 3, remote control 50 includes keys 51 and 52 for movement to the left and right, respectively, as well as keys 53 and 54 for movement up and down. These keys are often used to control channel selection and volume, with one set (e.g., keys 53 and 54) controlling channel selection and the other set (e.g., keys 51 and 52) controlling volume. In many instances, these keys perform these functions in one mode and perform other functions in other modes. For example, directional keys 51-54 may be used to control the setup of the television. In a setup mode, the LEFT and RIGHT keys may be used to toggle between brightness adjustment, contrast adjustment, color adjustment and other setup options. The UP and DOWN keys may then be used to adjust the level of one of these options (e.g., increasing or decreasing the brightness of the picture.) When the adjustment is complete, the user may press the SELECT key 55 to save the setup and return to normal viewing operation. Because these keys and associated operations are commonly used in television systems, users are typically familiar with this method of navigating through the features of television systems. These keys may likewise be mapped to other services which are provided in connection with the television system.

It should be noted that, although some of the embodiments described herein are controlled using cursor keys and a SELECT key, other keys and other controls may be used in other embodiments. For example, some television navigation systems include program up/down keys and previous channel keys. These keys can be used in the present system to move from one service to another and from one item to another in a service. Some television navigation systems may even have joysticks, knobs, sliders or other controls which can be mapped to navigation functions in the present system. The description herein, as it relates to cursor and SELECT keys, should therefore be construed to extend to any other keys or controls which can be mapped to functions in the present system.

In one embodiment of the present system, a broadcast system delivers several different services to a subscriber. The services may include television programming, pay-per-view movies, email, electronic news, software applications, music, advertising, shopping services or other services. The delivery of these services is controlled in part by the set-top box. Delivery and/or access to some services may also be controlled by the service provider at the broadcast station. The subscriber selects desired services by interacting with a navigation application which is executing on the set-top box.

When the user wishes utilize one of the services provided by the system, the user initiates the navigation application in the same manner as if he or she wished to change channels. In one embodiment, the navigation application is initiated by pressing the SELECT key on the remote control. When the navigation application is initiated, an image containing various selection options is displayed on the television screen in a format resembling an electronic program guide, where the services are represented as individual channels. This is illustrated in Fig. 4. Fig. 4 depicts a television 61 which is coupled to a set-top box 62. Set-top box 62 is controlled by infrared signals 64 received from remote control 63.

In the embodiment illustrated in Fig. 4, the available services and selection options are displayed in a grid 65. (It should be noted that, while the description below focuses on an electronic program guide format, the system may just as easily be adapted to a banner-style or other navigation format, and many of the same benefits are realized in such a system.) Each row (70, 76-81) of grid 65 corresponds to a particular service. Each row includes several cells. The leftmost cell identifies the service corresponding to the row. The remainder of the cells in the row identify individual selection options associated with the corresponding service. Row 70, for example, corresponds to a particular channel of a television service. Leftmost cell 71 identifies the channel as "NBC TV." Subsequent cells (from left to right) identify television programs which will be broadcast on NBC, starting in the current time and continuing until the cells of the row are filled. (Although the cells in Fig. 4 are identified by textual titles, some embodiments may use graphics, icons, thumbnail images or other means to identify the items. The items may also include indicators of encryption, ratings, etc.)

Rows 76 and 77 represent email service. The leftmost cell of rows 76 and 77 identify the respective rows as in-boxes or folders for emails from particular senders -- Jojo and Robert. The subsequent cells in rows 76 and 77 identify individual messages which have been transmitted to the user from Jojo and Robert. The emails may be organized in other ways as well. For example, all of the emails may be cells in a row corresponding to a single user (identified in the leftmost cell.) In another embodiment, the cells may represent folders that contain emails rather than representing the emails themselves.

Row 78 represents an electronic coupon service. The leftmost cell of the row identifies the provider of this service. This subsequent cells identify products for which coupons are available. Row 79 represents a

service which allows the user to view and text or graphics from his or her favorite advertisements. Each of the remaining cells in row 79 corresponds to an advertisement which the user has previously identified as one of his or her favorites.

5 Rows 80 and 81 represent electronic news services. Row 80 corresponds to a service which provides news on world events, while row 81 corresponds to a service which provides local news, as identified by the leftmost cells of the rows. Each of the remaining cells in the rows 80 and 81 corresponds to an individual news story.

10 It is contemplated that all of the television channels and all of the services which are available to a subscriber can be shown on the navigation display (although they may not all fit on the display at one time.) Because the navigation display can show only a limited number of rows at a single time, the display is configured to scroll through the rows in the same manner as an electronic program guide. That is, the user can attempt to move beyond the boundaries of the displayed rows, causing the rows to scroll upward or downward. The rows wrap around so that the user can scroll from the last row to the first and keep scrolling. Similarly, because the navigation display can show only a limited number of cells in a row at a single time, the display is configured to scroll right or left through the cells in the same manner as an electronic program guide. The user can thereby view rows and/or cells which were not previously included in the display.

