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(54) **SYSTEMS AND METHODS FOR LINKING TELEVISION VIEWERS WITH ADVERTISERS AND BROADCASTERS**

(75) Inventors: **Steven M. Schein**, Menlo Park, CA (US); **Sean A. O'Brien**, San Jose, CA (US); **James Jay Leftwich**, Palo Alto, CA (US); **Susan Broughton**, Tracy, CA (US)

(73) Assignee: **Starsight Telecast, Inc.**, Fremont, CA (US)

(21) Appl. No.: **13/403,579**

(22) Filed: **Feb. 23, 2012**

Related U.S. Application Data

(63) Continuation of application No. 11/894,660, filed on Aug. 20, 2007, which is a continuation of application No. 09/810,324, filed on Mar. 16, 2001, which is a continuation of application No. 09/416,161, filed on Oct. 11, 1999, now Pat. No. 6,263,501, which is a continuation of application No. 08/837,078, filed on Apr. 11, 1997, now Pat. No. 6,002,394, Continuation-in-part of application No. 08/537,650, filed on Oct. 2, 1995, now abandoned.

(60) Provisional application No. 60/015,648, filed on Apr. 19, 1996, provisional application No. 60/022,826, filed on Jul. 26, 1996.

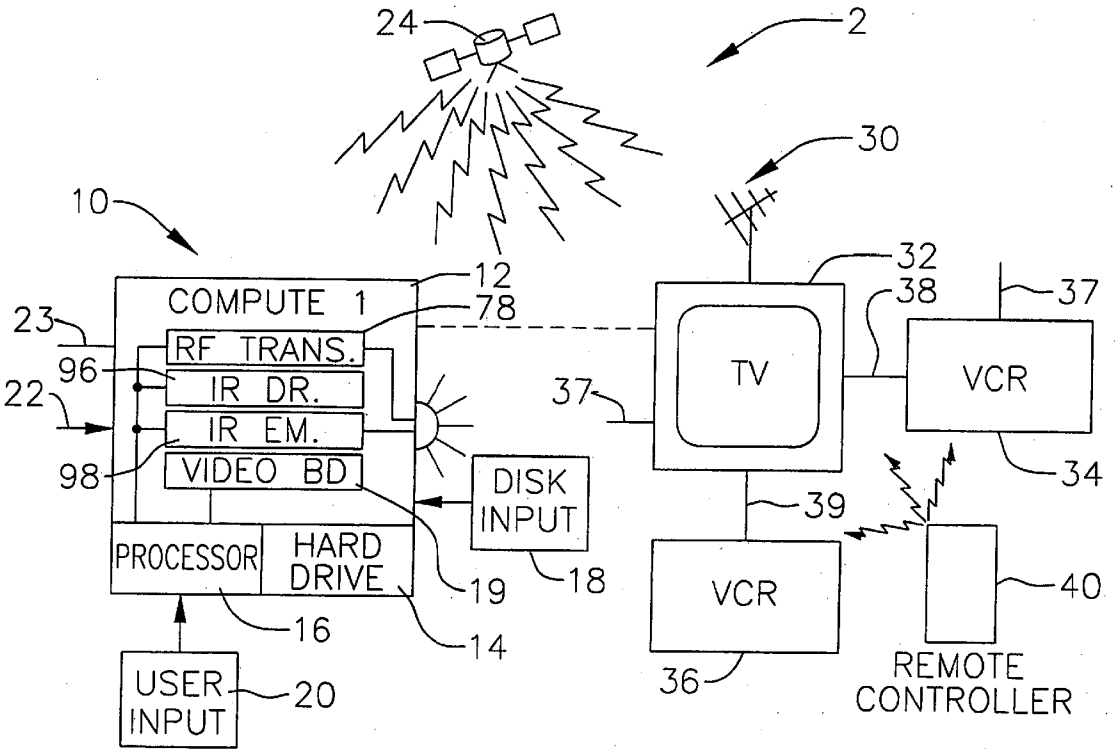
Publication Classification

(51) **Int. Cl.**
H04N 7/173 (2011.01)

(52) **U.S. Cl.** **725/114**

(57) **ABSTRACT**

The present invention provides systems and methods for providing television schedule information to a viewer, and for allowing the viewer to link, search, select and interact with information in a remote database, e.g., a database on the internet. The television schedule information can be displayed on a variety of viewer interfaces, such as televisions screens, computer monitors, PCTV screens and the like. The television schedule information may be stored on the viewer's computer, television, PCTV, or a remote server (e.g., a website), or the television schedule information may be downloaded from a remote database to the viewer's computer, television or PCTV.



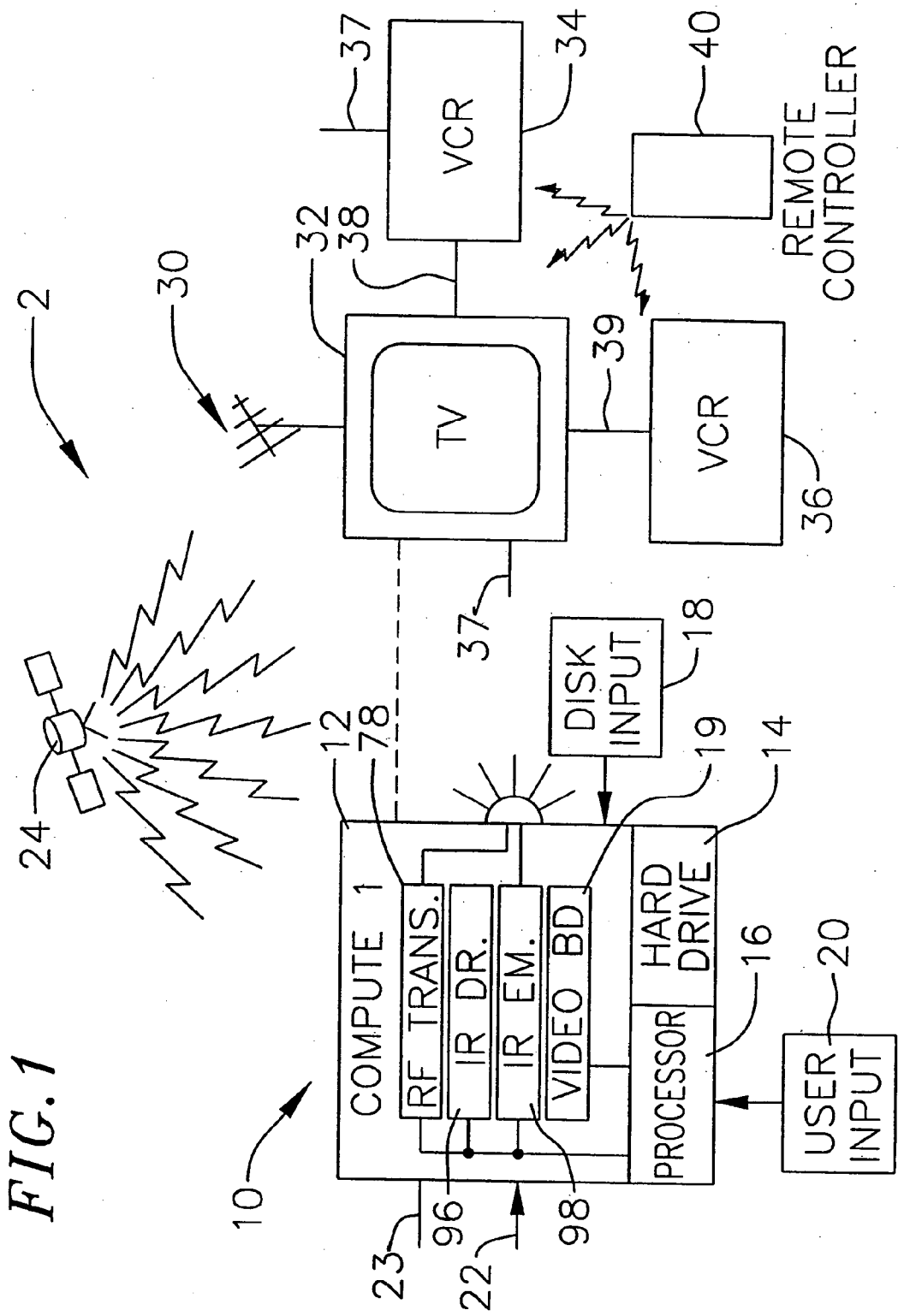

2
30
37
VCR
34
40
REMOTE CONTROLLER
32
38
TV
39
VCR
36
37
DISK INPUT
18
12
78
19
14
24
COMPUTE 1
RF TRANS.
IR DR.
IR EM.
VIDEO BD
HARD DRIVE
16
20
USER INPUT
PROCESSOR
10
96
98
23
22

FIG. 1

FIG. 2

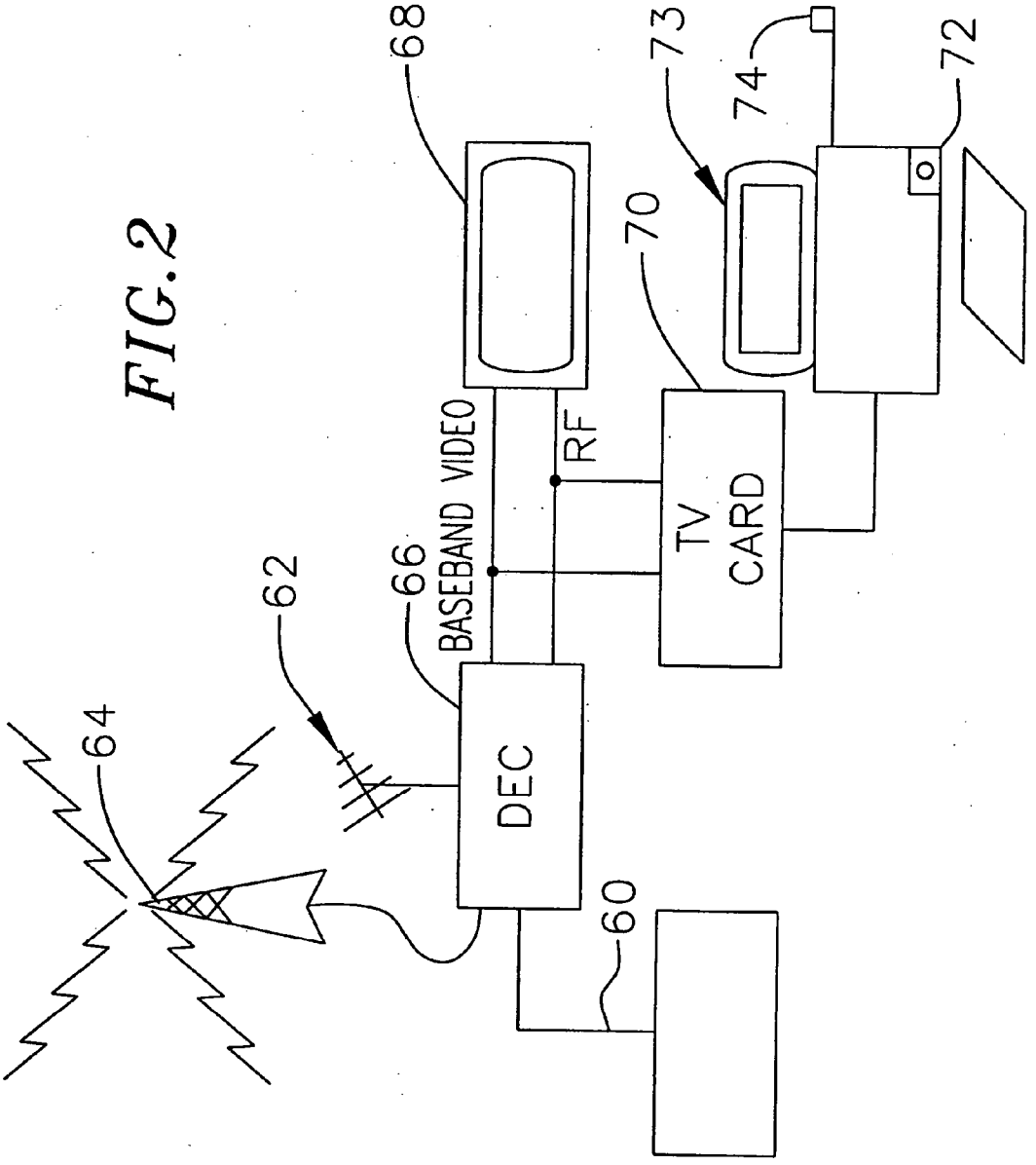


FIG. 3

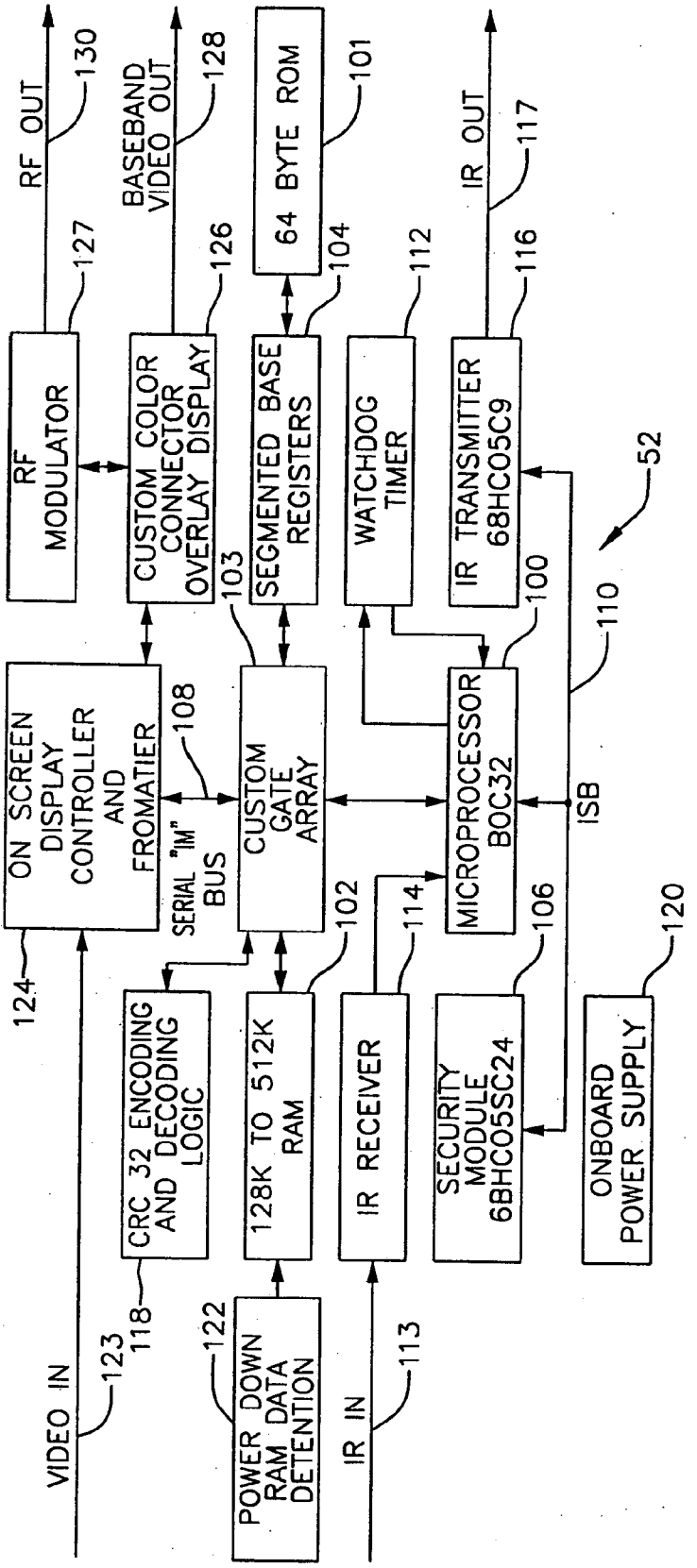

RF OUT
130
BASEBAND VIDEO OUT
128
64 BYTE ROM
101
IR OUT
117
127
126
104
112
116
RF MODULATOR
CUSTOM COLOR CONNECTOR OVERLAY DISPLAY
SEGMENTED BASE REGISTERS
WATCHDOG TIMER
IR TRANSMITTER 68HC05C9
52
103
100
110
ON SCREEN DISPLAY CONTROLLER AND FROMATIER
108
SERIAL "IM" BUS
CUSTOM GATE ARRAY
MICROPROCESSOR B0C32
ISB
124
102
114
106
120
CRC 32 ENCODING AND DECODING LOGIC
128K TO 512K RAM
IR RECEIVER
SECURITY MODULE 6BHC05SC24
ONBOARD POWER SUPPLY
VIDEO IN
123
118
122
POWER DOWN RAM DATA DETENTION
IR IN
113

FIG. 4

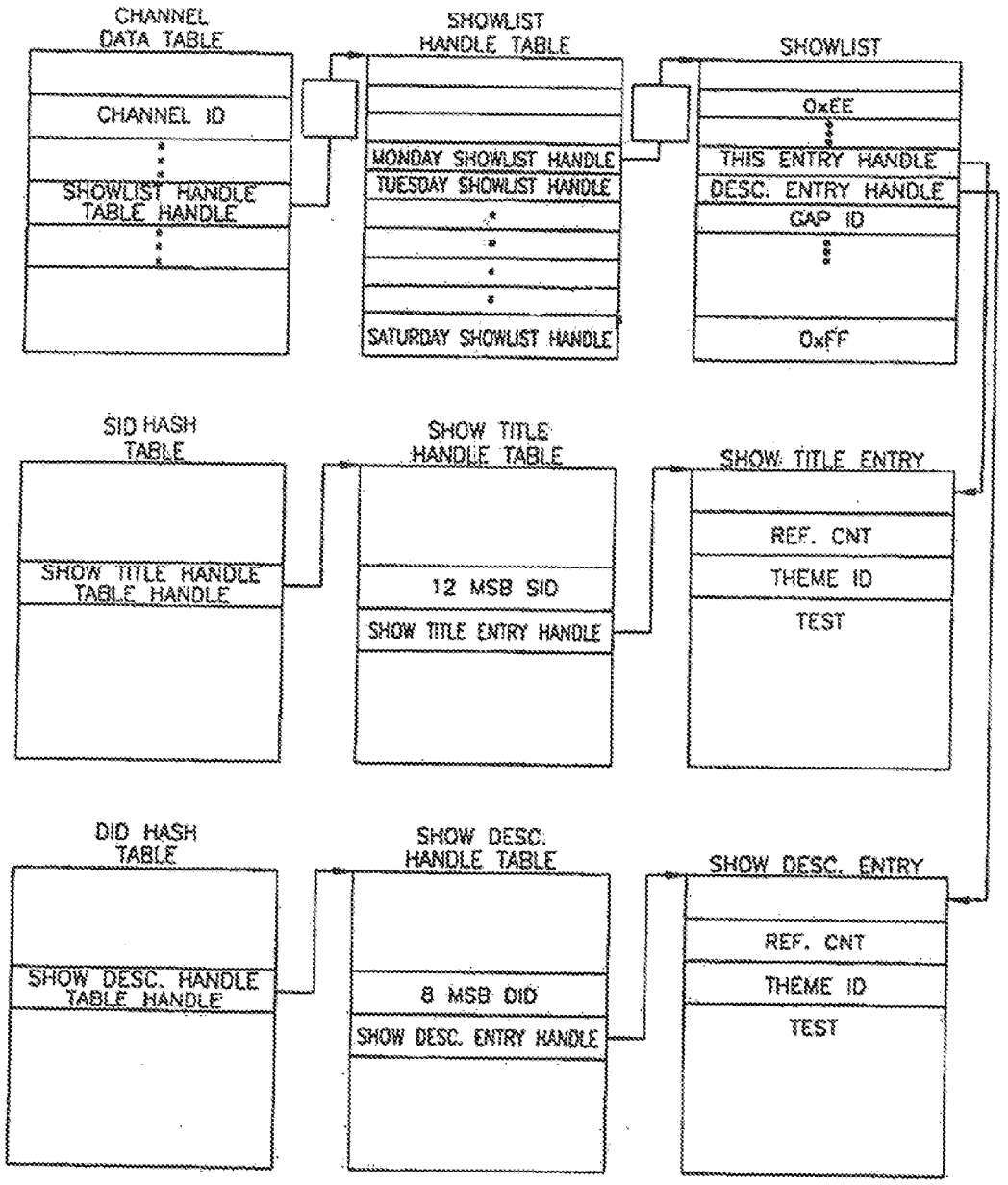

CHANNEL DATA TABLE
CHANNEL ID
SHOWLIST HANDLE TABLE HANDLE
SHOWLIST HANDLE TABLE
MONDAY SHOWLIST HANDLE
TUESDAY SHOWLIST HANDLE
SATURDAY SHOWLIST HANDLE
SHOWLIST
0xEE
THIS ENTRY HANDLE
DESC. ENTRY HANDLE
CAP ID
0xFF
SID HASH TABLE
SHOW TITLE HANDLE TABLE HANDLE
SHOW TITLE HANDLE TABLE
12 MSB SID
SHOW TITLE ENTRY HANDLE
SHOW TITLE ENTRY
REF. CNT
THEME ID
TEST
DID HASH TABLE
SHOW DESC. HANDLE TABLE HANDLE
SHOW DESC. HANDLE TABLE
8 MSB DID
SHOW DESC. ENTRY HANDLE
SHOW DESC. ENTRY
REF. CNT
THEME ID
TEST

FIG. 5

CHANNEL DATA TABLE

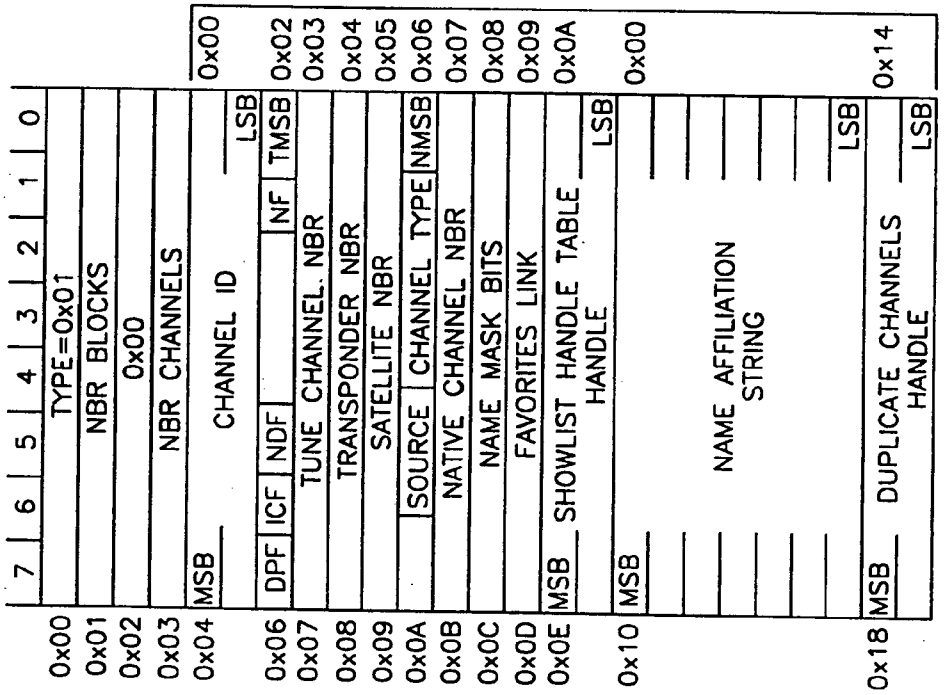


FIG. 6

SHOW LIST

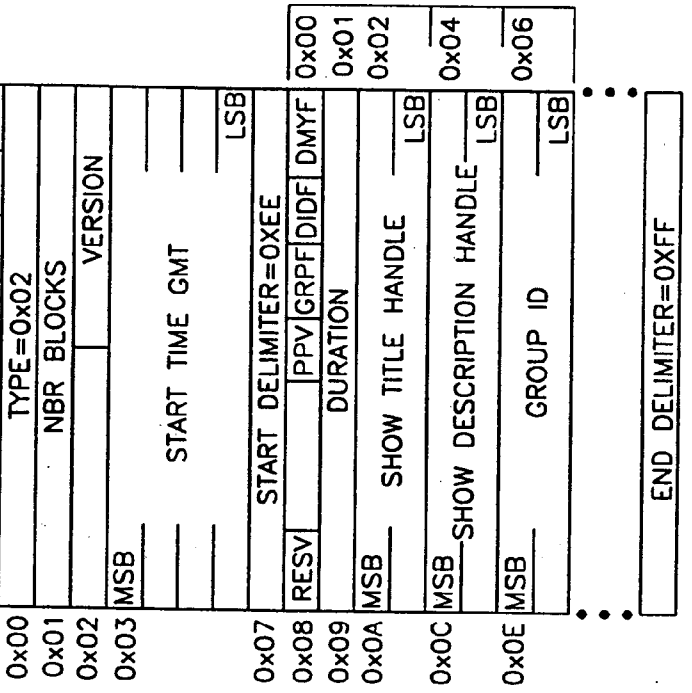


FIG. 7A

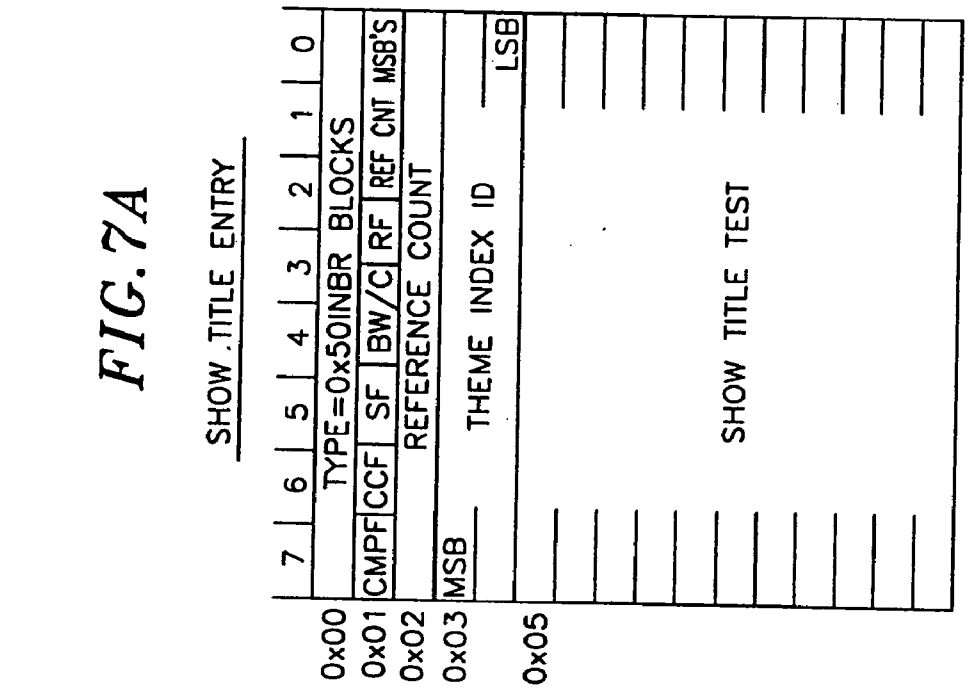

SHOW TITLE ENTRY
7 6 5 4 3 2 1 0
TYPE=0x50
INBR BLOCKS
CMPF CCF SF BW/C RF REF CNT MSB'S
REFERENCE COUNT
MSB
THEME INDEX ID
LSB
SHOW TITLE TEST
0x00
0x01
0x02
0x03
0x05

FIG. 7B

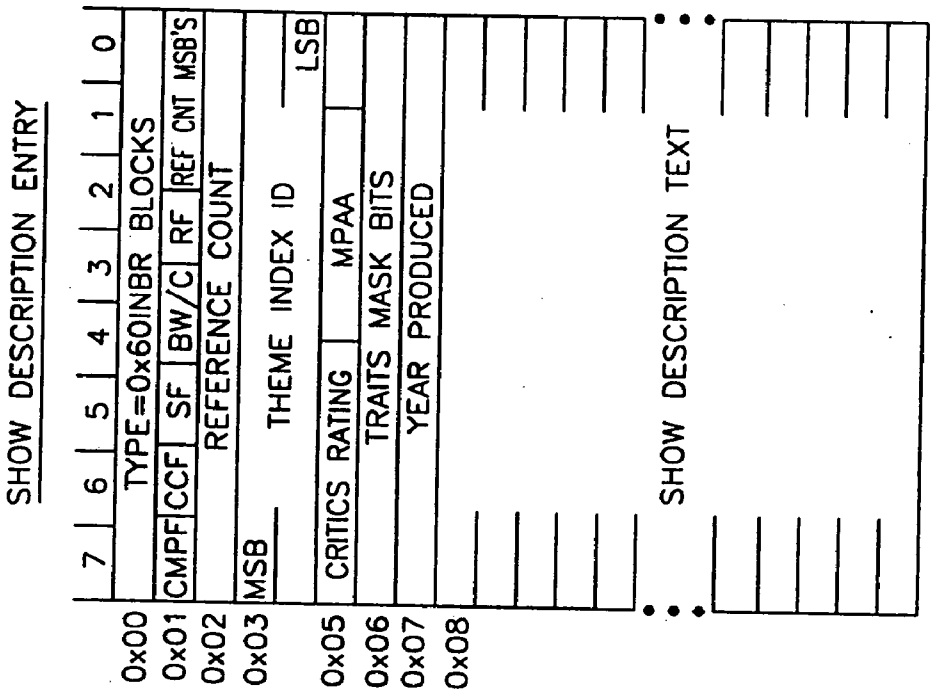

SHOW DESCRIPTION ENTRY
7 6 5 4 3 2 1 0
TYPE=0x60
INBR BLOCKS
CMPF CCF SF BW/C RF REF CNT MSB'S
REFERENCE COUNT
MSB
THEME INDEX ID
LSB
CRITICS RATING
MPAA
TRAITS MASK BITS
YEAR PRODUCED
SHOW DESCRIPTION TEXT
0x00
0x01
0x02
0x03
0x05
0x06
0x07
0x08

FIG.8

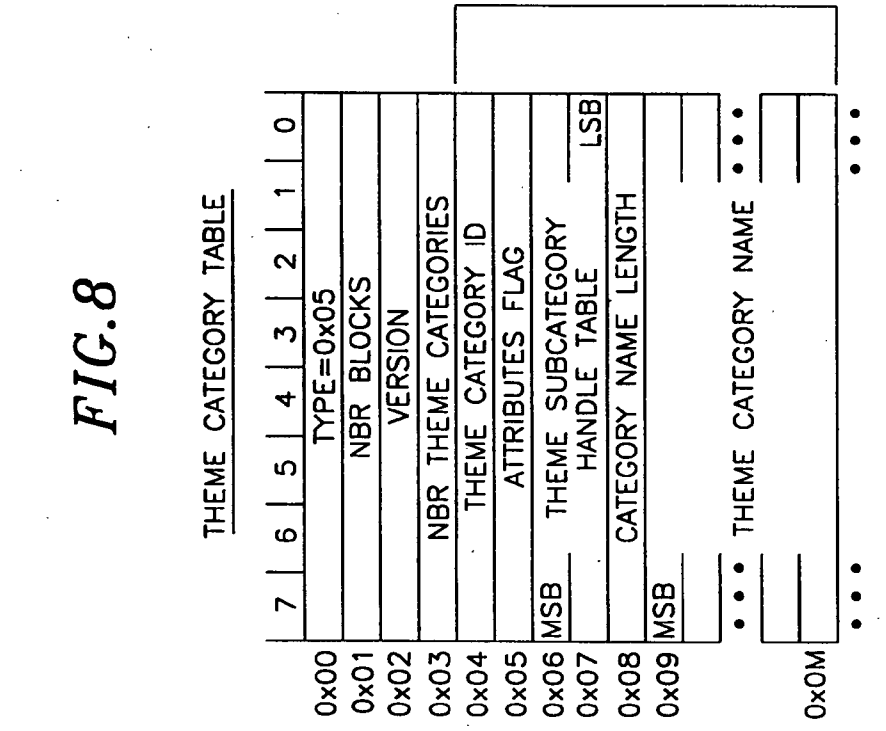

THEME CATEGORY TABLE
7 6 5 4 3 2 1 0
0x00 TYPE=0x05
0x01 NBR BLOCKS
0x02 VERSION
0x03 NBR THEME CATEGORIES
0x04 THEME CATEGORY ID
0x05 ATTRIBUTES FLAG
0x06 MSB THEME SUBCATEGORY HANDLE TABLE LSB
0x07
0x08 CATEGORY NAME LENGTH
0x09 MSB
THEME CATEGORY NAME
0x0M

FIG.9

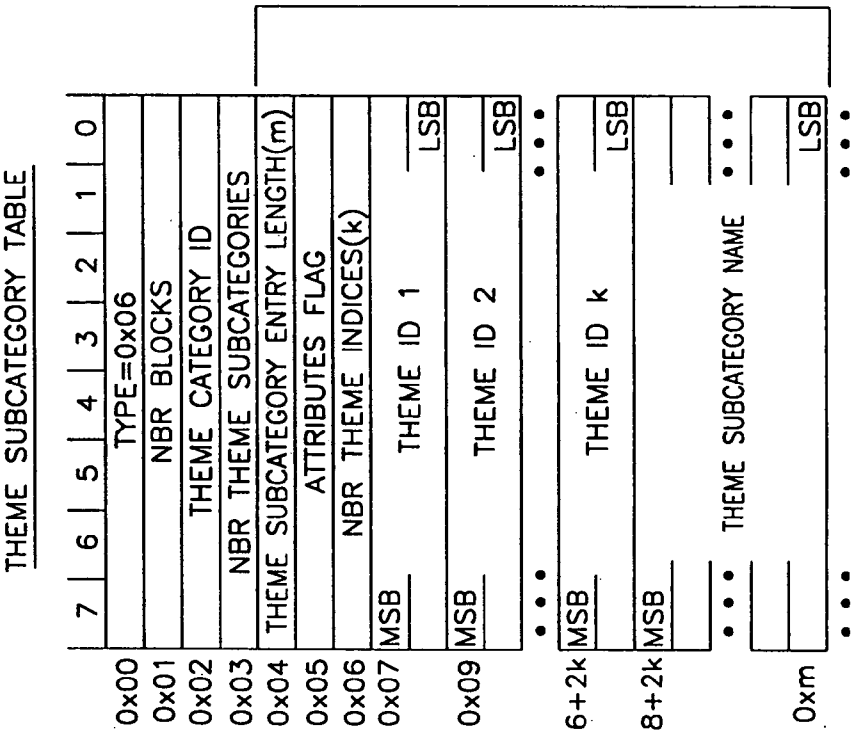
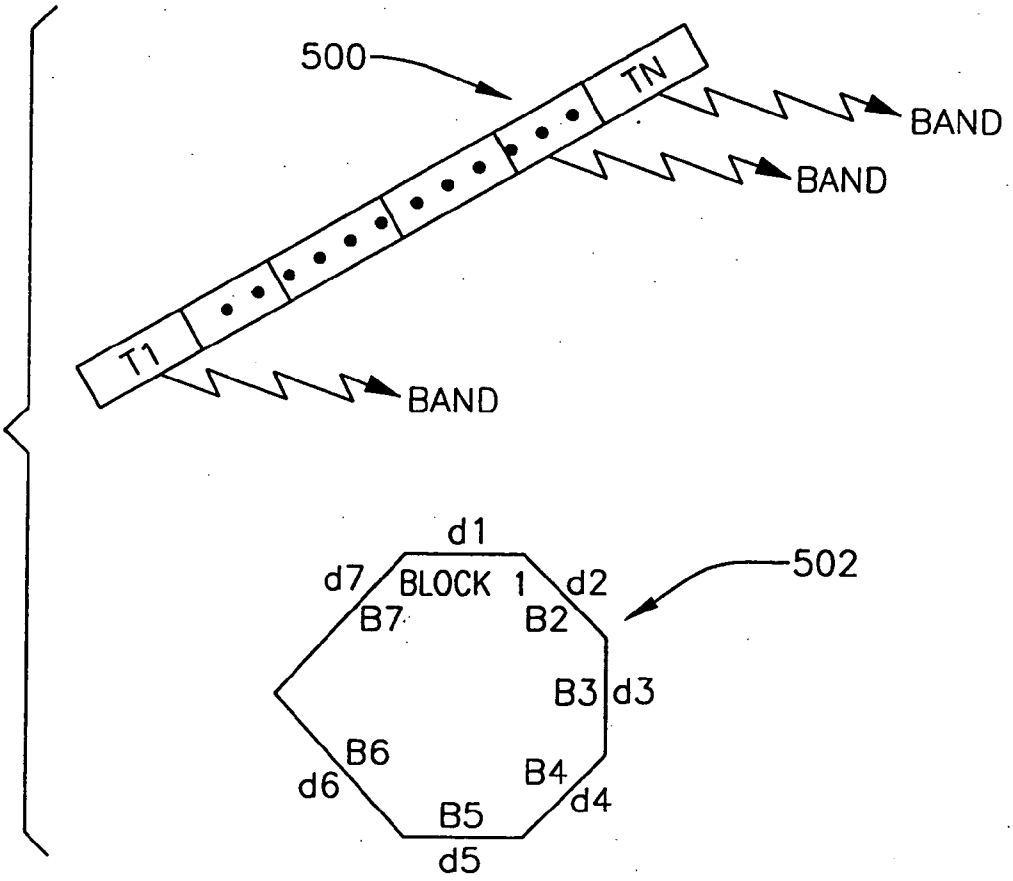

THEME SUBCATEGORY TABLE
7 6 5 4 3 2 1 0
0x00 TYPE=0x06
0x01 NBR BLOCKS
0x02 THEME CATEGORY ID
0x03 NBR THEME SUBCATEGORIES
0x04 THEME SUBCATEGORY ENTRY LENGTH(m)
0x05 ATTRIBUTES FLAG
0x06 NBR THEME INDICES(k)
0x07 MSB THEME ID 1 LSB
0x09 MSB THEME ID 2 LSB
6+2k MSB THEME ID k LSB
8+2k MSB
THEME SUBCATEGORY NAME
0xm LSB

FIG. 10


500
TN
BAND
BAND
T1
BAND
d1
d7
BLOCK 1
d2
502
B7
B2
B3
d3
B6
B4
d6
d4
B5
d5

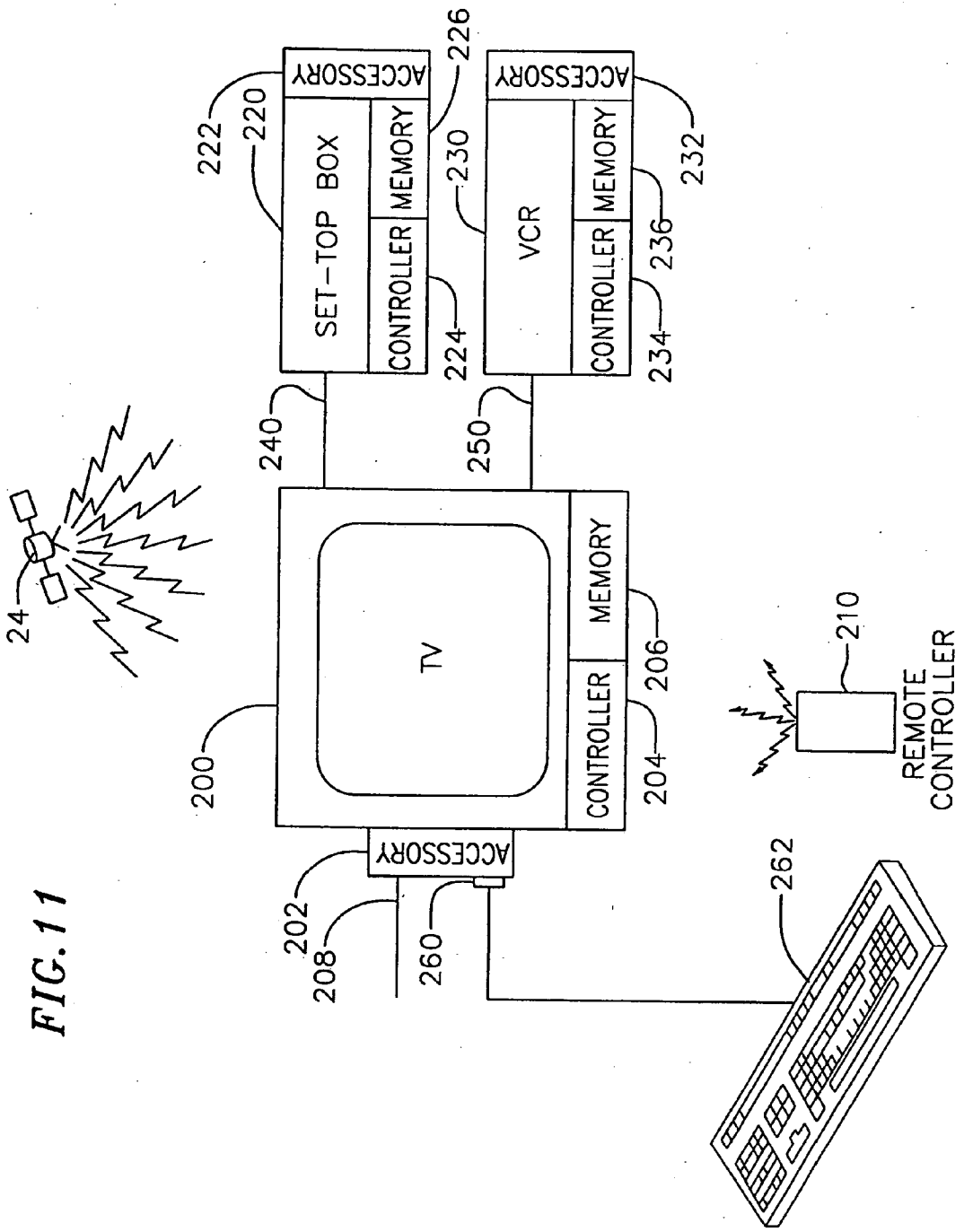

ACCESSORY
SET-TOP BOX
MEMORY
CONTROLLER
VCR
TV
REMOTE CONTROLLER
222
220
226
230
232
224
234
236
240
250
200
206
204
210
202
208
260
262
24