15 The rows of the electronic program guide-style navigation display can be set up in many different ways. The broadcast service provider may supply default settings, or may download new settings for the navigation system which define the organization or functionality of the navigation system. For instance, when the broadcast service provider adds a new service to the system, new actions may also be downloaded. These actions may define criteria for monitoring data in a broadcast signal (e.g., alerting the system to monitor coupon data if a coupon service is added) or may define actions to be taken upon selection of a particular option (e.g., upon selection of a coupon, launching an application that provides details of the promotion, coupon numbers, or participating stores.)

20 The navigation system may also allow the user to supply his or her own default settings. The settings may define the order of the rows, the display of some channels or services but not others, the creation of folders for email messages, naming of channels and services, and other properties of the navigation display. The user may further be allowed to dynamically reorganize the navigation display. For example, the user may be allowed to sort the rows and/or cells based on criteria such as the genre of services or items, topics of news stories, subjects or keywords of emails, types of products or times of events.

25 The navigation system may also provide various management functions relating to the services. For example, the system can track its usage and build lists of favorite channels or services, sort the channels and services according to use, delete old items such as expired coupons or outdated emails, create folders for emails and place emails in the appropriate folders, to name just a few. The navigation system may also be configured to automatically register new services which are made available by the service provider and to display the new services to the user as new rows in the electronic program guide. The navigation system may further be configured to map various functions of the new services to the existing television controls. Some of these management functions may be set up by the service provider, or may even be provided by the service provider as remote functions.



When one embodiment of the navigation application is initiated, the grid of selection options is displayed with one of the options highlighted. In Fig. 4, the first cell of the first row is highlighted (as shown by the heavy outline of the cell.) The highlighting serves as a cursor with which the user can indicate one of the selection options. The user can move the cursor by pressing one of the directional keys on the remote control. Figs. 5 and 6 illustrate this movement. (In Figs. 5 - 8, the cursor is illustrated as a darker shaded cell.) Fig. 5 shows the cursor moving from a first cell to the cell which is immediately to the right thereof in response to the RIGHT directional key of the remote control being pressed. (The pressing of the key is indicated by the solid arrow on the remote control.) Fig. 6 illustrates downward movement of the cursor in response to the DOWN directional key of the remote control being pressed. The LEFT and UP directional keys function in the same manner. It is contemplated that a list of cursor movements and/or user selections (i.e., a navigation history list) may be stored so that the user can backtrack through his or her actions, if desired.

When the user has highlighted a desired selection option with the cursor, the SELECT key of the remote control is pressed. This causes an activation signal to be transmitted to the set-top box and causes the set-top box to initiate an action associated with the highlighted selection option. The action which is initiated will vary with the particular selection option that is highlighted. For example, if the user or highlights a cell which corresponds to a news story, the text of the story may be displayed to the user. This is illustrated in Fig. 7. If, on the other hand, the highlighted cell corresponds to a television program, the set-top box may tune to the selected channel and display the television program which is currently being broadcast on that channel. This is illustrated in Fig. 8. These actions may be initiated directly, e.g. by displaying locally stored text, or indirectly, e.g. by employing items which contain information which is required to activate the item. For example, this information may be MIME-type information which allows the receiver to around the message to the appropriate content handler. MIME (which stands for "Multipurpose Internet Mail Extensions") is a specification for formatting non-ascii messages for transmission over the Internet. MIME-type information may include executable code which is loaded and executed upon receipt of the message, or location information that indicates where required information is stored (for example, a pointer to a remote server or to a different service.)

Further examples of the actions which can be taken upon selection of a corresponding cell are listed below to illustrate the wide variety of actions which may be initiated by the navigation system.

Television channels -- selecting one of the cells in a row representing a television channel may cause that channel to be displayed on the television. Alternately, selecting the leftmost cell may cause the selected channel to be displayed on the television, while selecting one of the other cells may cause a delayed action such as setting an alarm for the selected time or tuning to the selected channel at the selected time. (These actions are the ones normally associated with a television navigation system and are not new. They do, however, provide the basis for the user's familiarity with the system and allow the user to quickly learn to navigate the other services.)

Email -- selecting one of the cells corresponding to an individual email message may open the selected message and display the text of the message on the television. Selecting the leftmost cell may open a utility which allows the user to send a new email message to the person associated with the selected row.

Coupon service -- selecting one of the cells corresponding to a particular coupon may cause a hard copy of the coupon to be sent to the user (e.g., by facsimile.) Alternately, selecting one of the cells may initiate an online purchase of the product identified by the coupon.

Favorite advertisements -- selecting one of the cells corresponding to a particular advertisement may cause the advertisement to be replayed on the television. Alternately, selecting one of the cells may cause information regarding the advertisement to be displayed.

5 News -- selecting one of the cells corresponding to a particular news story may cause the text of the story to be displayed on the television. Selecting one of these cells may alternately present a group of related stories to the user.