FIG. 11

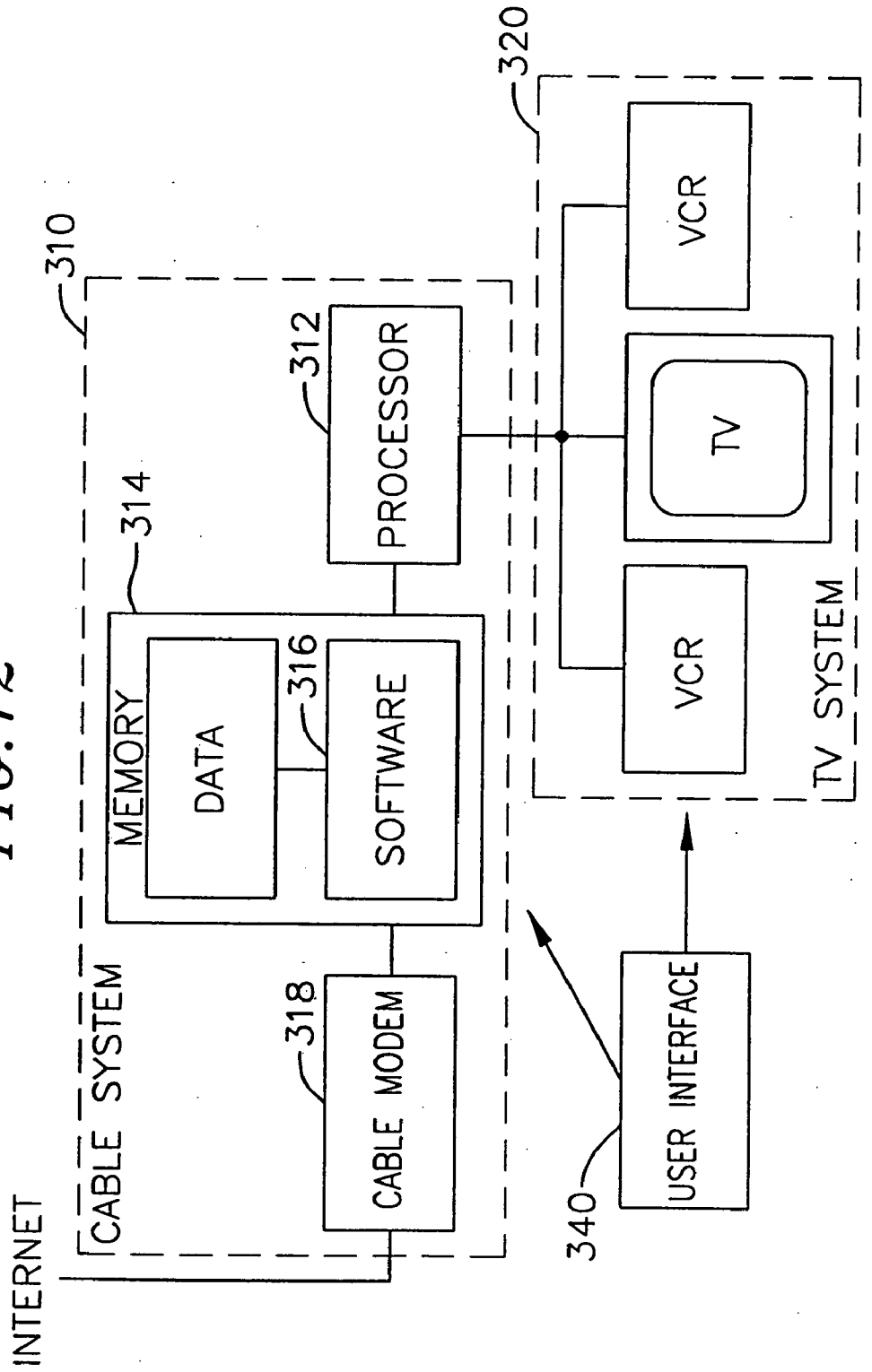

INTERNET
CABLE SYSTEM
310
CABLE MODEM
318
MEMORY
314
DATA
316
SOFTWARE
PROCESSOR
312
320
VCR
TV
VCR
TV SYSTEM
USER INTERFACE
340

FIG. 12

FIG. 13

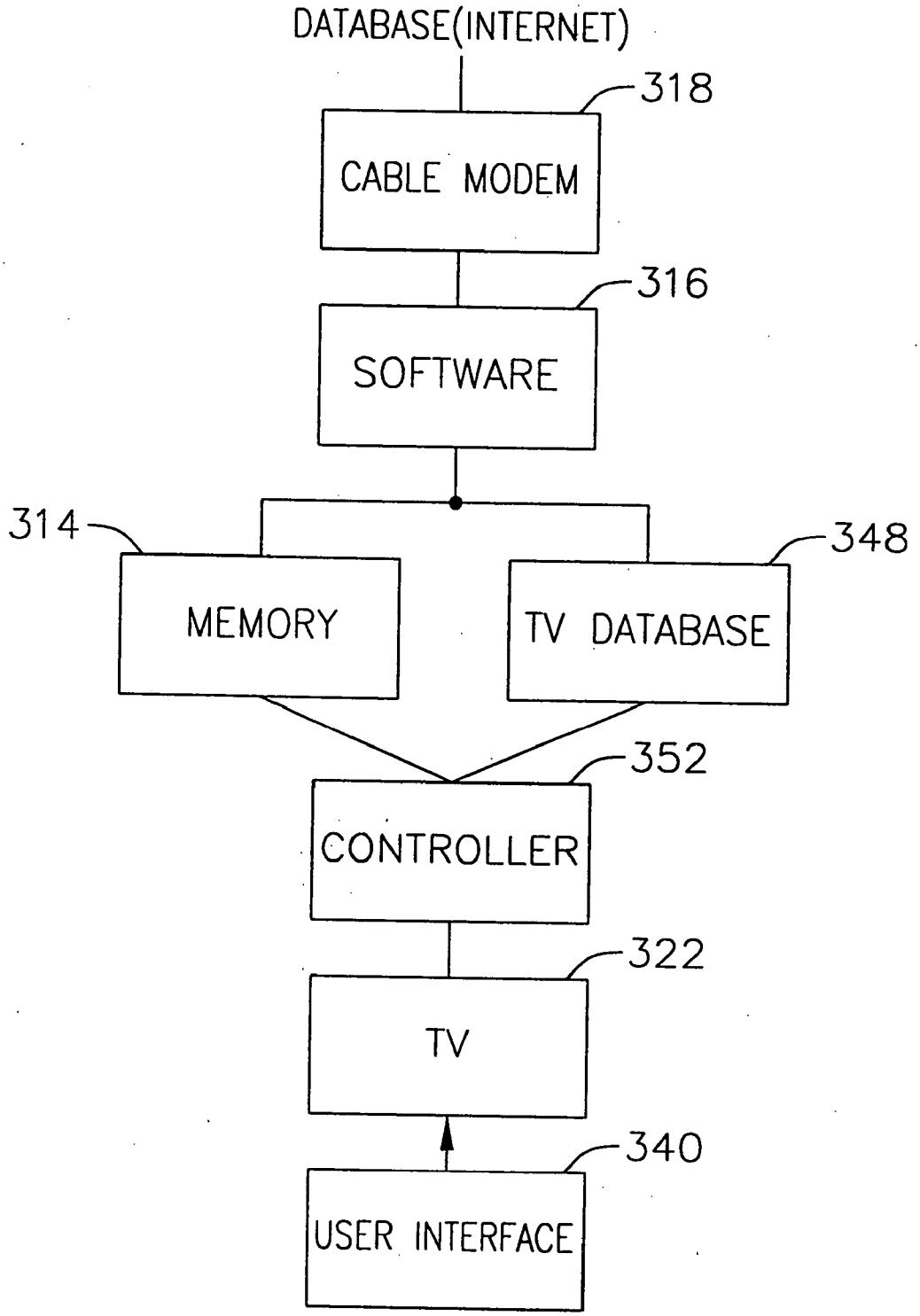

DATABASE(INTERNET)
318
CABLE MODEM
316
SOFTWARE
314
MEMORY
348
TV DATABASE
352
CONTROLLER
322
TV
340
USER INTERFACE

FIG. 14

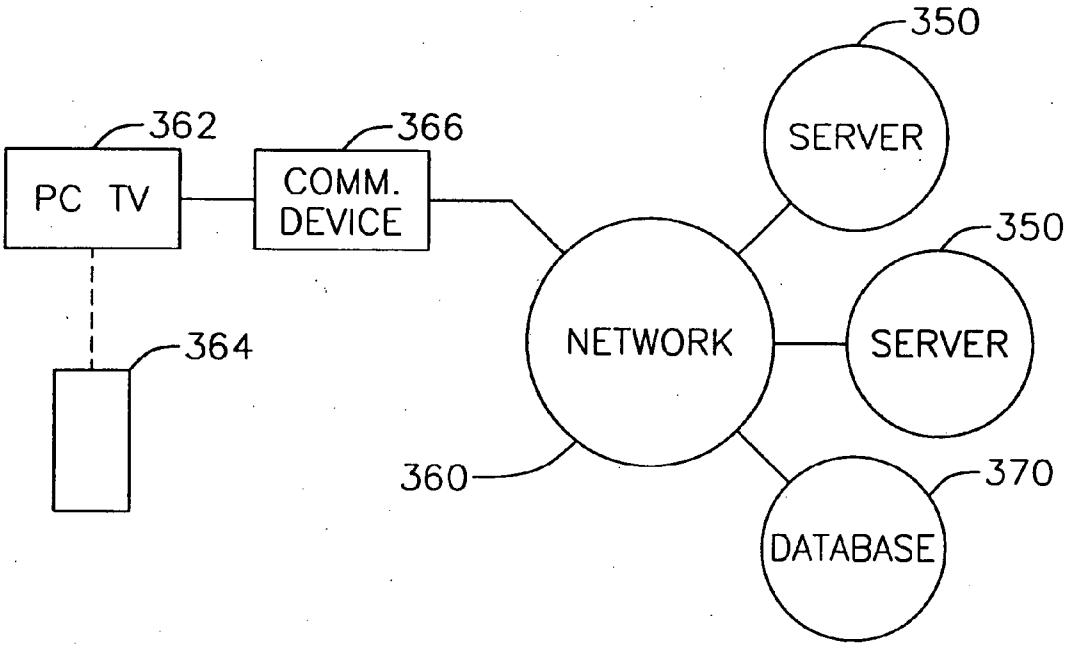

350
SERVER
362
366
PC TV
COMM. DEVICE
350
NETWORK
SERVER
364
360
370
DATABASE

FIG. 15

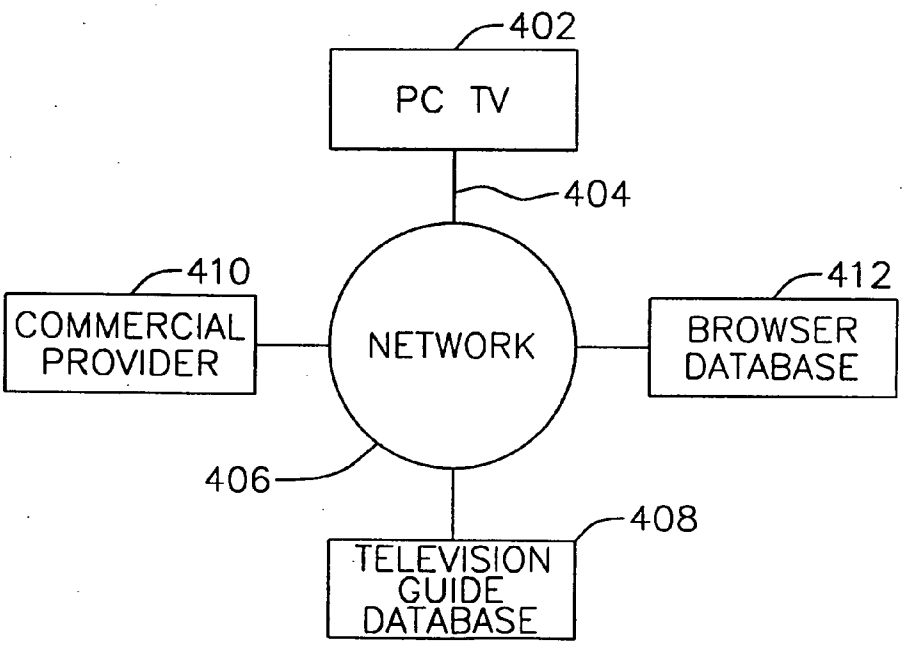
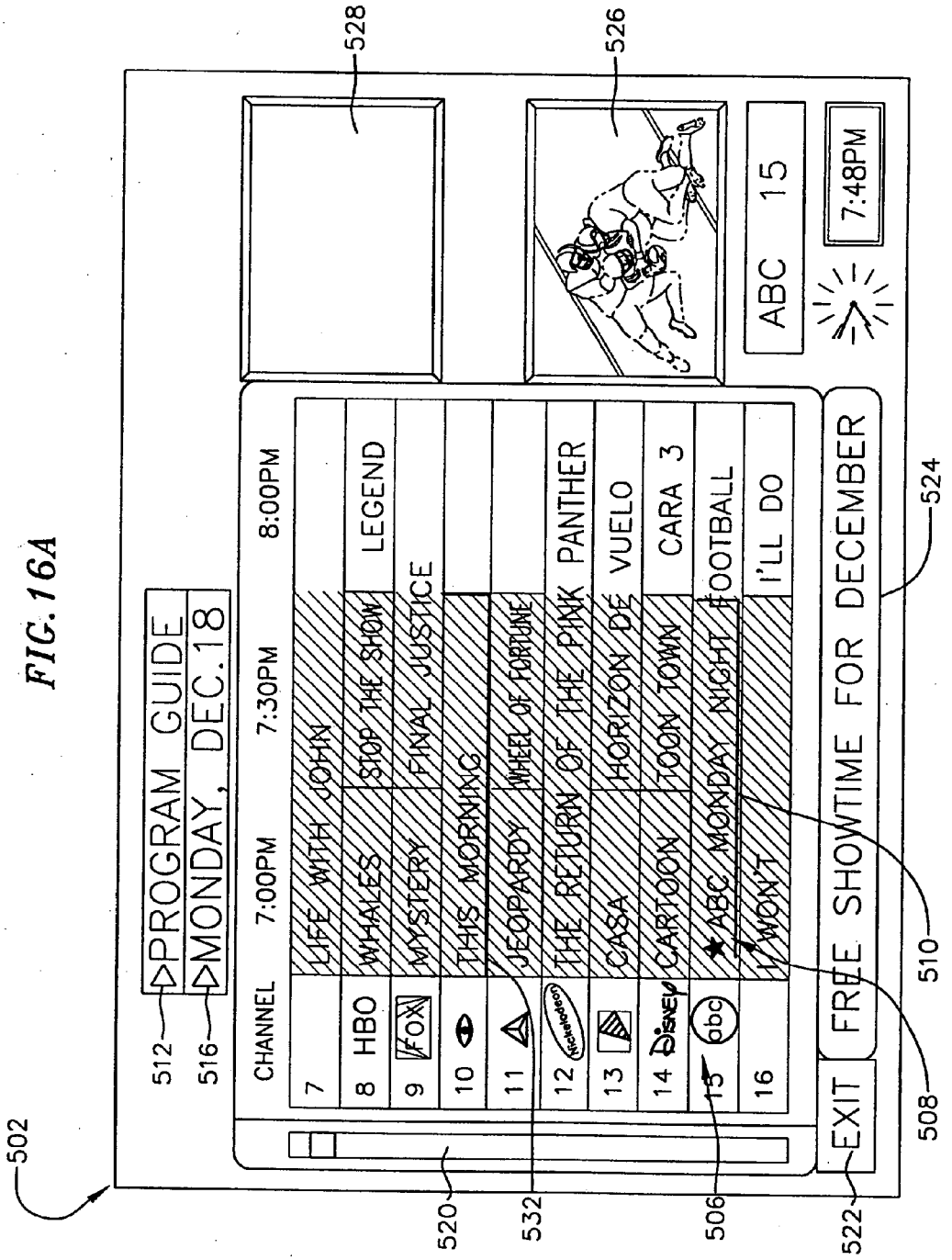

402
PC TV
404
410
412
COMMERCIAL PROVIDER
NETWORK
BROWSER DATABASE
406
408
TELEVISION GUIDE DATABASE

FIG. 16A


502
PROGRAM GUIDE
MONDAY, DEC.18
512
516
CHANNEL
7:00PM
7:30PM
8:00PM
7
8 HBO
9 FOX
10
11
12
13
14
15
16
LIFE WITH JOHN
WHALES
STOP THE SHOW
LEGEND
MYSTERY
FINAL JUSTICE
THIS MORNING
JEOPARDY
WHEEL OF FORTUNE
THE RETURN OF THE PINK PANTHER
CASA
HORIZON DE
VUELO
CARTOON
TOON TOWN
CARA 3
ABC MONDAY NIGHT FOOTBALL
I WON'T
I'LL DO
528
526
ABC 15
7:48PM
FREE SHOWTIME FOR DECEMBER
524
510
508
506
532
520
EXIT
522

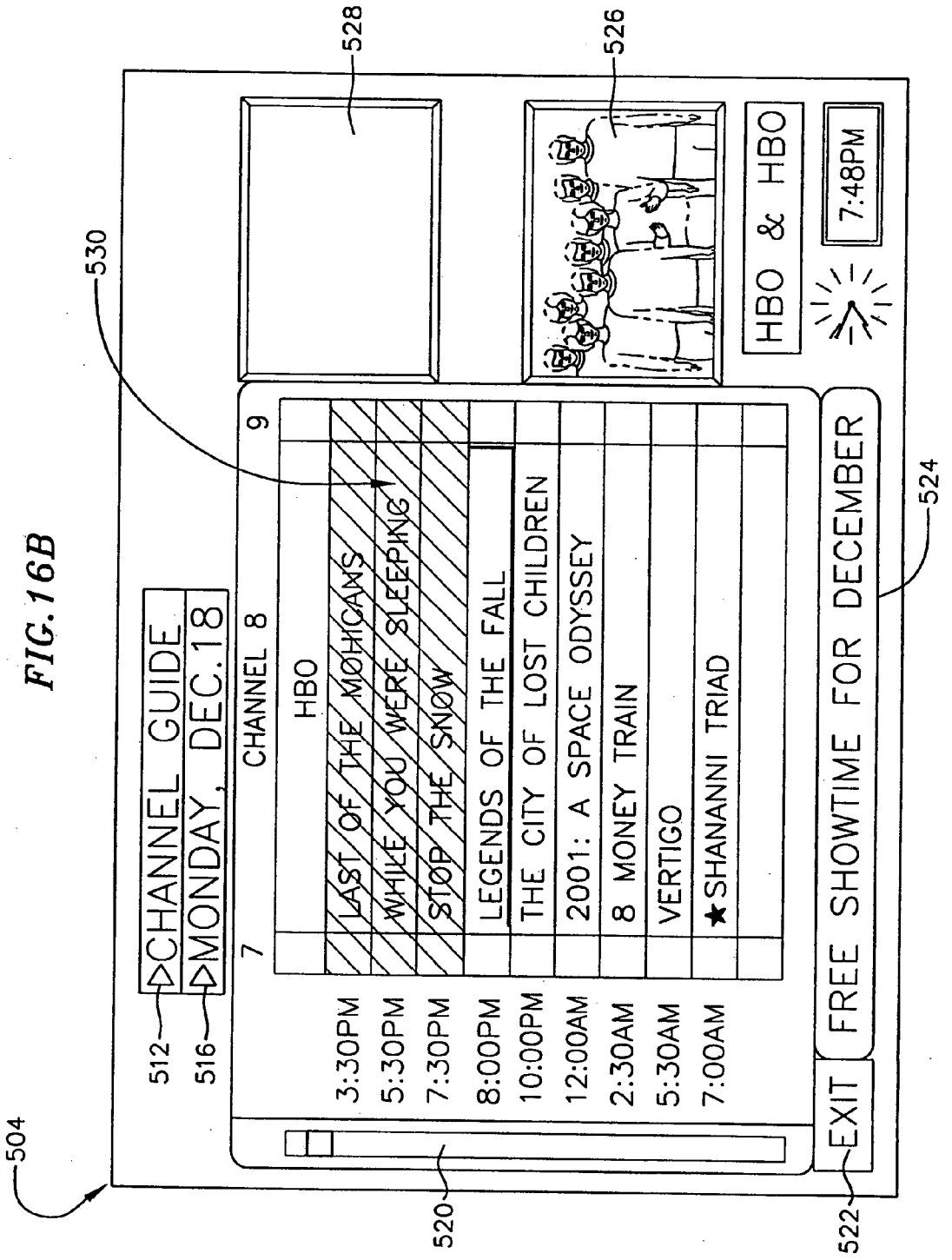

504
530
528
526
CHANNEL GUIDE
MONDAY, DEC.18
512
516
CHANNEL 8
7
9
HBO
3:30PM LAST OF THE MOHICANS
5:30PM WHILE YOU WERE SLEEPING
7:30PM STOP THE SNOW
8:00PM LEGENDS OF THE FALL
10:00PM THE CITY OF LOST CHILDREN
12:00AM 2001: A SPACE ODYSSEY
2:30AM 8 MONEY TRAIN
5:30AM VERTIGO
7:00AM ★SHANANNI TRIAD
520
HBO & HBO
7:48PM
FREE SHOWTIME FOR DECEMBER
524
EXIT
522