10 In some embodiments, the navigation system may be configured to display additional information when the item is highlighted. Other embodiments may initiate one of the above actions when the SELECT key is pressed and to display additional information on the highlighted item or initiate some other action when another key is pressed. The user may thereby be able to access information such as the date the item was created, the address of the originator of the item, terms and conditions relating to the item, or similar detailed information. Whatever action is initiated in response to pressing a particular key, it is preferred that similar actions for each service be mapped to that particular key. Some keys may function in a manner which is nearly identical in television navigation and navigation of other services. For example, in the same way a user can switch back and forth between two channels using a "last channel" key, the user can jump back and forth between two different services, such as television programming and email. It should be noted that the particular keys and mappings of functions to keys in this embodiment are illustrative and may be different in other embodiments.

15 In some embodiments, the navigation system may utilize a hybrid mapping of the services to the remote control keys. In other words, pressing one of the keys may initiate actions in two or more of the services. For example, an online purchasing service can be used in conjunction with other services. If the online purchasing service and an electronic messaging service are available to the user, one of the selection options presented to the user may correspond to a pay-newsletter. When the user selects this option, a purchase can be initiated by the online purchasing service, and a corresponding newsletter can be delivered through the electronic messaging service. Other examples of combined services may include coupon books or emails which are purchased online.

20 Since it is contemplated that the system may be shared by a number of users, the navigation system may provide mechanisms to ensure the privacy and security of the services. These access control mechanisms may enable the identification of individual users and set up the system according to the privileges and preferences of a particular user, or they may be implemented to control access to certain services or channels. A wide variety of mechanisms can be employed to verify the user's permission to access items, including login and password/PIN procedures, separate remote controls for individual users, voice recognition means, and the like. Particular channels can be set up to be shared or private, and other controls such as spending limits and parental controls can be implemented. Controls can also be implemented in the items themselves by including information (e.g., MIME-type information) which is required to display or activate the item.

25 The unified navigation system described above provides a means for a user who is familiar with common television channel selection mechanisms to easily navigate a variety of television and non-television services. By mapping the functions of non-television services to controls in a television-style system (e.g., using electronic program guide or banner displays,) the system leverages the user's familiarity with television channel selection to reduce, if not eliminate, the learning curve associated with new services and corresponding navigation systems.

30 While the present invention has been described with reference to particular embodiments, it will be understood that the embodiments described above are illustrative and that the scope of the invention is not limited

to these embodiments. Many variations, modifications, additions and improvements to the described embodiments are possible. These variations, modifications, additions and improvements are intended to be within the scope of the invention as detailed within the following claims.

## WHAT IS CLAIMED IS:

1. A method for unified navigation of a plurality of services in a television system comprising:  
receiving a plurality of services;  
5 presenting each of said plurality of services as one or more channels in a television-style navigation system;  
mapping each of a plurality of television-style navigation controls to a corresponding function in each of said plurality of services.
- 10 2. The method of claim 1 wherein presenting each of said plurality of services as one or more channels in a television-style navigation system comprises:  
simultaneously displaying a first set of selection options corresponding to a first service and a second set  
of selection options corresponding to a second service;  
highlighting a first selection option; wherein said first selection option is one of said first set of selection  
15 options;  
providing first user input selecting said first selection option; and  
initiating a first action corresponding to said first selection option in response to said first user input,  
wherein said first action is associated with said first service.
- 20 3. The method of claim 2 further comprising mapping one or more actions associated with said first and second services to corresponding functions of the television system and initiating each of said actions in response to a user input associated with said corresponding function of the television system.
4. The method of claim 3 wherein said first service comprises television programming and wherein said  
25 second service comprises a non-television service.
5. The method of claim 4 wherein said non-television service is selected from the group consisting of: an email service; an electronic news service; an online purchasing service; and an advertising service.
- 30 6. The method of claim 2 further comprising providing second user input indicating a second selection option, wherein said second selection option is one of said second set of selection options and highlighting said second selection option.
7. The method of claim 6 further comprising providing third user input and initiating a second action  
35 corresponding to said second selection option in response to said third user input, wherein said second action is associated with said second service.
8. The method of claim 2 wherein said first action comprises displaying a menu comprising a third set of  
40 selection options.

9. The method of claim 2 wherein said simultaneously displaying said first set of selection options and said second set of selection options comprises displaying said first set of selection options and said second set of selection options in a grid, wherein said first set of selection options are located in a first row of said grid and said second set of selection options are located in a second row of said grid.
- 5
10. The method of claim 2 wherein said simultaneously displaying said first set of selection options and said second set of selection options comprises displaying said first set of selection options and said second set of selection options as a series of banners, wherein said banners are displayed successively and wherein said cursor is displayed on a currently-displayed one of said banners.
- 10
11. The method of claim 2 further comprising sorting said selection options according to one or more user-selected criteria.
12. The method of claim 2 wherein said first action comprises verifying a user's permission to access said first selection option.
- 15
13. A system for unified navigation of services provided through a television system comprising:  
a processing unit configured to receive a first service and a second service;  
a user input device coupled to said processing unit and configured to provide user input to said  
20 processing unit; and  
a monitor coupled to said processing unit and configured to display said selection options;  
wherein said processing unit implements a television-style navigation system and wherein each of a  
plurality of controls of said navigation system is mapped to a corresponding function in each of  
said first service and said second service.
- 25
14. The system of claim 13 wherein said processing unit is configured to  
present a plurality of selection options to a user, wherein each of said selection options  
corresponds to one of said services, and  
initiate an action corresponding to a selected one of said selection options in response to  
30 receiving user input selecting said selected one of said selection options.
15. The system of claim 14 wherein said user input device comprises a remote control having a plurality of directional keys and a select key and wherein said user input device is configured to generate said user input in response to said directional and select keys being pressed.
- 35
16. The system of claim 14 wherein when a third service is provided to said processing unit, said processing unit is configured to register said third service and to present one or more selection options corresponding to said third service to said user.