FIG. 16B

FIG. 17A

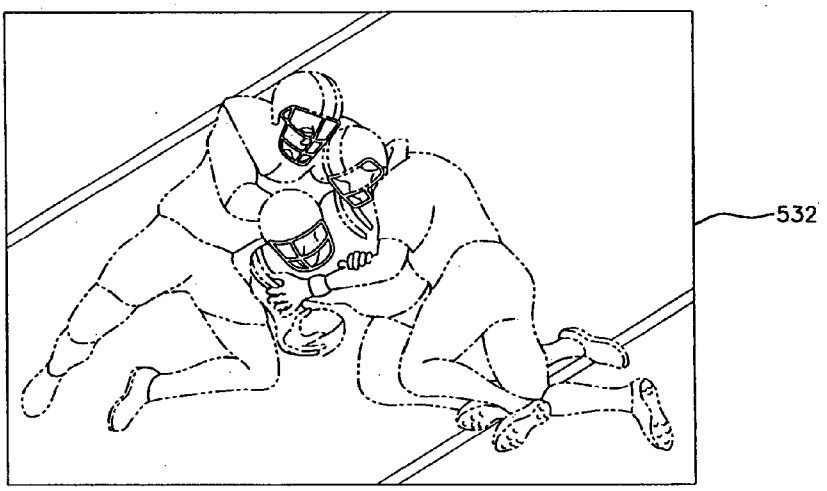


FIG. 17B

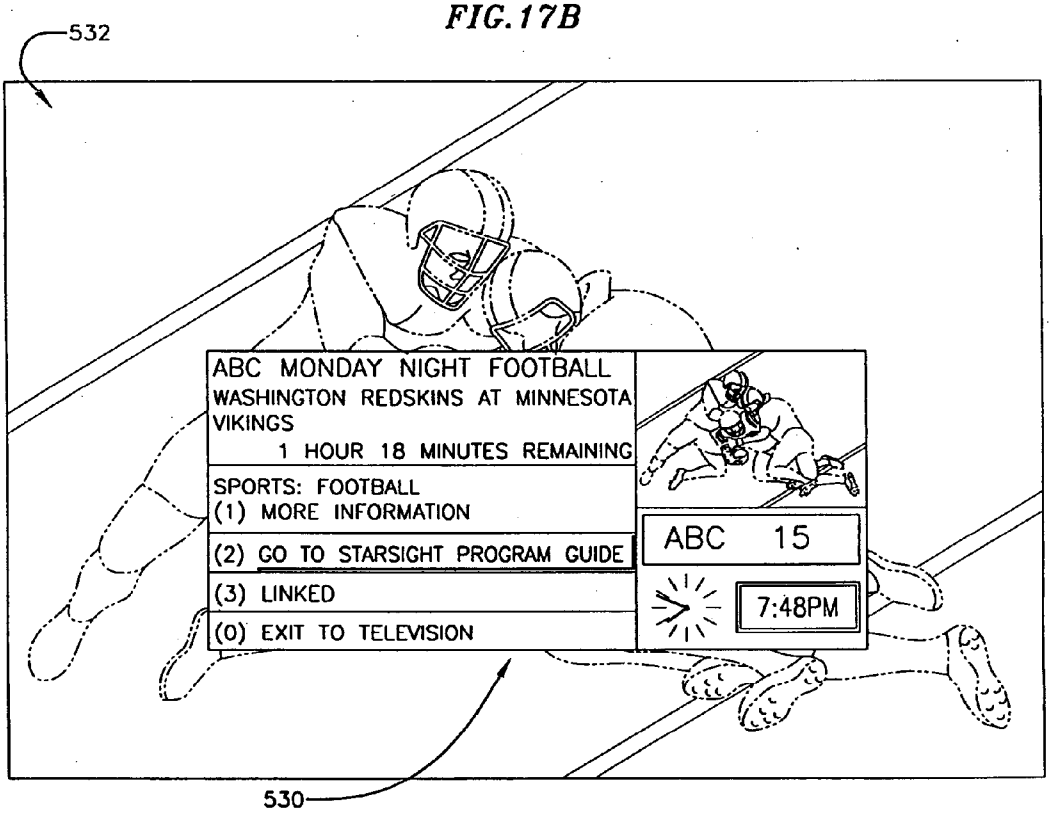


FIG. 17C

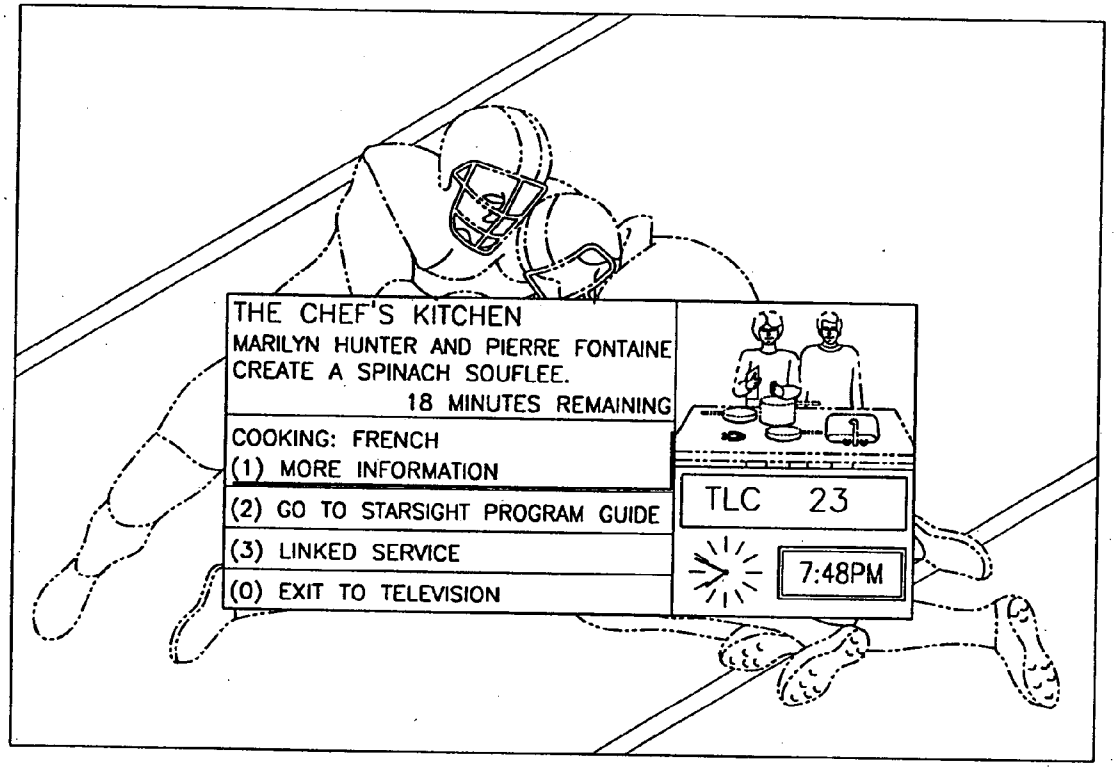

THE CHEF'S KITCHEN
MARILYN HUNTER AND PIERRE FONTAINE CREATE A SPINACH SOUFLEE.
18 MINUTES REMAINING
COOKING: FRENCH
(1) MORE INFORMATION
(2) GO TO STARSIGHT PROGRAM GUIDE
(3) LINKED SERVICE
(0) EXIT TO TELEVISION
TLC 23
7:48PM

FIG. 18A

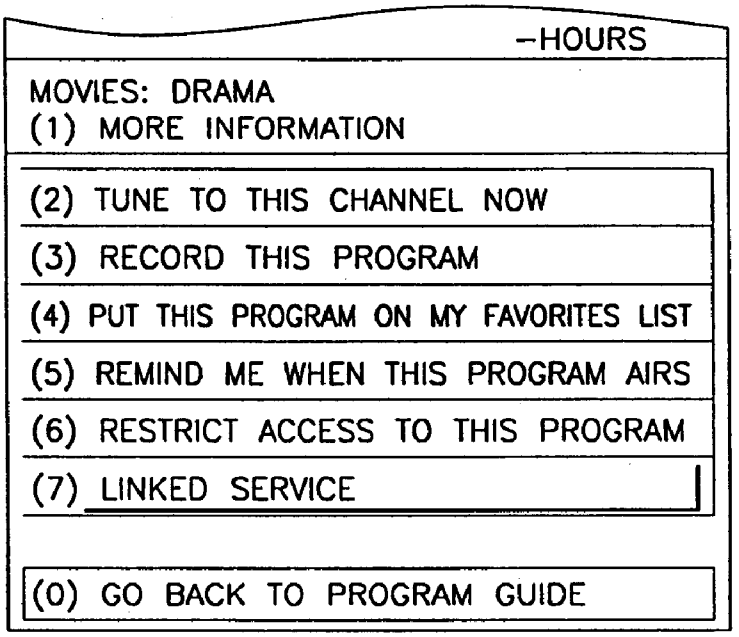


FIG. 18B

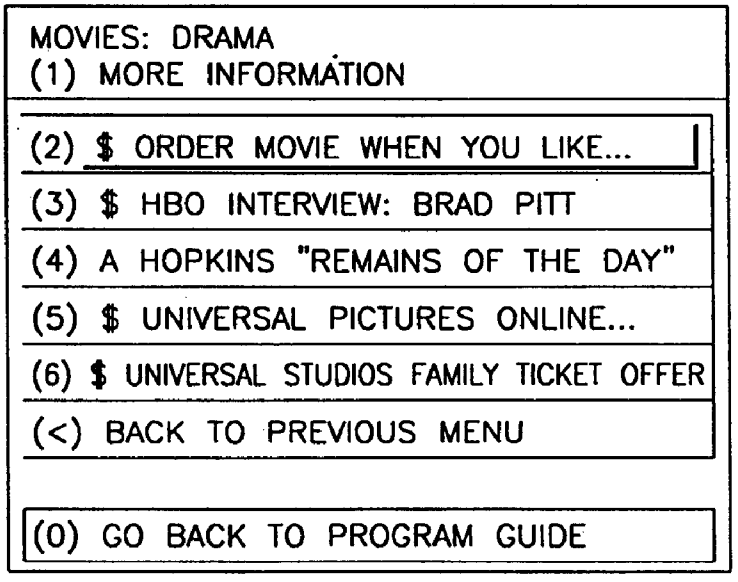


FIG. 18C

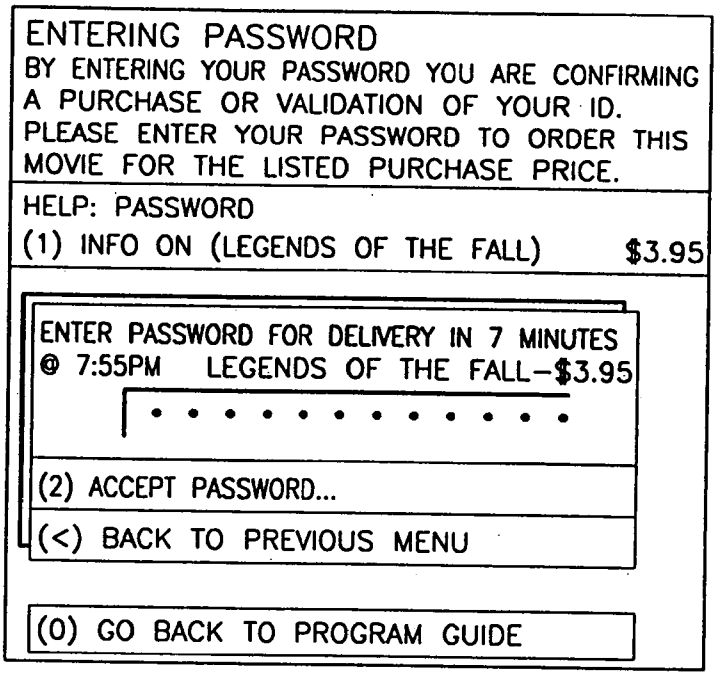


FIG. 18D

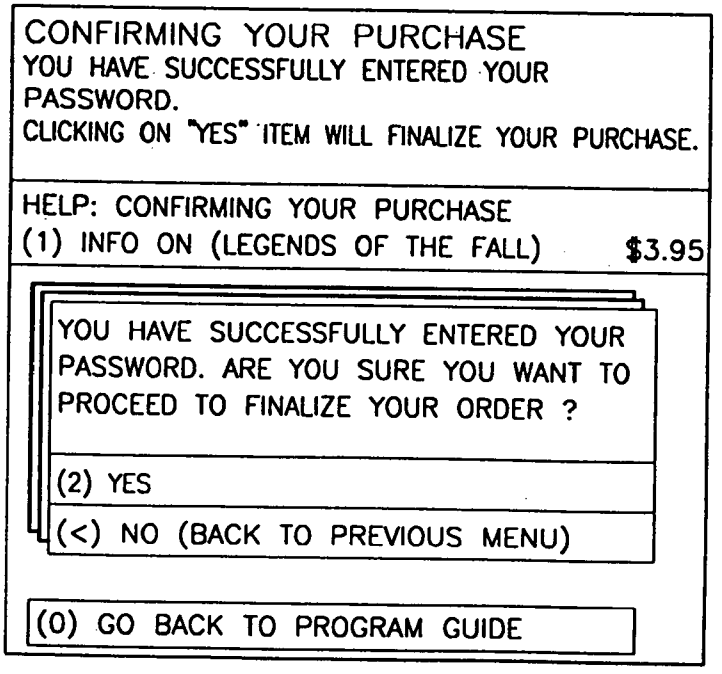


FIG. 18E

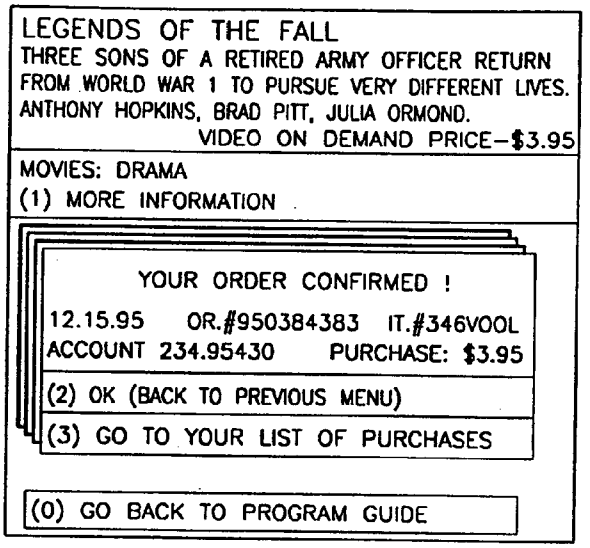


FIG. 19A

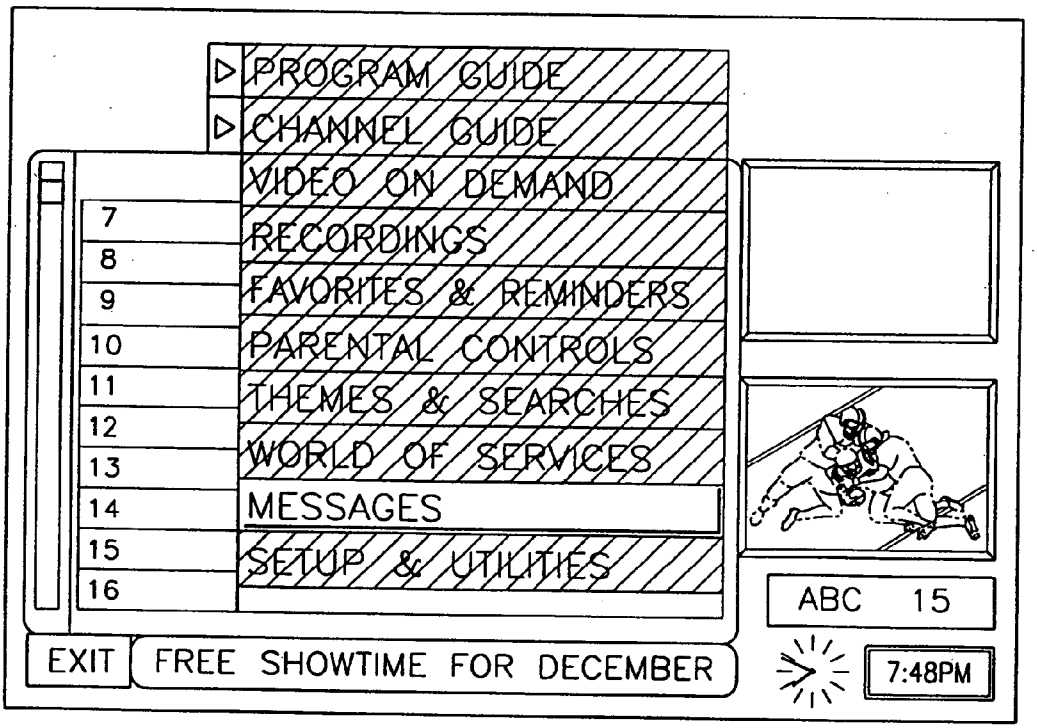


FIG. 19B

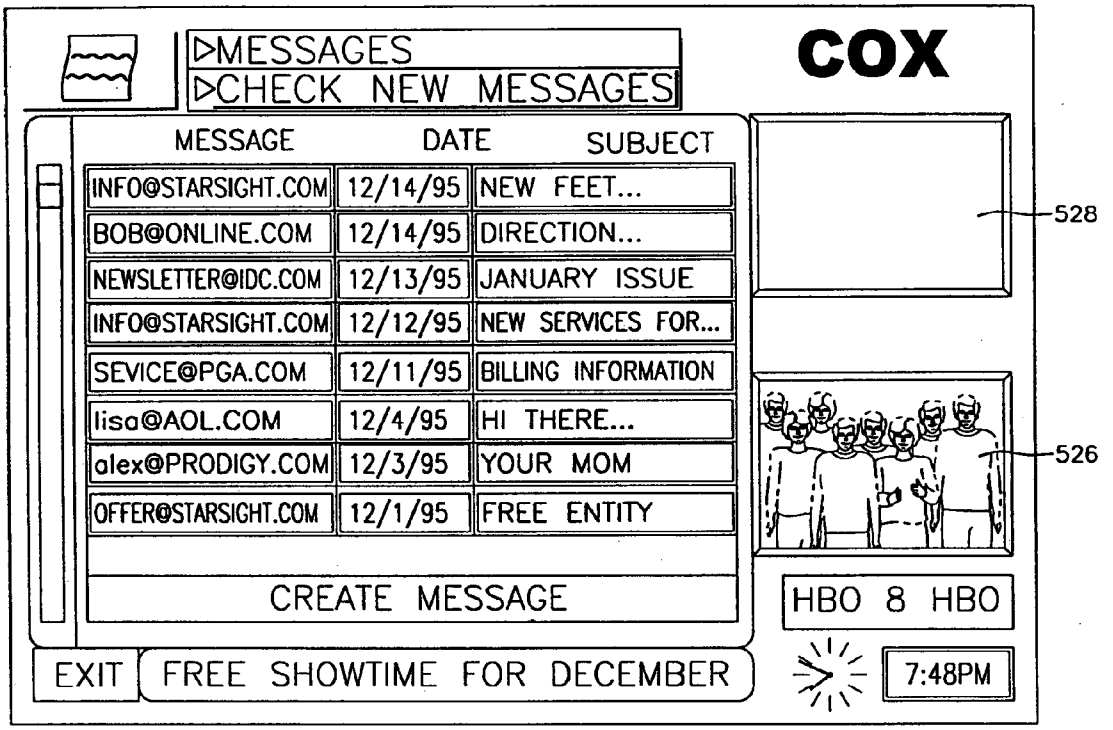


FIG. 19C

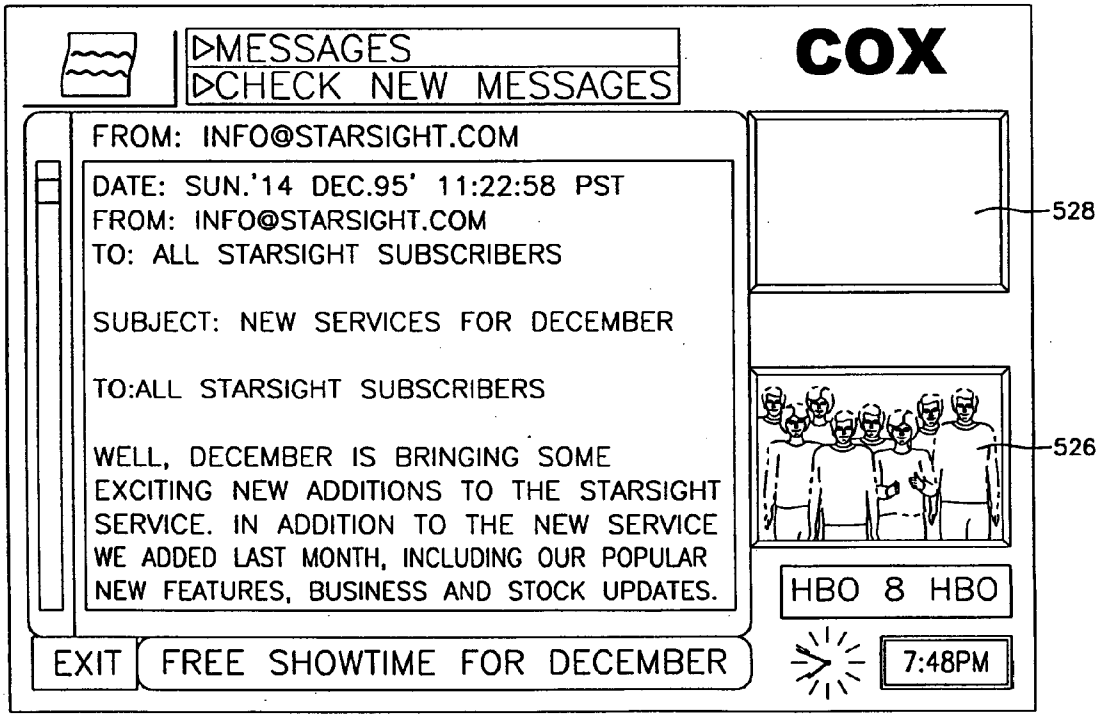


FIG.20A

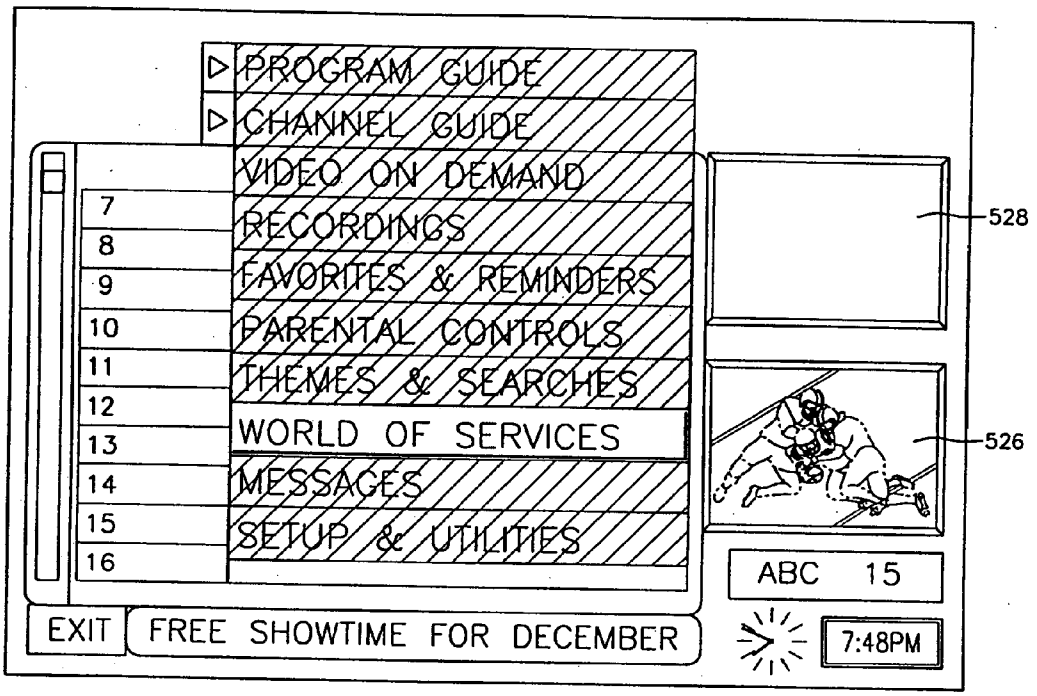

PROGRAM GUIDE
CHANNEL GUIDE
VIDEO ON DEMAND
RECORDINGS
FAVORITES & REMINDERS
PARENTAL CONTROLS
THEMES & SEARCHES
WORLD OF SERVICES
MESSAGES
SETUP & UTILITIES
7
8
9
10
11
12
13
14
15
16
528
526
ABC 15
EXIT
FREE SHOWTIME FOR DECEMBER
7:48PM