17. The system of claim 14 wherein said processing unit is configured to present said plurality of selection options to said user as an image displayed on said monitor.

18. The system of claim 17 wherein said image comprises a grid having a plurality of rows and wherein said  
5 each of said plurality of rows has a plurality of cells.

19. The system of claim 18 wherein said processing unit is configured to highlight alternate ones of said plurality of selection options in response to user input.

10 20. The system of claim 14 wherein said processing unit is configured to present said plurality of selection options to said user as series of banners displayed on said monitor.

21. The system of claim 20 wherein said monitor comprises a television configured to receive said first service and said second service from said processing unit.

15 22. The system of claim 14 wherein said first service comprises broadcast television service and wherein said second service comprises a service selected from the group consisting of: an email service; an electronic news service; an online purchasing service; and an advertising service.

20 23. A unified graphical user interface for a system configured to provide television programming and non-television services, wherein the unified graphical user interface comprises:

one or more first selection options associated with a television programming service;

one or more second selection options associated with a non-television service; and

a highlight on alternate ones of said first and second selection options responsive to user input;

25 wherein said unified graphical user interface is configured to initiate an action corresponding to a highlighted one of said first and second selection options in response to user input.

24. The unified graphical user interface of claim 23 wherein said first and second selection options are displayed in a grid comprising a plurality of rows, wherein each of said rows is associated with one of said  
30 services and contains one or more of said selection options which are associated with said one of said services.

25. The unified graphical user interface of claim 23 wherein each of said first and second selection options are displayed as banners and wherein said banners are successively displayed, wherein each of said banners is associated with one of said services.