FIG.20B

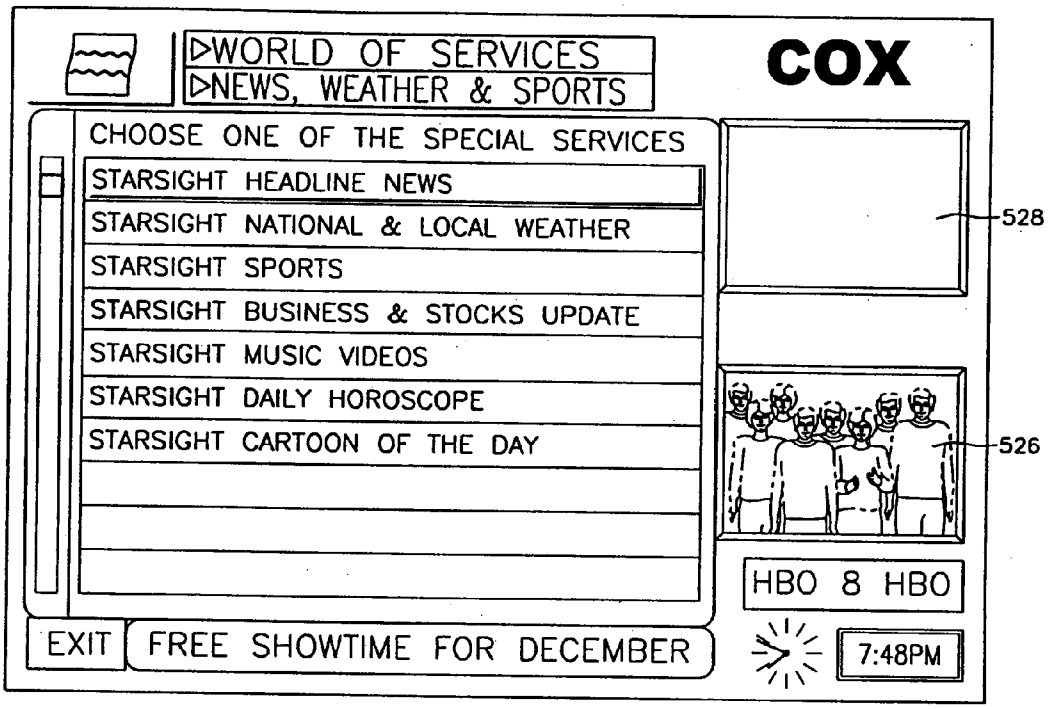


FIG.20C

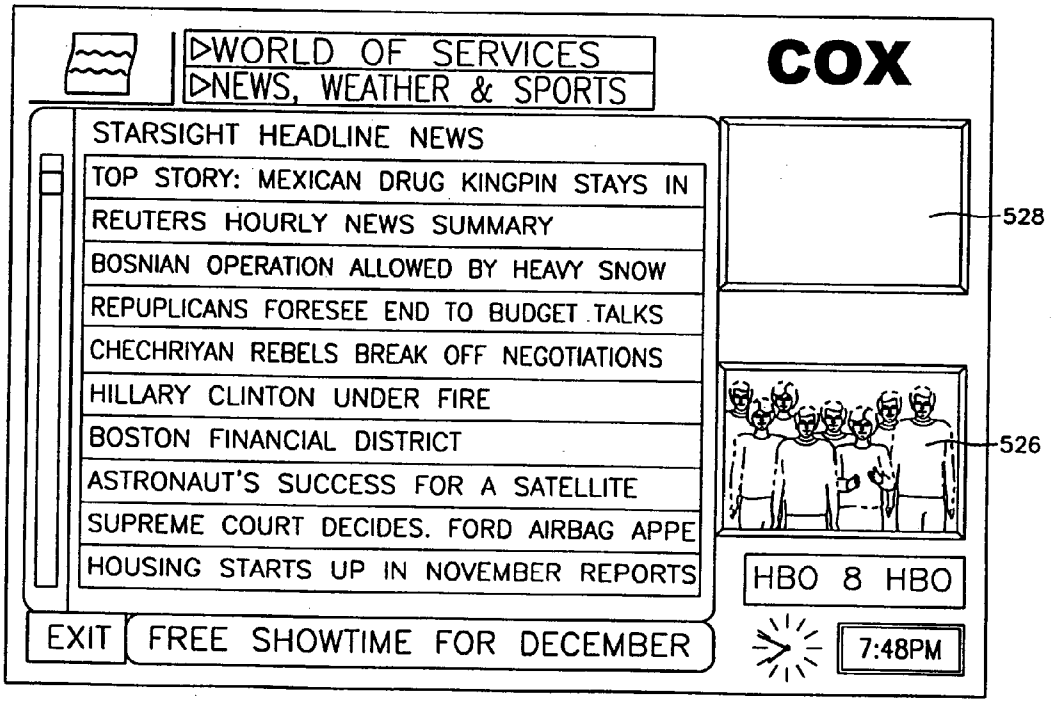


FIG.21A

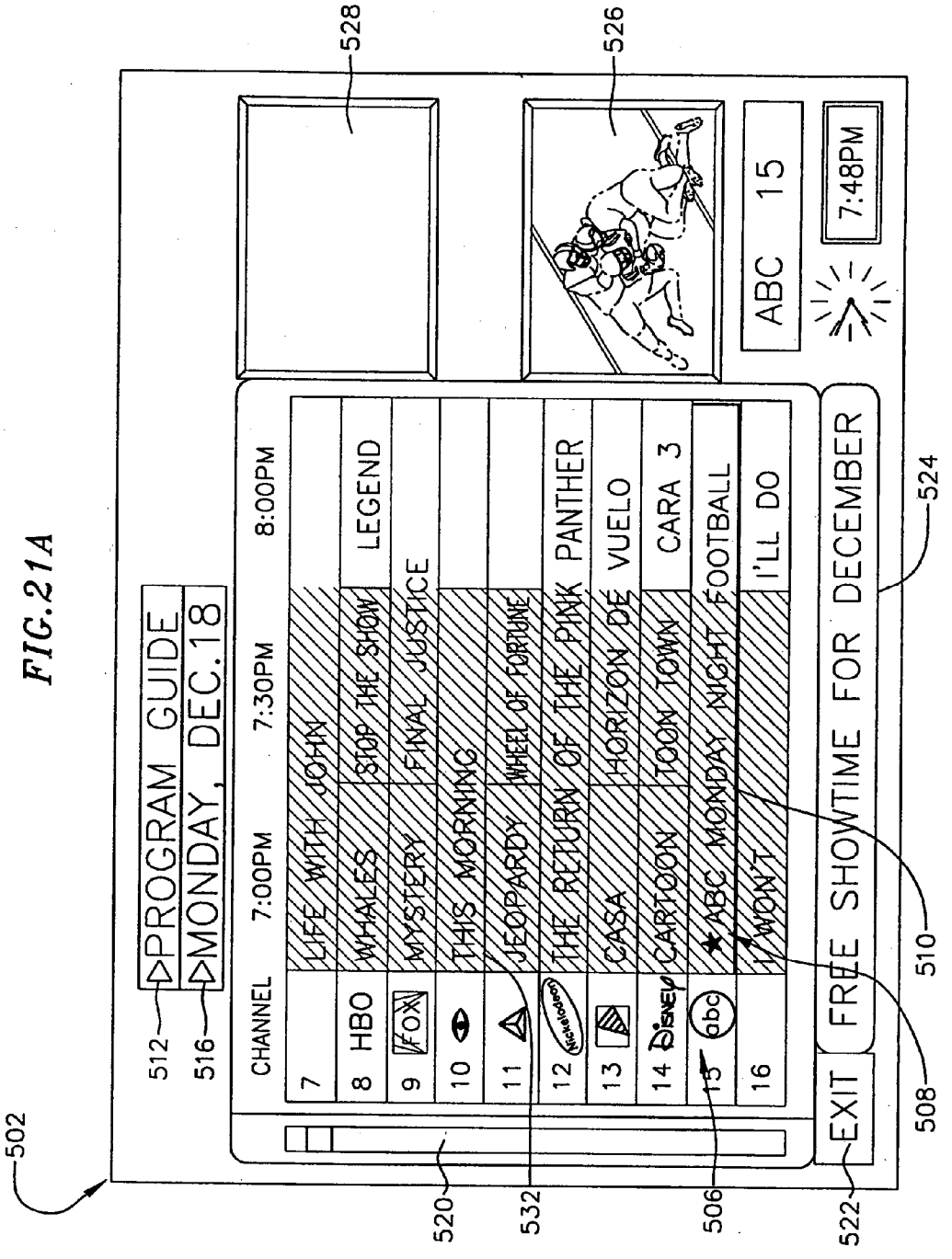

502
PROGRAM GUIDE
MONDAY, DEC.18
512
516
CHANNEL 7:00PM 7:30PM 8:00PM
7
8 HBO LIFE WITH JOHN
9 FOX WHALES STOP THE SHOW LEGEND
10 MYSTERY FINAL JUSTICE
11 THIS MORNING
12 JEOPARDY WHEEL OF FORTUNE
13 THE RETURN OF THE PINK PANTHER
14 CASA HORIZON DE VUELO
15 CARTOON TOON TOWN CARA 3
16 ABC MONDAY NIGHT FOOTBALL
I'LL DO
I WON'T
528
526
ABC 15
7:48PM
FREE SHOWTIME FOR DECEMBER
524
510
508
506
532
520
EXIT
522

FIG.21B

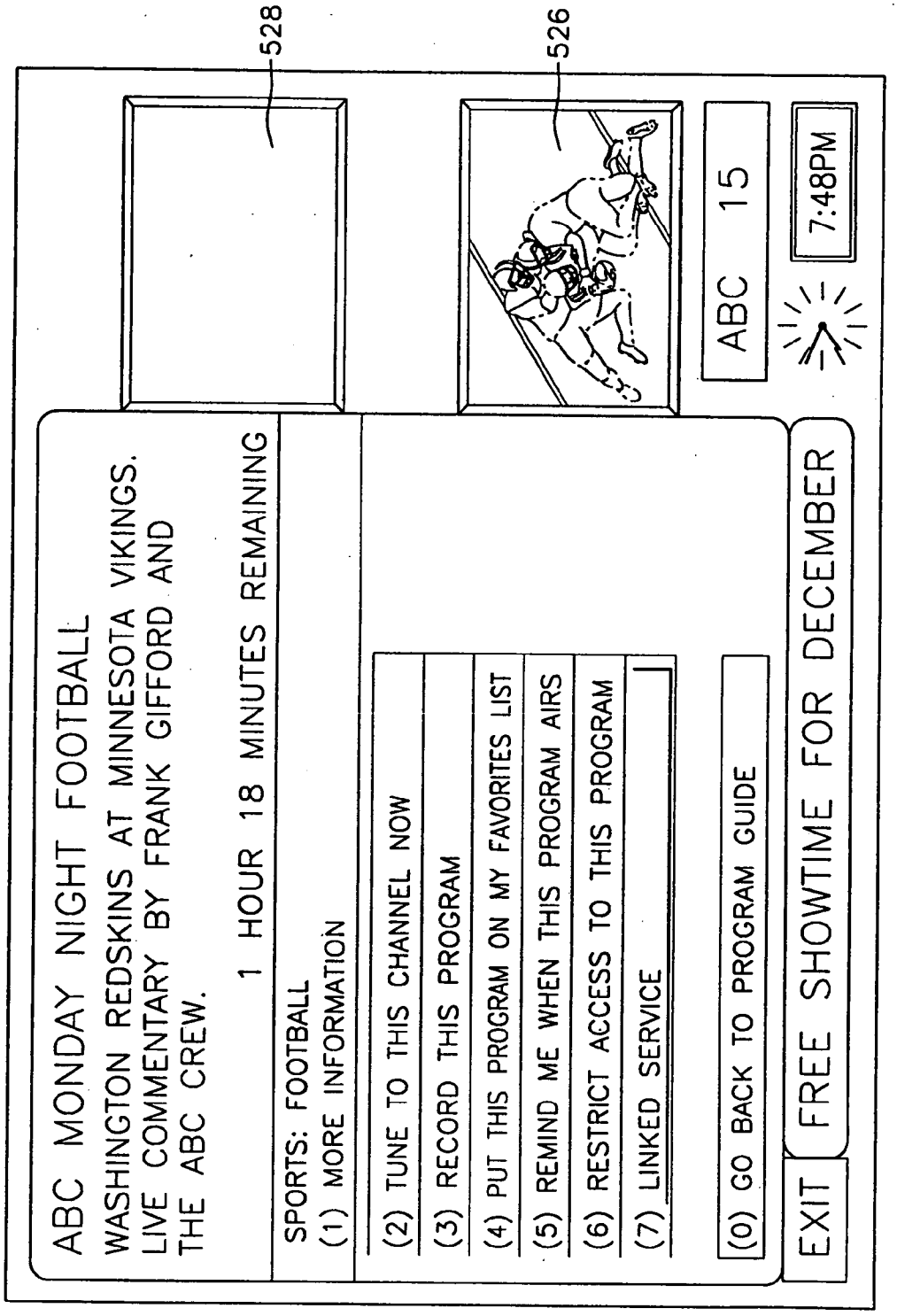

528
526
ABC MONDAY NIGHT FOOTBALL
WASHINGTON REDSKINS AT MINNESOTA VIKINGS.
LIVE COMMENTARY BY FRANK GIFFORD AND
THE ABC CREW.
1 HOUR 18 MINUTES REMAINING
SPORTS: FOOTBALL
(1) MORE INFORMATION
(2) TUNE TO THIS CHANNEL NOW
(3) RECORD THIS PROGRAM
(4) PUT THIS PROGRAM ON MY FAVORITES LIST
(5) REMIND ME WHEN THIS PROGRAM AIRS
(6) RESTRICT ACCESS TO THIS PROGRAM
(7) LINKED SERVICE
(0) GO BACK TO PROGRAM GUIDE
ABC 15
7:48PM
EXIT
FREE SHOWTIME FOR DECEMBER

FIG.21C

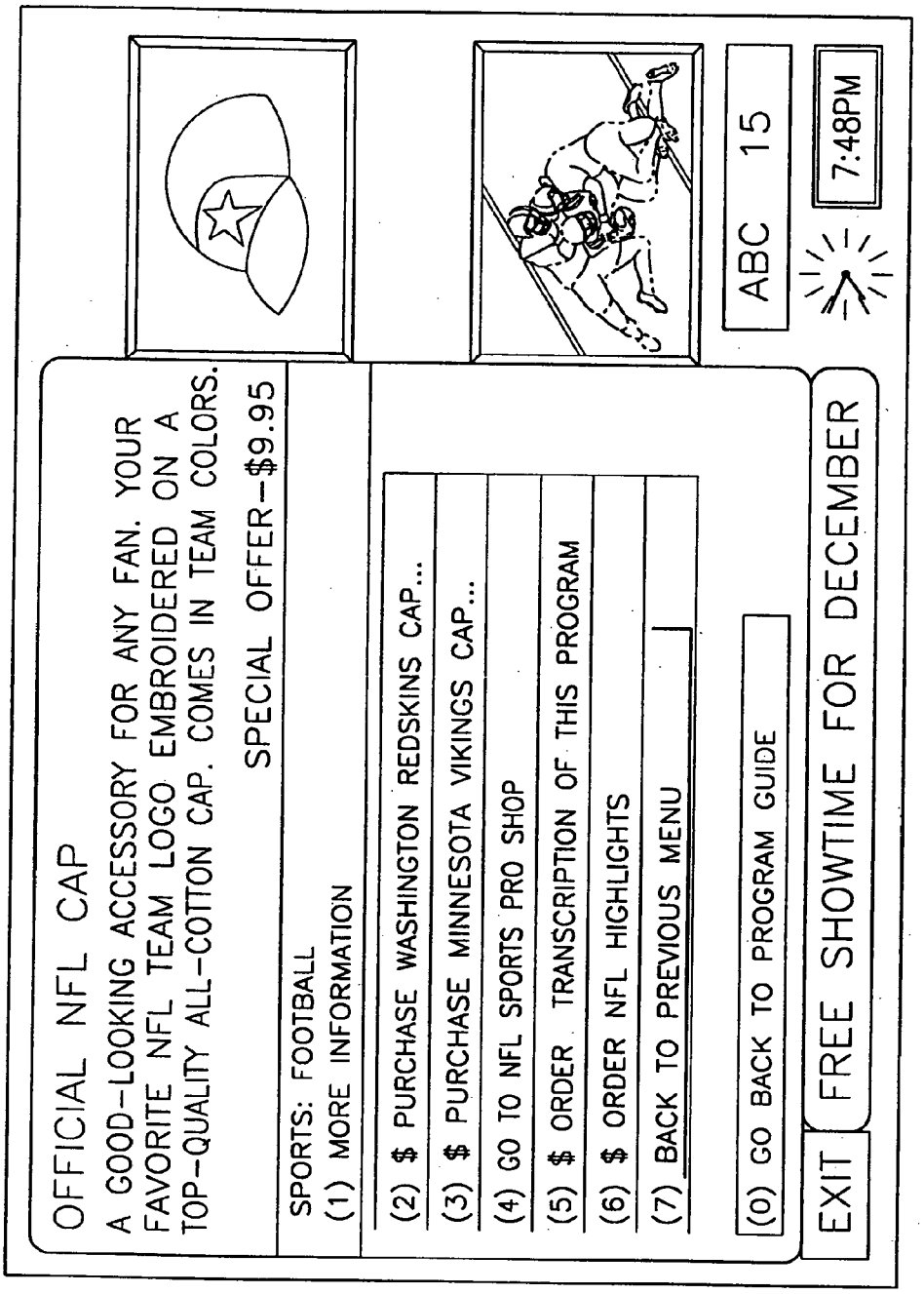

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SPORTS: FOOTBALL
(1) MORE INFORMATION
(2) $ PURCHASE WASHINGTON REDSKINS CAP...
(3) $ PURCHASE MINNESOTA VIKINGS CAP...
(4) GO TO NFL SPORTS PRO SHOP
(5) $ ORDER TRANSCRIPTION OF THIS PROGRAM
(6) $ ORDER NFL HIGHLIGHTS
(7) BACK TO PREVIOUS MENU
(0) GO BACK TO PROGRAM GUIDE
ABC 15
7:48PM
EXIT
FREE SHOWTIME FOR DECEMBER

FIG.21D

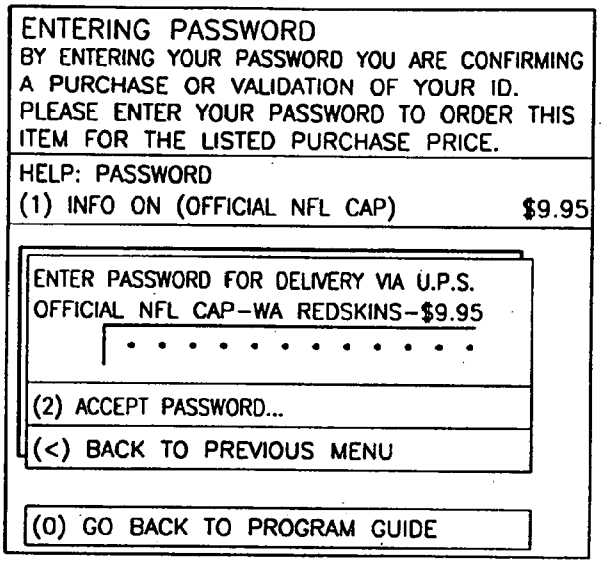


FIG.21E

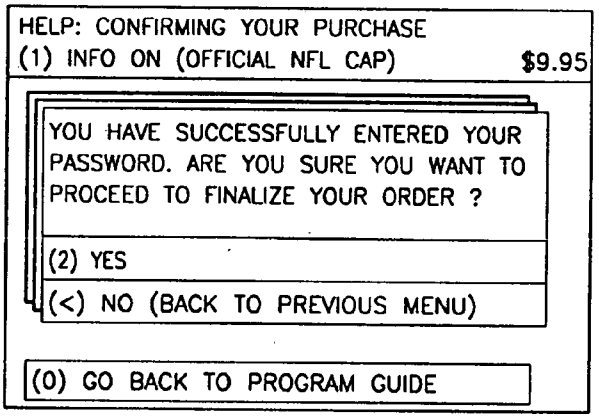
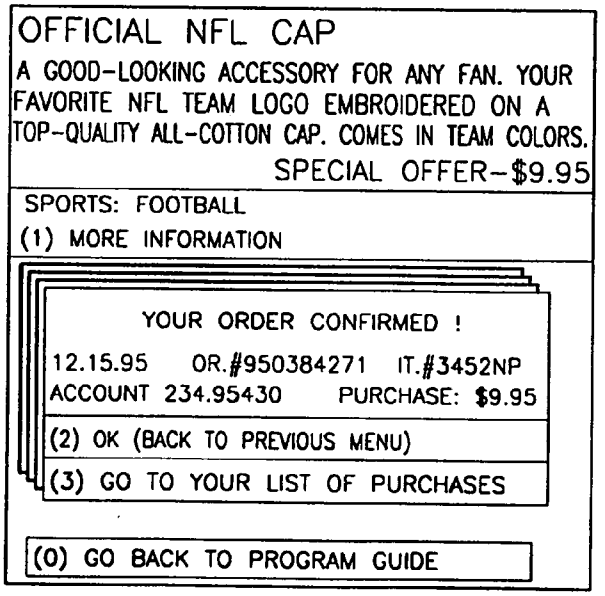


FIG.21F



SYSTEMS AND METHODS FOR LINKING TELEVISION VIEWERS WITH ADVERTISERS AND BROADCASTERS

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is a continuation-in-part of Provisional Patent Application Ser. Nos. 60/022,826, filed on Jul. 26, 1996, and 60/015,648, filed on Apr. 19, 1996, and U.S. patent application Ser. No. 08/537,650, filed on Oct. 2, 1995, the complete disclosures of which are incorporated herein by reference. This application is also related to U.S. patent application Ser. No. unassigned, filed Apr. 11, 1997 (Attorney Docket No. 14774-004410), and its Appendices A, B, and C, the complete disclosure which is also incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] The present invention generally relates to systems and methods for providing information to television viewers, and more particularly to systems and methods for allowing the viewer to retrieve, search, select and interact with television schedule information located in a remote database, computer network or on-line service, e.g., a network server on the Internet or World Wide Web.

[0003] 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 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. Pat. No. 5,353,121 (Young et al.), 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 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.

[0004] The recent development of television schedule systems, such as the above described patent to Young, have created many new challenges and opportunities. One such challenge and opportunity is to provide viewers with additional information associated with a particular program in the television guide. As a television viewer is browsing through the television programs, he or she may wish to obtain more information relating to specific areas of interest or concerns associated with the show, such as the actors, actresses, other movies released during the same time period, or travel packages or promotions that may be available through primary, secondary or third party vendors. Offering this type of information to the television viewer can be difficult, however, because their are hundreds of different programs broadcast every day. In addition, the available information changes at a rapid pace, which makes it even more difficult to provide this information in present television schedule guides.

[0005] In television broadcasting, it may also be desirable to interact with the viewer. There are many commercials and programs which request viewer action such as purchasing an advertised product, making a monetary contribution, responding to a survey, answering a question, or participating in contests with other viewers, for example. One problem with this existing system is that it is often difficult to motivate a viewer to request information or send in a contribution after the broadcast of the commercial or program. Viewers will often forget the advertisement or simply lose motivation to spend money or request information after the commercial or program is over. Another problem is that companies sponsoring these commercials or programs would often like to provide their viewers with further information, if the viewers could be identified or if the viewer requests the additional information. Thus, it would be desirable to provide a ready and efficient method to facilitate an exchange of information between television viewers and producers, promoters and advertisers during the broadcast of the commercial or program.

SUMMARY OF THE INVENTION

[0006] The present invention provides systems and methods for providing television schedule information on a visual interface, and for allowing the viewer to retrieve, search, select and interact with information located in a remote database, computer network or on-line service, such as a network server on the Internet or World Wide Web. The television schedule information can be displayed on a variety of visual interfaces, such as televisions screens, computer monitors, PCTV screens and the like. The television schedule information may be stored on the viewer's computer, television, PCTV, or a remote server (e.g., a website), or the television schedule information may be downloaded from a remote database or computer network to the viewer's computer, television or PCTV. The present invention also provides systems and methods for allowing the viewer to navigate and interact with a program 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, week or month. 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.

[0007] In an exemplary embodiment of the present invention, a system and method is provided for directly linking television viewers with broadcasters and advertisers during the real-time broadcast or non-real-time internet broadcast of a commercial or program. In this embodiment, the system includes a viewer interface, such as a television, computer, PCTV or a television coupled to a computer system, and a communication device for coupling the viewer interface with a computer network, such as the Internet or World Wide Web. A television guide database or network server is coupled to the computer network, or directly to the viewer interface for providing the television schedule and/or listing information to the viewer. The viewer interface will have a memory and a processor with appropriate software (not shown) for searching, retrieving, initiating a subscription to and interacting with information from the television guide database, or the commercial databases coupled to the computer network. Alternatively, this function may be provided through the com-

puter network by allowing the viewer to access, download, and/or automatically upgrade an application or applet (e.g., a JAVA™ applet) having appropriate software to run the television schedule and/or listing information guide on a display.

[0008] In the above embodiment, commercial providers (e.g., Budweiser) and/or television station broadcasters (e.g., ABC) and/or program directory, library, or archival sources (e.g., Turner Classics Film Library or other such repository of digitally-available programs or programming) may also have databases coupled to the viewer interface. In this manner, the viewer may directly access these databases during the broadcast of a television program, or while the viewer is browsing through the television schedule and/or listing information guide. For example, the viewer may purchase goods and services directly through the commercial sponsor, or through a delivery system provided by the television schedule and/or listing information guide. This type of advertising allows the advertiser to directly target a particular program, and it allows the viewer to directly purchase the products during the advertisement or associated program. Consequently, viewers will not forget the advertisement or simply lose motivation to spend money or request information and/or related products, offers, and services after the commercial or program is over.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. **1** is a schematic view of a representative interactive computer system coupled to a television system.

[0010] FIG. **2** illustrates another exemplary television system for use with an electronic program guide according to the present invention.

[0011] FIG. **3** is a block diagram of an exemplary electronic hardware unit utilized to perform the electronic on-screen schedule display and other functions for the electronic program guide of the present invention.

[0012] FIG. **4** illustrates a hierarchical structure of a database for the electronic hardware unit of FIG. **3**.

[0013] FIG. **5** schematically illustrates a channel data table for the data structure of FIG. **4**.

[0014] FIG. **6** illustrates a show list data table for the data structure of FIG. **4**.

[0015] FIGS. **7**A and **7**B illustrate show title entries and show description entries, respectively, for the data structure of FIG. **4**.

[0016] FIGS. **8** and **9** illustrate theme category entries and them subcategory entries, respectively, for the data structure of FIG. **4**.

[0017] FIG. **10** illustrates an exemplary satellite for transmitting program information to the television system of FIG. **2**.

[0018] FIG. **11** illustrates several arrangements for providing television schedule information from a database to a television for display.

[0019] FIG. **12** illustrates an interactive television schedule system according to the invention incorporating a cable system coupled to a television system.

[0020] FIG. **13** illustrates a preferred arrangement for providing television schedule information from the cable system of FIG. **12** to a television for display to the viewer.

[0021] FIG. **14** illustrates a system and method for accessing television schedule information at a network file server on the internet.

[0022] FIG. **15** schematically illustrates a system and method for viewer interaction with commercial advertisers and program sponsors within the television schedule information system of the present invention.

[0023] FIGS. **16**A and **16**B are schematic views of a representative program guide and a channel guide, respectively, for use with the television system of FIG. **1**.

[0024] FIGS. **17**A-**17**C are schematic views illustrating a method for selecting a program information menu, moving to the program guide of FIG. **16**A and browsing through information menus from other programs.

[0025] FIGS. **18**A-**18**E illustrate a Video On Demand menu and an associated submode menu.

[0026] FIGS. **19**A-**19**C illustrate a method for accessing and sending mail messages.

[0027] FIGS. **20**A-**20**C illustrate a Services Menu and a method for accessing special services and for purchasing items.

[0028] FIGS. **21**A-**21**F illustrate a system and method for contextually linking a program to a database on a computer network.

DESCRIPTION OF THE SPECIFIC EMBODIMENTS

[0029] The present invention provides systems and methods for providing television schedule and/or listing information to a viewer, and for allowing the viewer to link, search, select, retrieve, initiate a subscription to and interact with information in a remote database, computer network or online server, e.g., a network server on the Internet or World Wide Web. The television schedule and/or listing information can be displayed on a variety of viewer interfaces, such as televisions screens, computer monitors, PCTV screens and other interactive display devices. The television schedule and/or listing information may be stored on the viewer's computer, television, PCTV, or a remote server (e.g., a website), or the television schedule and/or listing information may be downloaded from a remote database or computer network and/or internet broadcast to the viewer's computer, television or PCTV. Suitable television schedule and/or listing information systems or video guides that can be used with the present invention are described in commonly assigned U.S. Pat. Nos. 5,353,121, 5,479,266, the complete disclosures of which are hereby incorporated by reference. The systems and methods of the present invention may also be useful with video guides available under the name of SuperGuide™ from The SuperGuide Corporation of Shelby, N.C.

[0030] In one embodiment, the invention incorporates an interactive computer system which assists the viewer in utilizing television schedule and/or listing information and linking with a database to search and retrieve, initiate a subscription to, information. Preferably, the information is contextually related to television programs within the television schedule and/or listing information. Referring to the drawings in detail, wherein like elements are indicated by like numerals, a representative television schedule and/or listing information system **2** for use with the contextual linking system and method of the present invention is illustrated in FIGS. **1**-**7**. As shown in FIG. **1**, schedule system includes a computer system **10** coupled to a television system **30**. Computer system **10** includes a standard computer **12** which is, for example, any available personal computer (e.g., IBM compatible, Macintosh, and the like). Computer **12** can also be located within a set-top box (e.g., a DSS box). Computer **12** contains a hard drive **14**, a processor **16** and a disk input **18** for providing computer **12** with various, additional software. An

input device **20** allows a viewer to interact with computer **12** and/or a television schedule guide (described below and illustrated in FIGS. **12-17**). Line **23** is connected to an available serial, parallel or other data port **23** on computer **12**. This line **23** is used to connect other devices/components to computer **12**.

[0031] In another embodiment, computer system **10** may be combined with television system **30** 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. Alternatively, the television may be incorporated into the computer so that the computer monitor performs this dual function. 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.

[0032] Television system **30** includes a television **32**, which may be any commercially available television, and a user input device **20**. Television system **30** may or may not include a video tape recorder (VCR). In this embodiment, VCRs **34** and **36** are coupled to television **32**. These VCRs **34** and **36** can be, for example, any commercially available VCRs or any other type of recording and/or storage device (analog or digital). Input device **20** allows the viewer to interact with television **32**, VCR **34**, and/or VCR **36**. Input device **20** may be a remote control, keyboard, mouse, a voice activated interface or the like. A suitable input device for use with the present invention is described in U.S. Provisional Application Ser. Nos. 60/022,826, filed on Jul. 26, 1996, and 60/015,648, filed on Apr. 19, 1996 (Attorney Docket Nos. 14774-004000 and 005500), the complete disclosures of which are incorporated herein by reference. A line **37** is used to connect other devices to VCR **34**. Other devices can also be connected in series between VCR **34** and television **32** via line **38**. With this configuration, computer **12** (or computer system **10**) and television **32** (or television system **30**) can be located in different rooms within a private residence or a commercial building.

[0033] In one embodiment, a computer program provided on diskettes, a CD ROM or other medium contains the software needed for receiving, organizing and displaying data for the television schedule guide. These diskettes are inserted in disk input **18** and the software for these diskettes is stored within computer **12** on hard drive **14** or on another mass storage location. This action can be performed by, for example, the user or a serviceperson. The computer program can also be provided access, download, and/or automatically upgrade, for example, via downloading from a satellite **24**, transmission through the internet or other on-line service, or transmission through another type of land line **22** (e.g., coax cable, telephone line, optical fiber, or wireless technology (e.g., Richochet™)).

[0034] In addition to the computer program, data for the basic schedule information and other related data (e.g., data relating to a particular show) are needed for the generation and maintenance of the television schedule and/or listing information guide. These data are received, in the preferred embodiment, via line **22**; they can also be provided via a satellite broadcast from satellite **24** or wireless technology (e.g., Richochet™). Additionally, the television schedule and/or listing information and related data can be sent directly to television **32** via satellite **24** or wireless technology (e.g., Richochet™). In this arrangement, the television schedule information and related data does not have to be transmitted from computer system **10** to television system **30**.

[0035] In one embodiment, line **22** is a telephone line which provides access to the internet or other on-line service via, for example, a regular modem or direct modem access to a schedule provider. The schedule data are then provided to the viewer from a remote database via the internet or other on-line service, or directly from the service provider. As stated above, line **22** can also be, for example, coax cable, optical fiber or any other land line which can provide data to computer **12**. The software program saved on hard drive **14** then utilizes the data received on line **22** to generate a television schedule guide. The user can retrieve this generated television schedule guide when desired.

1. Overview of a Preferred EPG System

[0036] In a preferred embodiment, the electronic program guide of the present invention may be implemented either on a personal computer, a PCTV, a television connected to a set-top box, or a television including a custom board. However, the invention is not limited to any particular hardware configuration and will have increased utility as new combinations of computers and television systems are developed. In the following any of the above will sometimes be referred to as a "TV system". Block diagrams of representative TV systems are depicted in FIG. **2**. Details of implementation are not depicted because the invention is not limited to any particular TV system.

[0037] As is well known, the picture to be displayed may be transmitted as an analog signal, for example according to the NTSC standard utilized in the United States, or as a digital signal modulated onto an analog carrier. The signals may be received over a cable, or via an antenna or satellite dish. Typically, television sets are designed to receive analog signals and computers display devices are designed to display pictures encoded in a digital format. However, decoder system converts the digital data to an analog signal for display on a television set and TV modems can format analog TV signals for display on a monitor.

[0038] In FIG. **2**, analog or digital TV signals, received via cable **60**, antenna **62**, or satellite dish **64**, are provided to a television system. If the signal is from a digital broadcast service, then a decoder **66** converts the signal to baseband video and audio or channel 3/4 RF. If the signal is an analog signal, it is passed through as a live video output. The television system **68**, depending on its configuration, receives selected ones of the outputs and displays the received program.

[0039] A PCTV includes a TV card **70**, connected to either live video, baseband video, or channel 3/4 output, digitizes the video image and displays the video image in a resizeable window on the computer monitor. The PCTV is also coupled to land telephone lines by a modem **72**.

[0040] If the received signal is an analog TV signal the TV card of the PCTV digitizes the analog signal and extracts included information from the vertical blanking intervals. On the other hand, if the signal is a digital signal, separate audio, video, VBI (vertical blanking information such as closed

caption, teletext, and program related information), program guide, and conditional access information are provided as separate bitstreams. The video and audio bitstreams for programs are converted to a format for display and the program guide information is processed to form program guide database. The processor, executing software stored in memory, generates interactive electronic program guide images and images of received programs. The guide can be used to interact with and control programs displayed in the window.

[0041] A television system configured to display an electronic program guide such as a guide provided by StarSight telecast includes an on-screen display controller and other hardware described below. If a standard analog broadcast signal is received program guide data is extracted from the VBI by a VBI data slicer and processed to form a program database. If a DBS digital signal is received, either from a satellite or cable, VBI and program data are provided in separate bit streams. The program guide images are generated are either generated locally or remotely and provided to an on screen display controller. Interactivity is provided via a remote control.

[0042] Alternatively, the program guide can be displayed on a computer monitor **83** that interactively controls the television set through, for example, an IR interface including an IR blaster **84** to generate IR codes to control the television and/or a VCR.

[0043] If the electronic guide database is generated locally, the system for creating the electronic programming guide must receive television schedule information and process the received information to create a database. Thus, the system usually requires, a data reception unit, a processor, memory to store program code and a database, an on-screen display generator (OSD), and a control interface for tuning to selected channels.

[0044] In one preferred embodiment, the schedule information is transmitted as a set of short commands of specified formats. Different commands communicate information such as a show schedule for a given channel, the title of each show in the schedule, descriptions and information attributes about each show in the channel. Thus, information for a show to be broadcast at a particular time is transmitted in several commands. ID numbers in the commands facilitate organizing the information into a relational database utilizing database engine (DBE) software stored in memory and executed by the processor.

[0045] In a preferred embodiment, a board is included at a viewer's television set and the database is stored locally and commands are transmitted in the VBIs of programming on a designated channel, for example PBS. An example of a board for receiving program guide information, generating program guide database, displaying the program guide, and interactively controlling the program guide is depicted in FIG. **3**. The commands are transmitted to the board in the vertical blanking intervals of programming broadcast on a designated channel.

[0046] Alternatively, the commands could be transmitted to the local unit over land telephone lines. Additionally, as described below, the database may be built remotely and the guide itself transmitted to the local unit.

[0047] The database engine builds a hierarchical database in the RAM. The hierarchical structure of the database is depicted in FIG. **4**. The database is structured internally as schedule data structures and theme data structures linked by handles and handle tables. Each handle is an index to a handle table which contains pointers to blocks of memory where items of the database are stored.

[0048] In another embodiment, for example a DSS system, program guide data is transmitted as a bit stream that is processed by the database engine.

[0049] Additionally, a N.E.W.S. (new, entertainment, weather, and sports) database has been developed. Commands including story text and story IDs are transmitted. Links from the program guide to stories related to a program can be created and the related stories can be accessed from the guide.

[0050] An advertisement database is also created from commands including advertising text and logos including IDs for linking the advertisements to shows displayed in the EPG. The user may access the advertising information directly from the guide.

[0051] An internet database is also created from commands including URLs to internet sites related to programs displayed on the EPG. If the viewer is viewing the EPG on a platform that is Web enabled, e.g., WebTV, a PC, or PCTV, then a linked site can be accessed directly from the EPG.

[0052] Additionally, a graphics program module builds various displays utilizing schedule, show title, and other information from the database. If the OSD controller operates in the character mode the display is a grid of character codes which are transferred to the OSD controller which generates the on-screen display.

[0053] An input-response user interface program module responds to user input to generate new displays responsive to the particular input. In one preferred embodiment, the user utilizes an input device, e.g., a remote control, mouse, voice activated interface or keyboard, to place a pointer over a part of the current display and clicks. A suitable input device for use with the present invention is described in U.S. Provisional Application Ser. Nos. 60/022,826, filed on Jul. 26, 1996, and 60/015,648, filed on Apr. 19, 1996 (Attorney Docket Nos. 14774-004000 and 005500), the complete disclosures of which are incorporated herein by reference. The input-response module responds to the position of the pointer and the particular display currently displayed to generate a responsive display or take a particular action. In another preferred embodiment the user interface responds to function buttons on a remote control. Specific examples will be described below.

2. Detailed Description of the EPG System

[0054] FIG. **3** is a block diagram of an embodiment of the electronic hardware unit **52** utilized to perform the electronic on-screen schedule display and other functions. The particular hardware unit **52** depicted is for TVRO (TV Receive Only) customers having home satellite dishes for television viewing. This unit is coupled in series with existing customer TVRO equipment.

[0055] In FIG. **3**, the unit receives Baseband Video in **123** from the customer TVRO system. The unit optionally outputs Baseband Video out **128** or channel 3/4 RF out **130**. The unit includes an 8-bit microprocessor **100**, 64 bytes of code ROM **101**, 512 K of RAM **102** for program data storage, a custom gate array **103**, segmented base registers **104** for fast memory data manipulation, security logic **106** for decoding incoming encrypted data, a serial bus **108** for display controller interface, serial bus **110** for inter-processor communication, watchdog timer **112** for error recovery, IR input **113**, IR transmitter circuits **116** for TV, VCR control, IR output **117**,

CRC-32 encoding and decoding logic **118**, on-board power supply **120**, video input **123**, On-Screen Display Controller and Formatter **124**, custom color converter **126**, RF modulator **127**, choice of Baseband Video or RF outputs **128** or **130**.

[0056] The on-screen display controller and formatter (OSDCF) **124** functions as an I/O controller, an on-screen display controller (OSD), and also as a closed-caption data (CCD) VBI data slicer. The VBI (vertical blanking interval) is a dead space in a TV signal that allows a television signal to reposition the scanning electron beam from the bottom to the top of the screen. Digital data, for example close-captioned data, is modulated onto the carrier signal during the VBI.