35

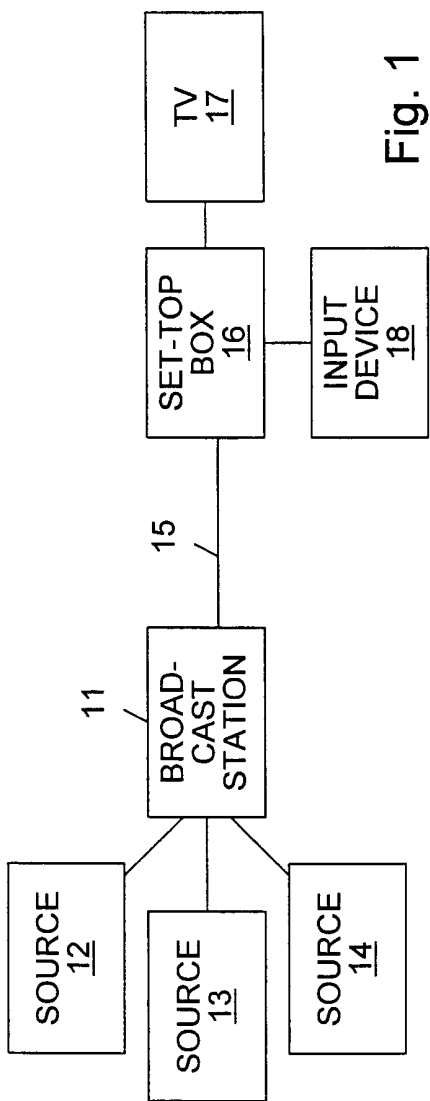


Fig. 1

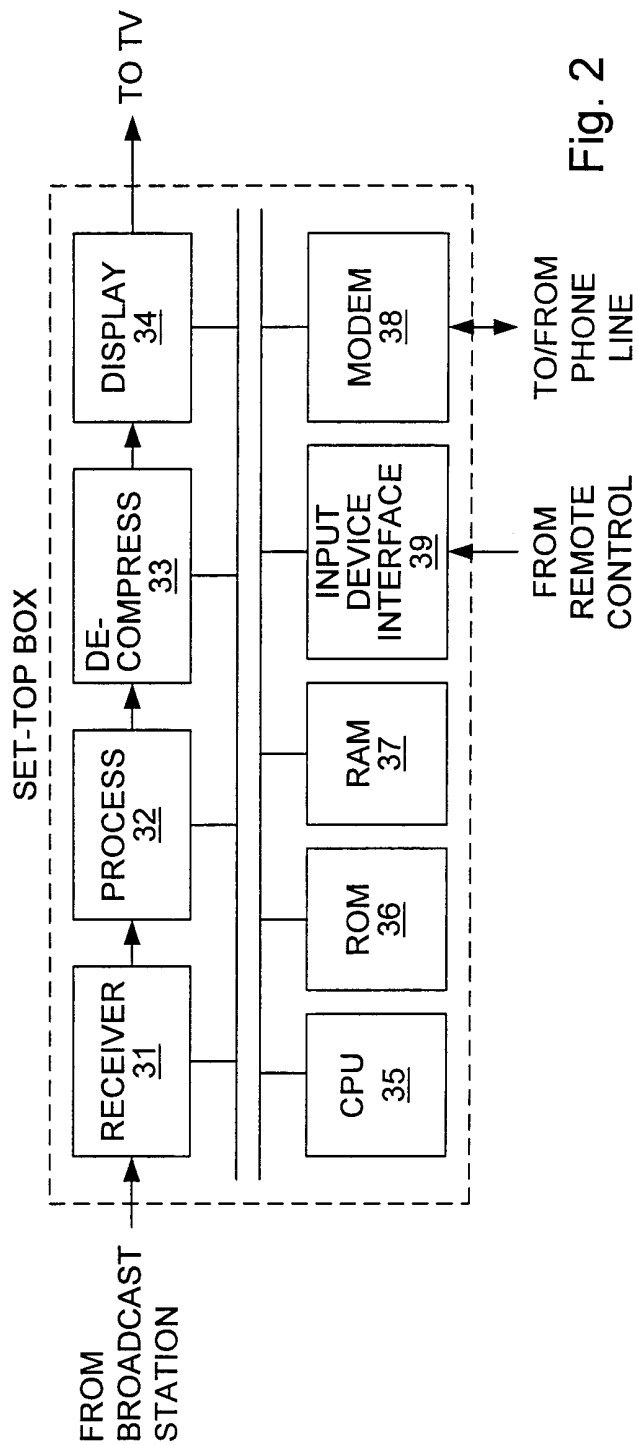


Fig. 2

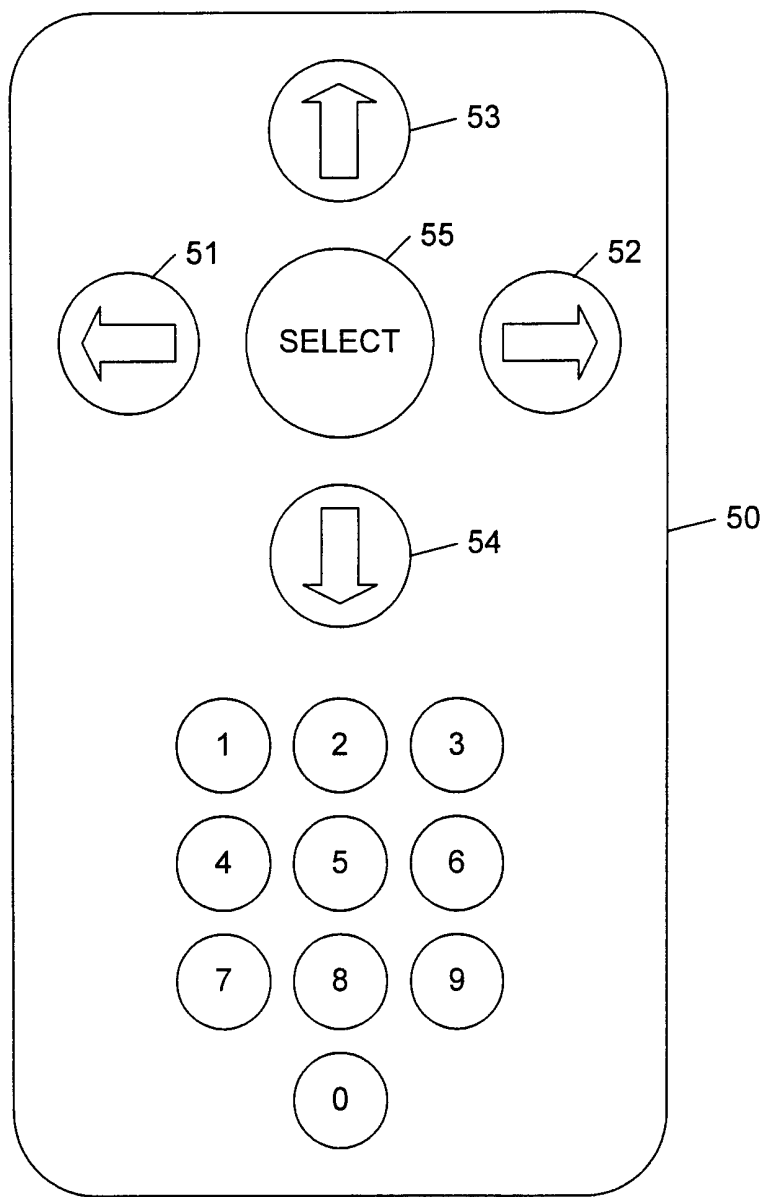


Fig. 3



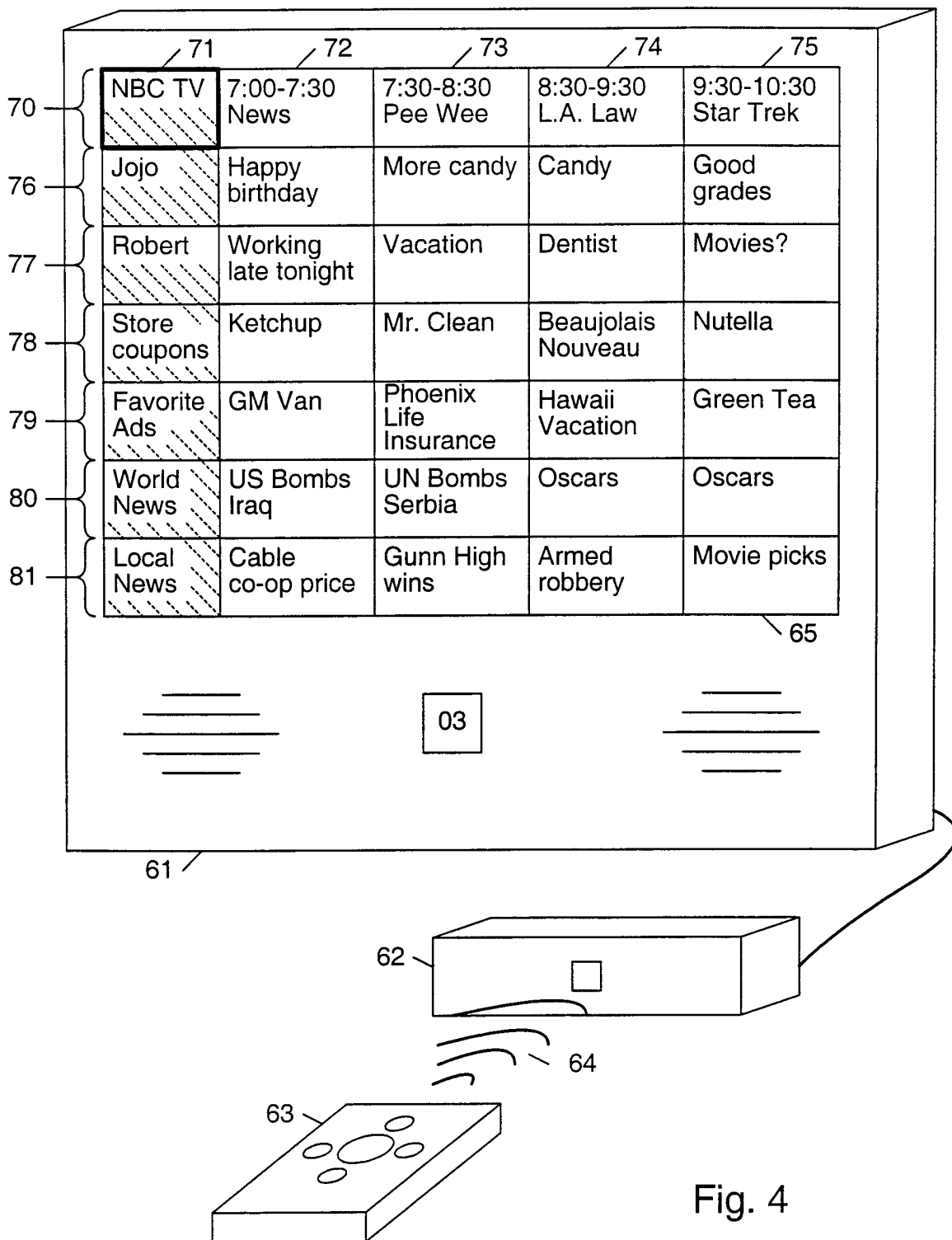


Fig. 4

4/5

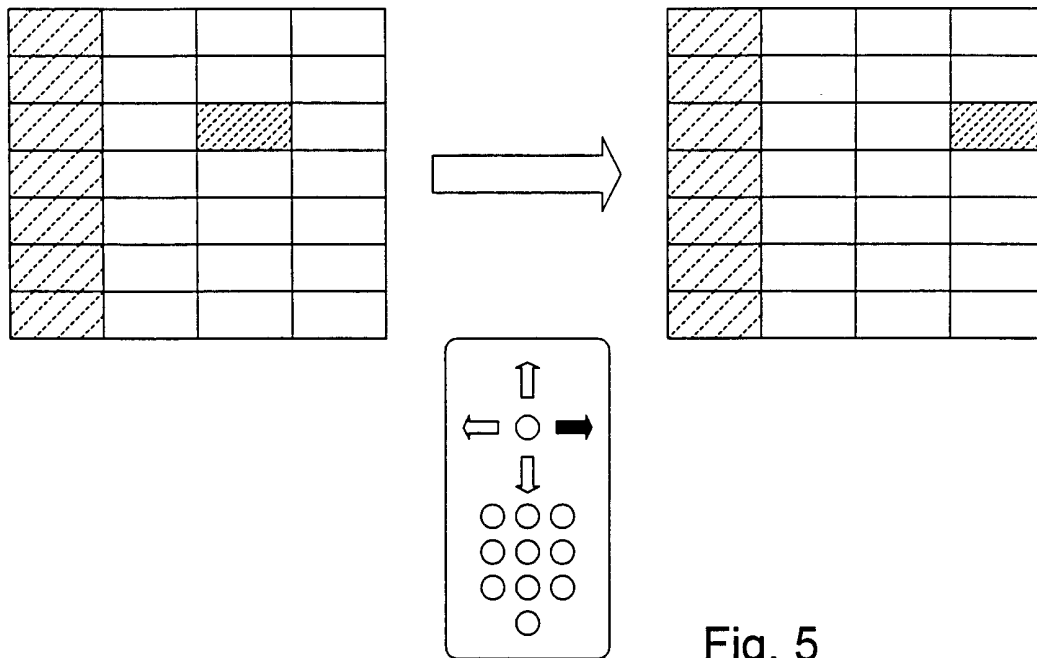


Fig. 5

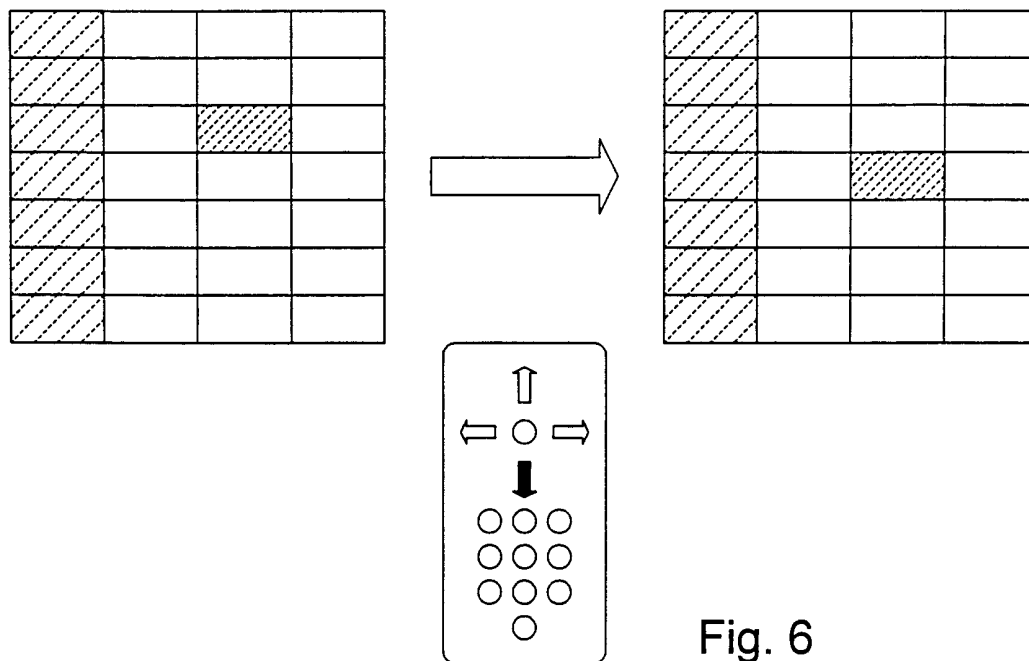


Fig. 6

5/5

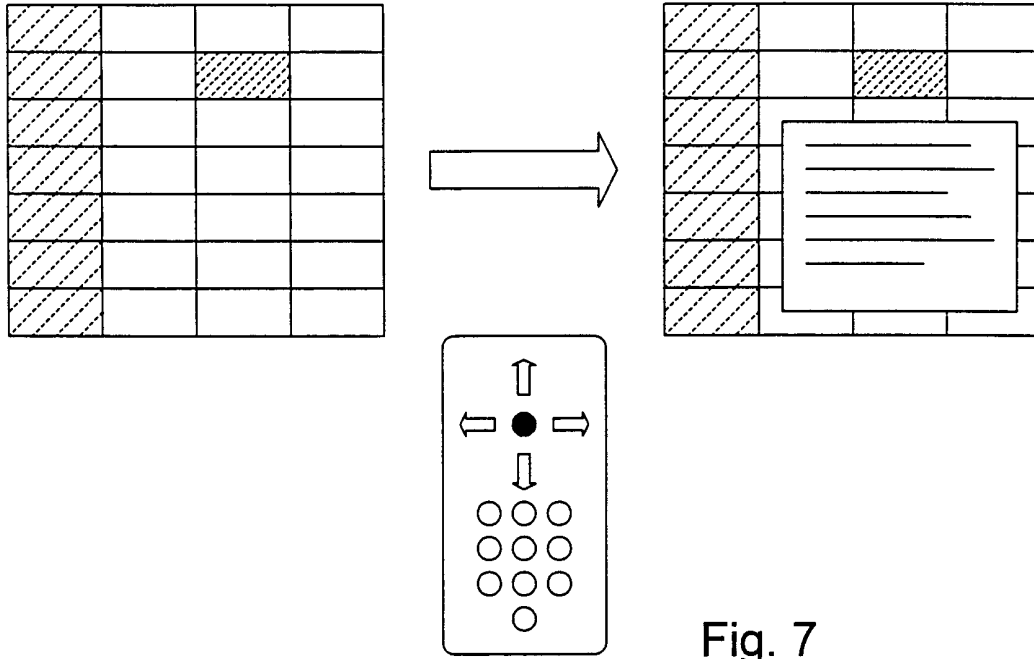


Fig. 7

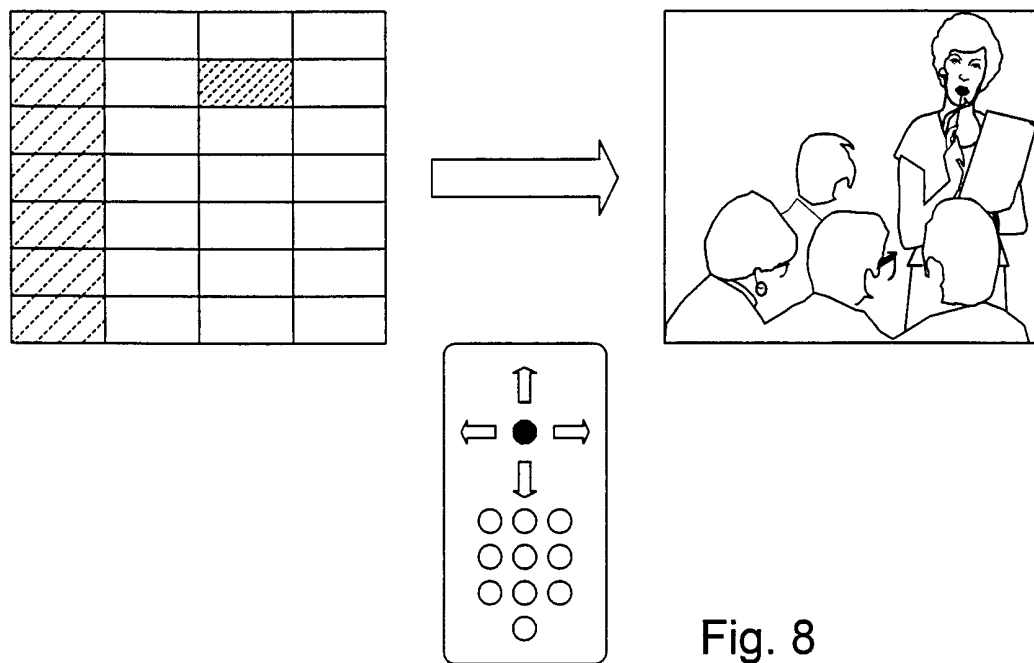


Fig. 8

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 00/24121

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 H04N5/445

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 H04N