[0057] The OSDCF **124** includes an analog to digital convertor (ADC) which digitizes the incoming baseband video and extracts digital information transmitted in the VBIs. As explained more fully below, messages for transmission to the database are transmitted in the VBIs. These messages are transferred to the processor **100** which executes a data base engine process to build or update the database.

[0058] The OSD part of the OSDCF **124** includes cache memory, character memory, timing functions, and an external RAM. The OSD reads high level graphic commands sent from the processor **100** and stores graphic information in the RAM. The OSD outputs red (R), green (G), blue (B), graphic data which is used to generate a local video signal. Depending on the state of the user input interface, described below, the OSD local video output or the incoming live video will be displayed.

[0059] Accordingly, screen display graphic data generated by the database engine is transferred to the RAM of the OSD which the generates a local video signal that causes the display screen to be displayed on the television screen.

3. Scheduling Data Structures

[0060] The DBE builds a hierarchical database in the RAM. The hierarchical structure of the database is depicted in FIG. **4**. The database is structured internally as schedule data structures and theme data structures linked by handles and handle tables. Each handle is an index to a handle table which contains pointers to blocks of memory where structures of the database are stored.

[0061] The hierarchy for the schedule data structures, in descending order, is:

[0062] Channel Data Table: contains subscriber unit's list of channels;

[0063] Show List: contains time slots for each show scheduled to be broadcast for a channel;

[0064] Show Title: contains the title text and show title attributes;

[0065] Show Description: contains show's ratings, attributes, and description text.

[0066] A channel data table, depicted in FIG. **5**, is the highest data structure in the hierarchy. This table includes an entry for each channel received by the subscriber unit. The entries in the channel data table are changed infrequently and are determined by the location of the subscriber unit and type of services received. Each channel data table entry includes information concerning the channel and a handle to a show list handle table for the channel.

[0067] The next data structure in the hierarchy is the show list depicted in FIG. **6**. The show list includes a start time typically being midnight GMT and 24 hours of scheduling. The channel's schedule is given by an ordered sequence of show slots, with a show slot for each show to be broadcast by a particular channel for a particular day. Each slot includes a duration, show title handle, and show description handle. Finding an entry corresponding to a given start time requires the entries to be scanned, in order, from the beginning of show list and adding duration values.

[0068] The database, when fully constructed, holds a weeks worth of show lists for each channel. The days of the week are accessed by incrementing the show list handle by two bytes. The show lists are updated each day at midnight GMT with the show list for the day just completed being deleted and the show list for same day next week being added to the database.

[0069] The next data structures in the schedule hierarchy are the show title entries, depicted in FIG. **7**A and show description entries, depicted in FIG. **7**B. For a given show slot the show title entry and show description entry are accessed utilizing the handles included in the slot. The show title and show description entries are stored in a memory pool divided into, blocks. Each show title is identified by a unique 20-bit show identification number (SID) and each show description is identified by a unique 20-bit number assigned at the head end. The show title handles are based on the SID and the show title handles are offsets into a show title handle table. The entry in the show title table accessed by a particular show title handle includes the address of the first block in the memory pool where the show title entry is stored. Similarly, the show description handle table entry accessed by a show description handle stores the address of the first block in the memory pool where the show description entry is stored.

[0070] Each show title entry includes theme index ID and the text of the show title. Typically, a single show title entry will be referenced by many show lists for different channels, days, and times. Thus, by utilizing handles in the show lists all show lists reference a single show title entry in memory so that memory is efficiently used. Many show title entries have a long life because the show titles may be for series that are broadcast over long periods of time and may be referenced by many showlists since many shows are broadcast by multiple channels.

[0071] Each show description entry includes a theme index ID, critics rating, MPAA rating for the show, traits mask bits, year produced, and show description text. Show description entries tend to have a shorter life than show title entries because a description is only valid for a particular episode of a series.

4. Schedule Search

[0072] To obtain schedule information for a particular time and to display the schedule information in the programming grid requires the following steps. For each channel in the channel list, the show list for the day is accessed and scanned. Horizontal blocks for the channel are sized according to the duration of the show slots including and following the selected time. The show title entry referenced by each show slot is accessed and the show title is displayed in the horizontal block corresponding to the show slot.

5. Favorite Channel Lists

[0073] Referring back to FIG. **5**, every entry in the channel data table includes a FAVORITE LINK field. This field includes a link to a next favorite channel and is utilized to form an ordered, linked list of channels in an order determined by the user.

[0074] The user interface and database engine provide screens to facilitate the ordering and selection of channels to be displayed in the guide. A link to the first channel in an ordered channel list is stored in memory. This link is utilized to access the channel table entry for the most favorite channel. The FAVORITE LINK in that channel is accessed and utilized to access the channel table entry for the next favorite channel and so on until a designated delimiter value, e.g., 0x00, indicates the end of the favorite channel list.

[0075] The capability of having more than one favorites list can be supported by having multiple FAVORITE LINK fields stored in each channel table entry.

6. Theme Data Structures

[0076] A powerful feature of the database is the ability to group shows by theme. The theme IDs stored in the show title and show description entries are utilized to match particular shows to particular themes. For example, a viewer may want to see a listing of all comedy movies.

[0077] Each primary category, movies in the example above, has a theme category entry included in a theme category table, depicted in FIG. **8**. A theme category entry includes a theme category ID, a handle for the subcategory handle table, and the theme category name. The theme category ID is used identify theme sub-categories, comedy in the example above, for this primary category.

[0078] There is a theme sub category table, depicted in FIG. **10**, for each primary category. The table contains entries for each theme sub-category contained in a primary theme category. Each table entry includes the theme IDs corresponding to the sub-category entry and the name of the sub-category.

7. Theme Search

[0079] When the viewer initiates a search for a particular type of show, for example a comedy movie, each channel is inspected and theme IDs of each show listed are compared to theme IDs stored in the comedy entry of the theme sub-category table corresponding to the movie primary category entry. Information about shows with matching theme IDs is stored in a theme search data structure in a user interface local buffer.

[0080] The theme search function requires two calls to the database. The first of these calls initializes the theme search data structure to the first show that matches the theme category for a specific channel entry, including the shows time offset from the search time. The second call will then find the next matching show after a particular offset time, updating the theme search data structure and returning the offset to the next show.

[0081] The basic algorithm for them user interface access is:

[0082] 1. for a given starting time, for each channel entry, find the first show that matches the theme criteria on or during this time and create a list. Keep track of the channels that had matches;

[0083] 2. sort the list of shows in time order;

[0084] 3. find the channel with the earliest show in the sorted list;

[0085] 4. place this earliest show into the user interface search list;

[0086] 5. for the channel with the earliest show, request the next show that matches the theme criteria and updated offset time;

[0087] 6. repeat steps 2-4 until all shows have been located or other specified limit is reached (i.e. search may be for a limited number of matches).

[0088] The shows for the selected category are then displayed in time order.

8. AD Data Structures

[0089] An ad list data structure is similar to the show list. It includes a start time and 24 hours of ad scheduling. The ad list is regionalized and includes an ad slot for each ad to be broadcast for a given day. The ad slot includes a duration and an Ad ID utilized to access an ad entry.

[0090] Each add entry includes an ad banner text field, an ad text field, and a pointer to an ad logo, if appropriate. The ad logo includes a graphics file to be displayed with the ad.

9. Building the Database

[0091] The data base is built by a data base engine software module operating on the processor. Messages comprising discrete commands are received by the database engine. Examples of commands include a Region Command which specifies channels available for a particular subscriber unit to be included in the Channel Data Table; a Channel Data command including information utilized to form the entries in the Channel Data Table; and Showlist, Show Title, and Show Description commands including SIDs and DIDs referencing areas in memory. The database engine selects only Showlist Commands relevant to channels included in the Channel Table for further processing.

[0092] The data base engine creates storage locations in memory for all SIDs and DIDs included in any Showlist. Information included in commands having matching SIDs or DIDs is written to the referenced memory area. In practice the SIDs and DIDs are processed by a hashing system for more efficient searching.

[0093] The messages may be transmitted to a subscriber unit in various ways. A system for receiving messages in the VBIs of broadcast programming has been described above. In a DBS system the messages may be transmitted in a dedicated bit stream.

[0094] In a DBS system video baseband signals are digitized, compressed, and modulated onto an analog carrier signals. Because of advances in the art of compression, a carrier once used to transmit a single program can now transmit four programs. Typically, in addition to video signals other bitstreams encoding information such as audio, VBI (vertical blanking information data such as closed caption and teletext), program guide information, and conditional access information are provided as separate bitstreams, multiplexed into a composite bit stream, and modulated onto a carrier signal.

[0095] Alternatively, the database itself may be transmitted in a digital data stream. For example, in DSS the program guide information is transmitted in block of 3 hours of programming for 36 channels. Programming is digitally modulated onto different bands. As depicted in FIG. **10**, a satellite has several transponders **500** simultaneously transmitting on different bands. Several channels can be modulated onto a single band utilizing digital compression techniques. A bit stream including the current programming is carried by all bands. However, future programming for different blocks of channels is transmitted on different bands. The blocks are

transmitted in as a carousel or endless loop so that there may be a delay before a particular time band is received.

[0096] A decoder at the viewers location receives 16 carriers and controls a tuner/demodulator to select one carrier. The carrier is sampled, decoded, error-corrected, and demultiplexed to separate the various bit streams. The decoder includes video decoder chips decompress compressed video to reconstruct pictures of virtually any size.

[0097] When the viewer accesses the guide the block for that time period is loaded into memory so that the user can interact with the guide. For a future time and different channel there may be a time delay. For example, if the current programming block were B1 and the block currently received is B4 the user must wait for blocks B5, B6, and B7, to be transmitted before the current programming can be received and displayed. The viewer would wait for a time delay equal to the sum of time durations for transmitting each block, i.e., d5+d6+d7. If the program guide block is modulated onto a different band the cable box must tune to the band and wait until the desired block is transmitted on the carousel. So if the guide is accessed for future programming there could be a delay.

[0098] For cable the database is built at the SST head end and sent over land-lines to the cable head end. Cable company sends data anyway it wants, VBIs, satellite, digital, etc.

10. User Interface

[0099] The user interface takes remote control commands as its primary input. In one embodiment a user requests various functions by pressing function buttons on a remote control. In another embodiment, the GUI is utilized with different interactive regions on a displayed screen corresponding to different functions. The user moves the cursor over the interactive region corresponding to a desired function and selects the function to generate command. The particular form of entering a command is not critical and technology for utilizing voice commands may soon be available.

[0100] The user interface receives commands and responds with a requested display screen and by performing the function requested by the command. The function performed may be to perform an action such as recording a program, tuning to a channel, accessing a related internet site, purchasing a pay-per-view program, or purchasing merchandise. The data and format of each screen is dependent on the previous screen, time of day, the contents of the data base, the command received, and other parameters. A state table is used to define the screen flow.

[0101] For every defined screen, there is an entrance function, an exit function, an update function, and an array of request-handling functions. The entrance function is called when a state is first entered to collect all necessary data and format the screen. The exit function is called to release memory and data for the screen. The update function is called once per minute to update the screen time and to re-draw the screen if any information displayed on the screen needs to be updated.

[0102] Once in a particular state, the table contains a reference to another software function corresponding to each key on the remote control or to each interactive region on the screen. These referenced functions will be executed whenever an associated remote control button is pressed or interactive region is selected.

[0103] For example, if the user wishes to record a program, in the GUI embodiment, the viewer moves the cursor over the record interactive region which is then selected to request that the recording function be performed. A confirmation screen will then be generated. Once the user confirms the recording request, an entry is made in a recording queue. A record daemon is then called from the real-time executive to examine the queue and manage recording functions.

[0104] The screens are displayed by the on-screen display (OSD) controller based on graphic display commands issued by the database engine. Among the primitive commands need to draw system display screens are the Erase Screen Command; Draw Rectangle Command; Save Rectangle Command; Restore Rectangle Command; Move Rectangle Commands; Write ASCII String Command; and Draw Channel Icon Command.

[0105] Each screen includes areas that are constant and based on code and data stored in non-volatile memory and variable areas such as show titles and descriptions which utilize data stored in the database. As described above in the description of the database engine, the database is structured to facilitate efficient searching for information, generally in the form of ASCII text strings, stored in the database. Additionally, graphics files are also being stored in the database to be displayed in windows of the display screen.

[0106] FIG. **11** illustrates several arrangements according to the present invention for providing television schedule information from an external database to a television for display. In one embodiment, on-line information providers (Prodigy, America On Line, Compuserve, MSN, AT&T, etc.) provide access to a database which contains the television schedule information. These on-line information providers can transmit data to television **200**. In this embodiment, a modem within accessory **202** is utilized to provide the data. Accessory **202** is attached to television **200** and directly connected to telephone line **208** via the modem. The modem for access to the on-line service can also be located within television **200**. Software, located either within accessory **202** or television **200**, is used to search for and provide the data, along with providing several other features described below.

[0107] The available data, displayed on television **200**, can emulate what a computer on-line user normally sees when accessing the internet through a personal computer. This television schedule data can also be further enhanced to "tie into" the televisions show that the user is viewing. Alternatively, accessory **202** may be replaced by accessory **222** which is attached to set-top box **220** (e.g., a cable box). The data provided via the on-line information provider is then transmitted to television **200** over line **240**. Similarly, accessory **232**, attached to VCR **230**, can be used to obtain the television schedule data. The data would then be transmitted from VCR **230** to television **200** over line **250**.

[0108] In another embodiment, the database with the television schedule information is located in memory **206** within television **200**. Controller **204** is used to obtain the data from memory **206** so that it can be displayed on television **200**. Alternatively, the database with the television schedule information could be located in memory **226** (within set-top box **220**) or in memory **236** (within VCR **230**). Controller **224** or controller **231** would be used to obtain the data which would then be sent to television **200** for display via line **210** or line **250**. Therefore, the technology that enables the television schedule information to be provided from a database to a television for display is not specific to any given data system.

In summary, this technology can be resident in the user's set-top box **220**, television **200**, VCR **230**, personal computer or the like.

[0109] The television schedule information provided from a database can be used to provide information which is independent of the viewer's program choice. For example, from a television schedule guide, the user can utilize remote control **210** to press a Services button. This Services button can be located on remote control **210** or within the television schedule guide display. When the Services button is pressed, the user is given choices such as News, Weather, Sports, Scores, Financial Data, Local Traffic, etc. Using remote control **210**, the user can then select the area or title of interest, and the associated information from the database is provided. If accessory **202** is used, a modem accesses the on-line service which provides the information from the database. Once this connection is made, the user has two-way communication with the on-line service provider. The user can then go deeper into the given selections or, if requested and keyboard **262** is available, can access the Internet and enter chat rooms or other interactive services. In the preferred embodiment, keyboard **262** is either an IR keyboard or connected to port **260** on accessory **202**.

[0110] In yet another embodiment, a television program title and/or a program's content is contextually linked to an on-line service or to an available database. In this arrangement, a user, in conjunction with the data made available through an electronic program guide (or navigational system), can link, search, select, and/or initiate a subscription to more information relating to specific areas of interest or concerns associated with a program or a program's title. In the preferred embodiment, a user of an electronic program guide (e.g., as described above) can conduct a search for information about a particular program/television show or for information relating to the show, the actors, the actresses, the show's theme, other broadcast times or sources, and other related information through selection via a user interface. This linking of program title and/or program content to additional related information could be operable whenever a program title is accessible in a electronic program guide. Additionally, this linking could be available whenever a user requests it via the currently tuned program.

[0111] For example, a user previewing the program such as a movie (e.g., "Casablanca") can receive information regarding (1) the actors and actresses in that movie, (2) other movies released during the same time period, (3) associated available products, (4) related travel packages, and (5) advertisements and promotions available through primary, secondary or third party vendors, other broadcast times or sources. Utilizing a user interface such as remote control **210** or keyboard **262**, the user can indicate to the electronic program guide what information they would like to view on television **200**. The electronic program guide then lists a selection of choices for the user. In the preferred embodiment, the choices are associated with the context of the selected program and can be changed via the electronic program guide supplier. In the "Casablanca" example, the choices might be (1) Other Humphrey Bogart Movies, (2) Other Lauren Bacall Movies, (3) Other Movies Released in the Same Era, or (4) Associated Products, other broadcast times or sources. The user selects from the presented choices, and the electronic program guide contacts and communicates with the database of available information for more detailed information relating to the user's choice. Once contact and communication is established between the user and the database of available television information, the electronic program guide acts as an agent to assure that the information flow and appropriate data is exchanged. At this point, the user can delve deeper into the available information by selecting from a series of further choices or related topics. For example, if the user chooses (1) Other Humphrey Bogart Movies option, the electronic program guide contacts and communicates with the selected database of available information. The database of available information is then used to collect the requested data of other Humphrey Bogart movies. The selected choice is transmitted and used by the electronic program guide as its contextual reference for the search. A list with the search results is then displayed on television **200**.

[0112] Once the user sees the list of broadcast times or sources for "Casablanca," or other Humphrey Bogart movies, the user can select any of the available titles for recording or watching, or digital storage when digital program directories, libraries, or archival sources are available. In the preferred embodiment, each time the available database is contacted and searched, previously selected movies can be identified. In addition, a user can select certain types of programs to be recorded, watched, or retrieved for digital storage before any particular program is available to the electronic program guide. Moreover, each time a connection is made to an on-line service, the software can search the database and set the selected types of programs to be recorded and/or retrieved for digital storage. These features enable a consumer to never miss a favorite program.

[0113] 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 designation of 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 or, when the television schedule system includes a means of digital storage, automatically downloading or providing an easy confirmation process for downloading the program. The user may also customize specific preferences based on a program title. Through a series of repetitive operations, the electronic program guide can select programs, titles or services that the user would likely be interested in. This can be accomplished through a user interface wherein the user answers preference or choice questions, or through heuristic learning accomplished through the electronic program guide. The electronic program guide would include software for performing this customization.

[0114] In an exemplary embodiment, the system includes a database containing each program within the television schedule and/or listing information. 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 pro-

gram 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. A more detailed description of this method can be found in commonly assigned co-pending Provisional Application Ser. No. 60/015,648, filed on Apr. 19, 1996 (Attorney Docket No. 14774-005500), the complete disclosure of which has previously been incorporated by reference.

[0115] In another embodiment of the invention, the system will automatically record television programs that are listed as a user's "favorite" or in some other category (i.e., contextual recording). In this embodiment, a user identifies to the system (or the system automatically identifies) favorite subject matters, actors, actresses, etc, as described in detail above. For example, the user may input into the system that he/she would like to add Jerry Seinfeld to the "favorites" list. Thereafter, the system tags any program it finds where Jerry Seinfeld is involved (i.e., he is a guest on the Tonight Show). In addition to tagging the show according to this embodiment of the invention, the system will automatically program the VCR or similar recording device to record any or all of the shows with that tag. The user may then view the contextually recorded programs at any time he or she desires. Thus, the system will constantly search for any show that includes Jerry Seinfeld and record that show, episode, or only the portion of the show that involves Jerry Seinfeld. The user will then have a list of all the shows or some of the shows that feature Jerry Seinfeld, and can view these shows at his or her leisure.

[0116] FIGS. **12** and **13** illustrate an interactive television schedule system **300** according to the present invention which can access television schedule information from the Internet, and provide user access to the internet. Access to the internet may be provided in this embodiment without tying up any phone lines, and without the need for a personal computer (e.g., an "NC" or Network Computer). As shown in FIG. **12**, interactive television schedule system **200** includes a cable system **310** coupled to a television system **320**. Cable system **310** generally includes a processor **312**, and a memory **314**. Television system **320** includes a television **322** and a user interface device **340**. Similar to the above embodiment, television system **320** may include VCRs **324** and **326** coupled to television **322**. In a specific embodiment, memory **314** of cable system **310** stores software **316** for receiving, organizing, and displaying any received data into a television schedule guide. In addition to software **316**, data for the basic schedule information and other related data (e.g., data relating to a particular show) are also stored in memory **314** as they are needed for the generation and maintenance of the television schedule guide. This data is received, in the preferred embodiment, via a cable modem **318**, which may access the data from the Internet. The software **316** then utilizes the data received from cable modem **318** to generate a television schedule guide. The user can access this generated television schedule guide when desired.

[0117] In the embodiment of the present invention shown in FIG. **12**, two programs provided at the same time can be automatically recorded because two VCRs **324** and **326** are present. The user need only select two programs for recording and the present invention will automatically cause the programs to be recorded when they are aired in an unattended fashion. The user can also directly select which device or devices will be recording or tuning for each selected program. For additional information, see commonly assigned U.S. Pat. No. 5,151,789 to Young, the complete disclosure of which has previously been incorporated by reference.

[0118] FIG. **13** illustrates an arrangement for providing television schedule information from cable system **310** to a television for display. In one embodiment, cable modem **318** provides access to a database, which may be on-line; the database contains the television schedule information, and the information is transmitted to the television. Software **316** stored in memory **314** is used to search for and provide the information, along with providing several other features described below. The available data, displayed on the television, may be stored in memory **314** within cable system **310**, or within a database **348** within television **322**. A controller **352** is used to obtain the data from memory **314** or from database **348** to display it on television **322**. From the television schedule guide, the user can further utilize user interface **340** to press a "Services" button. This Services button can be located on the user interface or within the television schedule guide display. When the Services button is pressed, the user is given choices such as News, Weather, Sports, Scores, Financial Data, Local Traffic, Network, etc. Using the user interface, the user can then select the area or title of interest, and the associated information from the database is provided.