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 practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 98 56188 A (SONY ELECTRONICS) 10 December 1998 (1998-12-10)  abstract; figures 5,7,8 page 4, line 8 -page 5, line 4 page 12, line 7 - line 20 page 14, line 36 -page 16, line 21 page 19, line 4 - line 11 ---	1-8,11, 13-15, 17,22,23
X	WO 99 20049 A (THOMSON CONSUMER ELECTRONICS) 22 April 1999 (1999-04-22)	1-3,6,9, 13-15, 17-19, 23,24
A	figures 2,9,18 --- -/--	4,21,22

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

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Date of the actual completion of the international search

Date of mailing of the international search report

12 December 2000

19/12/2000

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Berwitz, P

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/24121

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

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 99 13641 A (PREVUE INTERNATIONAL) 18 March 1999 (1999-03-18)  abstract page 3, line 16 -page 4, line 17 page 6, line 27 -page 8, line 5 page 11, line 26 -page 12, line 6 page 13, line 3 -page 14, line 28 page 16, line 13 -page 17, line 9 ----	1-8, 11-17, 22,23
A	US 5 940 073 A (KLOSTERMAN ET AL.) 17 August 1999 (1999-08-17)  column 1, line 37 - line 47 column 4, line 63 -column 5, line 17 column 10, line 1 -column 11, line 21 figures 6-11 ----	1-6, 13-17, 22,23
P,X	WO 00 46986 A (THOMSON LICENSING) 10 August 2000 (2000-08-10)  the whole document -----	1-9,11, 13-19, 22-24

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/24121

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9856188 A	10-12-1998	US 6028600 A	22-02-2000
		US 6072483 A	06-06-2000
		AU 7446798 A	21-12-1998
		EP 0986901 A	22-03-2000
WO 9920049 A	22-04-1999	AU 1080799 A	03-05-1999
		EP 1023807 A	02-08-2000
WO 9913641 A	18-03-1999	AU 9298398 A	29-03-1999
US 5940073 A	17-08-1999	AU 720002 B	18-05-2000
		AU 3058397 A	26-11-1997
		BR 9709048 A	04-01-2000
		CA 2253293 A	13-11-1997
		CN 1236524 A	24-11-1999
		EP 0896775 A	17-02-1999
		WO 9742763 A	13-11-1997
WO 0046986 A	10-08-2000	AU 2614600 A	25-08-2000