[0119] The user can further access the internet by choosing Network from the guide using the user interface. Cable modem **318** accesses the Internet, and once connection is made, the user has two-way communication with on-line service providers. The user can then access the different on-line services. For example, a user viewing a sporting event may press the Services button, and a different menu will appear with the following choices: (1) Sports Scores, (2) Current Game Statistics, (3) Current Player Statistics, and (4) Associated Products. If the user selects (4) Associated Products, the software, will notify the cable modem and instruct the cable modem to establish connection with an on-line service provider. The on-line service provider then lists a series of selections associated with the game (e.g., 49er's hats, Giant's Baseball Bats from Louisville Slugger, Nike Spiked Football shoes for Pop. Warner, etc.), and the user can interact with the service provider accordingly.

[0120] FIG. **14** illustrates a system and method for accessing television schedule information from one or more servers **350** on a computer network **360**, such as the Internet or the World Wide Web. The television information guide may be accessed and viewed through a computer system, a television system, a PCTV, or a simple display coupled to a communication link, such as a telephone line or the like. In the representative embodiment, a PCTV **362** is illustrated with a user input device **364**, such as a remote control, keyboard, mouse or the like, and a communication device **366** for accessing computer network **360**. As discussed above, communication device **366** may include a wide variety of data lines, such as telephone lines, cable modems, etc.

[0121] In one embodiment, the computer network **360** includes a plurality of servers **350** and a database **370**. The database **370** includes television schedule information, which may be retrieved and viewed on PCTV **362**. Servers **350** represent file servers having files, databases or the like. In a representative embodiment, the computer network is the

World Wide Web and each server **350** is set up as a network file server addressable by a unique address. For example, the servers **350** may be configured to follow a common network protocol such as the Transmission Control Protocol (TCP), and the Internet Protocol (IP) (commonly referred to collectively as TCP/IP), and may be assigned a unique IP address or internet domain name. For example, the servers may be assigned the domain name "invoice.com". The servers **350** may also have some form of server software installed to permit the system to function as an internet graphics server. For example, the servers **350** may be configured with HyperText Transport Protocol (HTTP) server software to permit the system to function as an internet "world wide web" (WWW) server. In this embodiment, PCTV **362** may access servers **350** via the WWW using WWW compatible software by indicating the system's uniform resource locator address: "HTTP://www.invoice.com".

[0122] In another embodiment, the television schedule guide (not shown) is stored as one or more files (e.g., a websites or internet broadcast transmitters) on one of the servers **350**, which can be accessed by any viewer having access to the World Wide Web. The television schedule guide or website may be configured for viewing and interacting with television information directly on-line, or it may be configured for downloading the information into a computer hard drive or other suitable processor. The guide will provide listings information for all channels in the viewer's local cable line-up. Preferably, the guide will be capable of creating personalized TV listings with search and sort features (discussed below) that allow the viewer to call up favorite programming choices based on categories, such as channel, day, actor, movie genre or other desired categories. The guide may also include other information about programs, such as ratings, stars, type of movie (e.g., suspense, comedy, drama, western, musical, children, biography, horror, etc.). This information may be provided on the actual website and/or internet broadcast transmitter, or the website and/or Internet broadcast transmitter may provide means for linking the viewer with other websites and/or Internet broadcast transmitter to provide more information on certain topics and categories.

[0123] Since the television guide website and/or internet broadcast transmitter may be accessed from virtually any location in the world, it will preferably include a mechanism for selecting a region from which the television guide is applicable. For example, the television guide may include television schedule and/or listing information from a variety of countries throughout the world, or the information guide may be limited to the United States. To obtain television schedule information for a particular region, the user can select an appropriate state, city, or other region, such as a region covered by a particular cable company. Alternatively, the television schedule guide may provide information for certain networks and stations (instead of particular channels or stations), such as CBS, FOX, HBO and the like, that are global to all regions of the country. With this configuration, the television guide may include a time zone selection so that the guide can automatically be configured for the particular time zone in which the user will watch television.

[0124] In one embodiment of the present invention, the system will include a search engine that allows the viewer to search for particular types of programs that will be broadcast within a certain period of time. The search engine may include categories such as title, description, category, dates, day parts, channels, actor/actresses, directors, etc. In addition, the viewer may obtain more information on the programs within each category. For example, the guide could provide information on movies in many categories, including theatrical, made-for-TV movies, Spanish, French, etc. The guide can tell you what Clint Eastwood movies are on this week, how many StarTrek episodes this weekend, or whether your favorite basketball team is on TV this Saturday. The on-line viewer may customize their own listings by title, year, actors, director, run themes, critical star rating, MPAA, warning lines, video laser disc, full descriptions, genre, and holidays with themes. In another example, the guide could provide information on shows and series, including network shows, first run, British, PBS, cult favorites, syndicated shows, talk shows, local productions and obscure programs. The user may sort by, for example, title, episode run times, genre, original air date, etc.

[0125] In another aspect of the invention, the web site television guide will include a highlight section that highlights particular programs that will be broadcast during the day, week or month. For example, the guide may have a web page that picks a "hot pick" for each day of the week, and provides a picture or video together with descriptive information, such as an editorial comment, on the video hot pick. In addition, the user may be able to move to other areas where more information can be provided on particular moves, such as articles, interviews with actors/actresses, editor's choice reviews, commentaries, etc.

[0126] In another aspect of the invention, the system will include a variety of files on the same or different network servers that allow the user to interact with other users, program sponsors, advertisers, etc. For example, the system may have a web site that allows viewers to chat about certain programs (each program itself may have its own web site). In addition, the system may include a "virtual agent" that searches existing websites and/or internet broadcast transmitter on the internet and points to websites and/or internet broadcast transmitters that may interest the viewer. The virtual agent will learn from previous user choices to customize the television guide for each particular viewer.

[0127] FIG. **15** schematically illustrates a system and method according to the present invention for linking television viewers with broadcasters and advertisers during the broadcast of a commercial or program. As shown, system **400** includes a viewer interface **402**, such as a television, computer, PCTV or a television coupled to a computer system. For convenience, the system will be described as utilizing a PCTV **402**. A data line **404**, such as a cable modem, telephone line or other communication link, couples the PCTV **402** with a remote database, network server or on-line-service, such as the Internet **406**. A television guide database **408** is also coupled to the Internet **406** for providing the television schedule information to PCTV **402**. This information may be downloaded to PCTV **402**, or it may be configured for viewing only while the viewer is actually connected to database **408**. Alternatively, the television guide may be drawn locally from a processor within PCTV. As shown, a commercial provider **410** (e.g., Budweiser) and/or a television station broadcaster **412** (e.g., ABC) also have databases directly coupled to PCTV **402** or through Internet **406**.

[0128] PCTV **402** may include a memory and a processor with appropriate software (not shown) for searching and retrieving information from databases on the Internet **406** based on user selections. Alternatively, this function may be

provided through Internet **406**, television guide database **408** or through the commercial provider **410** or broadcaster **412**. In this embodiment, PCTV may access, download, and/or automatically upgrade an application or applet (e.g., a Java™ applet) having the appropriate software to run the television schedule guide on a display, e.g., a computer monitor, television display or other user interface.

[0129] In one example, the viewer is watching a sports event, such as a football game. One or more icons or other visual indicators are located on the television screen in a convenient location, such as the top, right corner. One of these icons may be an icon that represents the television schedule guide. The viewer can move a cursor or other visual indicator to the television guide icon and click thereon to open up the television guide as discussed in detail below. Another icon may be provided, for example, by a commercial sponsor. Moving into and activating this icon allows the viewer to link with a database provided by the commercial sponsor, or to a portion of the television schedule guide database that allows the viewer to purchase an advertised product, make a monetary contribution, respond to a survey, answer a question, or participating in contests with other viewers, for example.

[0130] By way of example, Budweiser may provide a database **410** that allows the viewer to purchase a coupon for a free six-pack or other items, such as Budweiser T-shirts, hats, etc. The viewer may purchase the coupon, hats, or T-shirts directly through the commercial sponsor, or through a delivery system provided by the television schedule guide (discussed in detail below). This type of advertising allows the advertiser to directly target a particular program, and it allows the viewer to directly purchase the products during the advertisement. In addition, viewers will not forget the advertisement or simply lose motivation to spend money or request information after the commercial or program is over.

[0131] In another example, the television network that is broadcasting the program may provide an icon that allows the viewer to access a database **412** providing more information about the football game, previews of upcoming programs related to the program, such as another football game later on in the week, or other products and services related to the football game.

[0132] FIGS. **16-21** illustrate a sample television schedule system **500** with a grid guide, and methods for utilizing the television schedule system with the contextual linking system and method of the present invention. Of course, it should be recognized that the invention is not limited to the specific television schedule system shown in FIGS. **16-21**. For example, other suitable television schedule systems are described in the user manuals "Using Starsight 2", "Starsight Interactive Television Program Guide, Phase III", and "Starsight Interactive Television Program Guide, Phase IV", which are attached to U.S. patent application Ser. No. unassigned, filed Apr. 11, 1997 (Attorney Docket No. 14774-004410), as Appendices A, B, and C, and of which are incorporated herein by reference, or commonly assigned U.S. Pat. Nos. 5,353,121, 5,479,266, the complete disclosures of which are also incorporated herein by reference. The television schedule system **500** shown in FIGS. **16-21**, however, is particularly advantageous with the contextual linking system of the present invention as it enables the viewer to quickly and efficiently browse through the television schedule, and to interact with a wide range of services that are related to the programs in the television schedule.

[0133] FIGS. **16**A and **16**B illustrate a program guide **502** and a channel guide **504**, respectively, for the television schedule system of the present invention. The program guide **502**, which is the primary mode in the television schedule system, includes a number of screen information areas or windows in a particular screen where the viewer operates a input device, such as a remote control, to move around vertically and horizontally and to interact with that screen area's function. 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 to select or activate items within the grid. Activation of an item will invoke a Submenu, a Dialog, a Panel, invoke an action or the like.

[0134] As shown in FIG. **16**A, program guide **502** preferably includes a schedule information area **506** having a program matrix **508** of cells or items that depict the shows that are being presented on each channel at each time during the day. Program guide **502** conveniently lists the channels in a vertical column to the left of the program matrix **508** and the times in a horizontal row above matrix **508**. As shown, the viewer may vertically scroll through a particular time or horizontally scroll through a channel with the remote control device. As the viewer scrolls through matrix **508**, a cursor **510** will indicate the user's location within the matrix **508**. Alternatively, the item may be automatically highlighted with a brighter color to indicate the viewer's location. Preferably, program matrix **508** will also be shaded to indicate the portion of each show that has already been presented. For example, as shown in FIG. **16**A, the shading extends to 7:48 (the current time as indicated at the bottom right of program guide **502**) to indicate which portion of the show the viewer has already missed.

[0135] As shown in FIG. **16**A, program guide **502** includes a number of other information areas. For example, program guide **502** includes a mode menu area **512** that indicates the currently active mode (i.e., program guide **502**) and allows the viewer to pull down a mode menu **514** (see FIG. **17**A). Program guide **502** also includes a date area **516** that indicates the date reflected in program matrix **506** and allows the viewer to pull down a date submenu **518** to change the date. In other submodes, the submode menu will display options for ordering or displaying lists that are appropriately related to the submode. A proportional scroll bar **520** located to the left of program matrix **506** is visually proportional to the total information in program matrix **506** to provide visual feedback as the user vertically scrolls through matrix **506**. In addition, scroll bar **520** may be used for large-scale movement through hundreds of channels/sources by navigating to bar **520** and then vertically moving bar **520**. An exit area **522** allows the viewer to immediately exit back to the television by navigating to exit area **522** and clicking on the remote control device. A program area **526** depicts the currently tuned program and a preview window area **528** can be used for all types of promotional, descriptional, or contextual video or graphics, such as a short preview of the show that is currently being highlighted in show matrix **506**. Preview window area **528** may also be interactional similar to the other areas of guide **502**.

[0136] 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 **524** may be located underneath program matrix **506** that advertises programs or products from program sponsors,

etc. The viewer may navigate to message **524** to receive more information or to purchase the product or program.

[0137] 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 an NFL proshop, whereas a link to a movie on demand may lead back to a commercial film library.

[0138] FIG. **16**B illustrates the television schedule system of the present invention in the channel guide mode. As shown, channel guide **504** is similar to program guide **502** except that it includes an information screen area **530** that is reversed from the information screen area **506** in the program guide. Thus, the viewer can scroll vertically to move forward and backward in time along one channel and horizontally to move from channel to channel.

[0139] FIGS. **17**A-**17**C illustrate a method of accessing program guide **502** from a currently tuned program and browsing through other currently tuned programs with remote control device **2**. As shown in FIG. **17**A, the viewer is watching a television show on a display screen **532**, such as a Monday Night. Football game featuring the Washington Redskins versus the Minnesota Vikings. Clicking on the remote control device automatically causes a Program InfoMenu **530** to pop up on a portion of the television screen **532** (see FIG. **17**B). Program InfoMenu **530** may allow the viewer to obtain more information about the currently tuned program, move to program guide **502**, move to contextual linked services (discussed below), or exit InfoMenu **530** back to the television show. The viewer may vertically scroll through these options upwards or downwards, 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 FIG. **16**A. To browse other currently tuned programs, the viewer employs suitable channel controls or other input commands on the remote control device (not shown). As shown in FIG. **17**C, the viewer may browse through other information menus while viewing the currently tuned program.

[0140] FIGS. **18**A-**18**E illustrate a method of ordering video on demand with the system of the present invention. As shown in **18**A, the viewer opens up the program's InfoMenu **530** and scrolls down to the "linked services" item. The viewer is then presented with an easily scrollable menu **562** of items and services associated with this program, as shown in FIG. **18**B. Some, denoted with a dollar sign, are purchasable. Free items would be instantly accessible to the viewer. Here, the viewer may be prompted to a simple procedure to specify when the movie is to be delivered. When the viewer selects a particular service or item requiring a financial transaction, a purchasing sequence unfolds. As shown in FIG. **18**C, 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 a slot on the remote control device. If the password/access code is accepted, the viewer is given a final opportunity to review the purchase and/or either confirm or return to the previous item menu (see FIG. **18**D). When the viewer confirms his or her purchase and/or order, a receipt **570** is shown (FIG. **18**E). 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.

[0141] FIGS. **19**A-**19**C illustrate another embodiment of the present invention in which the television viewer may accept incoming e-mail messages or send outgoing messages to other television viewers or users connected to the television schedule system, e.g., users on the Internet. As shown in FIG. **19**A, the viewer scrolls down to the Messages window in the Mode menu and activates this window to enter a submode menu. To read incoming messages, the viewer scrolls down to the "Check new messages" cell and activates this cell to display messages that have been received. The Messages mode organizes incoming messages in order of date received and displays them in lists (see FIG. **19**B). The viewer may then scroll to a particular message, as shown in FIG. **19**C. To send outgoing messages, the viewer scrolls down to the "Create message" cell and activates this cell to open up a blank window. A message may be created by inputting text on the input device, through voice activation via a microphone on the input device.

[0142] FIGS. **20**A-**20**C illustrate a method of accessing a whole variety of other services to the Internet with the interactive television schedule system of the present invention. As discussed above, databases on the Internet may be accessed through a telephone line, cable modem or other means of communication. As shown in FIG. **20**A, the user scrolls down to the world of services mode and clicks on this mode to obtain a submode that includes a variety of different services, such as news, weather and sports, previews and reviews of programs on the television schedule guide, a super mall for purchasing products and services related to the programs in the television schedule guide, or other products and services on the Internet or World Wide Web. As shown in FIG. **16**C, the user has selected news, weather and sports, which opens up another menu involving a variety of special services, such as headline news, national and local weather, sports central, business and stock updates, music videos, daily horoscope, cartoon of the day and/or other services related to news, weather and sports. These services may be provided by a special database that is linked to the television system, to an on-line information provider, such as America On Line, Prodigy and the like, or with a search engine that searches network servers or databases on the Internet and World Wide Web. As shown, the user selects headline news which opens up another menu providing the user with a variety of news reports that may be accessed. The news reports may be viewed, printed out, or downloaded to the computer system that is attached to or an intricate part of the television system, (e.g., PCTV).

[0143] FIGS. **21**A-**21**F illustrate a representative system and method for contextually linking related items and services to a particular program in the program guide **502**. As shown in FIG. **21**A, the viewer selects a particular program within guide **502**, to access that program's info menu. Within the info menu, the viewer then scrolls to linked services and clicks on this window to move into a database that includes items and services contextually related to that particular program. In the example shown, the viewer has been watching a sport event featuring the Washington Redskins v. the Minnesota Vikings. The viewer is transferred to a window that

provides a number of options for purchasing items and services related to that game, such as Washington Redskin or Minnesota Vikings paraphernalia, other NFL teams paraphernalia (in an NFL sports pro shop), or highlights of other games between these two or other teams. Alternatively, the viewer may order a tape/transcript of the program that is currently being shown on the guide. FIGS. **21**C-**21**F illustrate a case in which the viewer has selected purchasing a Washington Redskin cap. The viewer inputs a password or other input identification, which is confirmed by the system. Alternatively, the viewer can simply swipe his or her credit card or other identification card through the remote control device or the television system to authorize the purchase of the Redskins' cap. The order is confirmed and the cap is delivered to the viewer's home.

[0144] 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 viewer can automatically tune to a desired program or can select different programs for automatic recording. For more information on automatic tuning and automatic recording, see U.S. Pat. No. 4,706,121 and U.S. patent application Ser. No. 08/423,411; this patent and this patent application are, like the present patent application, assigned to Starsight Telecast, Inc. U.S. Pat. No. 4,706,121 and U.S. patent application Ser. No. 08/423,411 are hereby incorporated by reference in their entirety for all purposes.

[0145] It should be also noted that the present invention is not limited to a television schedule as shown in the enclosed figures. For example, in another embodiment of the invention, a program listing is provided that lists a series of television programs that are available for viewing. This listing can include, for example, a list of movies that are available in a movie library that can be accessed and viewed by the user (e.g., the Turner Classics Film Library or Pay-Per-View programs, such as sporting events or movies). Alternatively, the program listings can be related to digital programming. In this aspect of the invention, the television program is available to access or download for an extended period of time rather than being scheduled as a single live event. Thus, a digital archive of movies, program shows or previously played sporting events can be available to the user. This digital archive may be available through a database directly coupled to the electronic program guide, or on a remote database, such as the World Wide Web, Internet, or the like. In this embodiment, the television guide may be used to both: (1) show when the television programs are first available to the user (i.e., a schedule); and (2) list the shows that have been digitally recorded and, therefore, are available to the user at any time.

[0146] In one example of this embodiment, a Jerry Seinfeld fan can browse through a list of previously played Jerry Seinfeld episodes. The episodes can be arranged chronologically, by subject matter, or other convenient methods. Upon reaching one of the episodes in the list, the user may then find out more information about the episode, such as a brief abstract on the episode, when it was first made available to the public, etc. Alternatively, the user may contextually link with other databases, such as the Internet or World Wide Web, to find out more information about the program (e.g., chat with other Jerry Seinfeld fans, read reviews on that particular episode, etc) If the user wishes to play or record the episode, the user may do so by the methods described above.

1-37. (canceled)

38. A method for displaying information contextually related to media content, the method comprising:

identifying a first media content;

based on the identification of the first media content, searching over the Internet to identify second media content that is contextually related specifically to the identified first media content; and

receiving a request to access the identified second media content that is contextually related specifically to the identified first media content.

39. The method of claim **38**, wherein at least one of the first media content title and the first media content itself is contextually related to the identified second media content.

40. The method of claim **38**, wherein the identified second media content comprises a service, and wherein the receiving further comprises receiving a request to at least one of search for, link to, and initiate a subscription to more information from the service.

41. The method of claim **40** further comprising receiving, in response to receiving the request, information over the Internet from the service.

42. The method of claim **38**, wherein the identified second media content comprises one or more of access to information related to actors and actresses in the identified first media content, access to information related to the theme of the identified first media content, and access to other broadcast times or sources of the identified first media content.

43. The method of claim **38**, wherein the identified second media content comprises one or more of product sales and advertisements related to the identified first media content.

44. The method of claim **38**, further comprising:

receiving a user request to view additional information specifically related to the identified first media content; and

searching over the Internet in response to receiving the user request to view additional information.

45. The method of claim **38**, further comprising providing access to the requested media content in response to receiving the request.

46. The method of claim **38**, wherein the identified second media content comprises media content of different types.

47. The method of claim **38**, wherein the identified first media content is media content currently being displayed.

48. A system for displaying information contextually related to media content, the system comprising:

a processor configured to:

identify a first media content;

search, based on the identification of the first media content, over the Internet to identify second media content that is contextually related specifically to the identified first media content; and

receive a request to access the identified second media content that is contextually related specifically to the identified first media content.

49. The system of claim **48**, wherein at least one of the first media content title and the first media content itself is contextually related to the identified second media content.

50. The system of claim **48**, wherein the identified second media content comprises a service, and wherein the processor is further configured to receive a request to at least one of search for, link to, and initiate a subscription to more information from the service.

51. The system of claim **50**, wherein the processor is further configured to receive, in response to receiving the request, information over the Internet from the service.

52. The system of claim **48**, wherein the identified second media content comprises one or more of access to information related to actors and actresses in the identified first media content, access to information related to the theme of the identified first media content, and access to other broadcast times or sources of the identified first media content.

53. The system of claim **48**, wherein the identified second media content comprises one or more of product sales and advertisements related to the identified first media content.

54. The system of claim **48**, wherein the processor is further configured to:

receive a user request to view additional information specifically related to the identified first media content; and

search over the Internet in response to receiving the user request to view additional information.

55. The system of claim **48**, wherein the processor is further configured to provide access to the requested media content in response to receiving the request.

56. The system of claim **48**, wherein the identified second media content comprises media content of different types.

57. The system of claim **48**, wherein the identified first media content is media content currently being displayed.

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