US007634789B2

(12) **United States Patent**
Gerba et al.

(10) **Patent No.: US 7,634,789 B2**
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(54) **SYSTEM AND METHOD FOR DISPLAYING ADVERTISING IN AN INTERACTIVE PROGRAM GUIDE**

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(73) Assignee: **Corporate Media Partners**, Chicago, IL (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 472 days.

(21) Appl. No.: **09/929,506**

(22) Filed: **Aug. 14, 2001**

(65) **Prior Publication Data**

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Related U.S. Application Data

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(51) **Int. Cl.**

G06F 3/00	(2006.01)
G06F 13/00	(2006.01)
H04N 5/445	(2006.01)
G06F 3/048	(2006.01)

(52) **U.S. Cl.** **725/44**; 725/42; 715/715; 715/719; 715/726

(58) **Field of Classification Search** 725/42, 725/44, 47, 32; 715/726, 715, 513; 345/684
See application file for complete search history.

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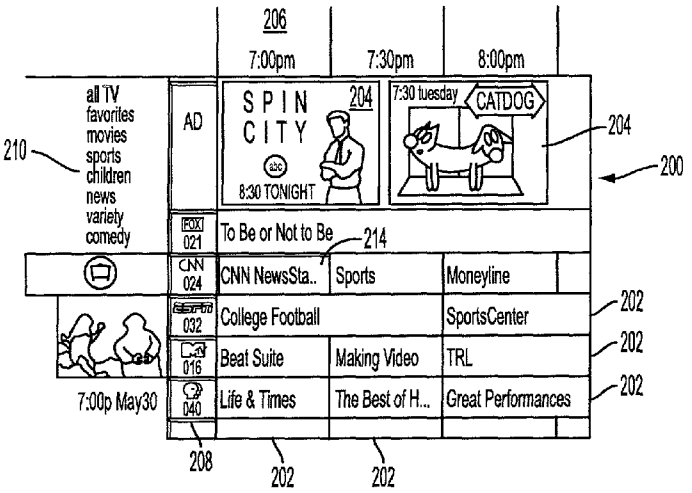
(74) *Attorney, Agent, or Firm*—Polsinelli Shughart PC

(57) **ABSTRACT**

An interactive program guide containing schedule data for multiple channels and advertising data is provided to viewers on a screen. The advertising may be related to the programs adjacent thereto in the guide and to time slots displayed on the screen. The advertising srolls in various directions in response to the viewer's scrolling of the grid, but at a different pace and according to a different scheme than the scrolling of the schedule data itself. For example, the advertising may remain on the screen in a predetermined location while the viewer scrolls the schedule data, and then scroll off the screen to be replaced by new ads after a predetermined number of channels scroll off the screen, or on the basis of time slots and/or adjacent channels displayed on the screen. This provides for greater viewer attention to the advertising and for greater control by advertisers over the manner and length in which advertising is presented to viewers.

17 Claims, 16 Drawing Sheets



FreeWheel, Ex. 1170

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WO	WO 99/45702		9/1999
WO	WO 99/56466		11/1999
WO	WO 99/56473		11/1999
WO	WO 00/02380		1/2000
WO	WO 00/49801		8/2000
WO	WO 00/67473		11/2000
WO	WO 00/79798		12/2000
WO	WO 00/79798	A1	12/2000
WO	WO 01/19086		3/2001
WO	WO 01/22719		3/2001
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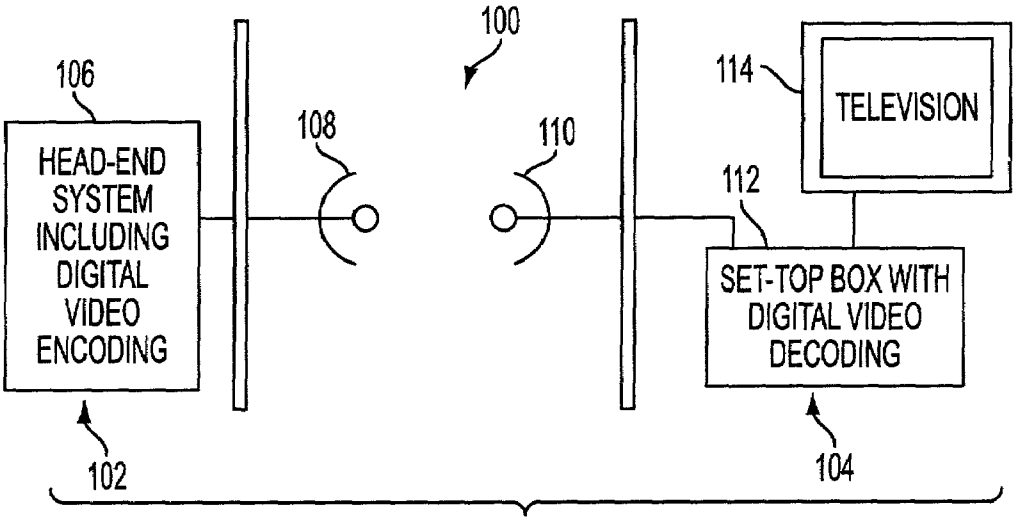
100
106
HEAD-END SYSTEM INCLUDING DIGITAL VIDEO ENCODING
108
110
114
TELEVISION
112
SET-TOP BOX WITH DIGITAL VIDEO DECODING
102
104

FIG. 1

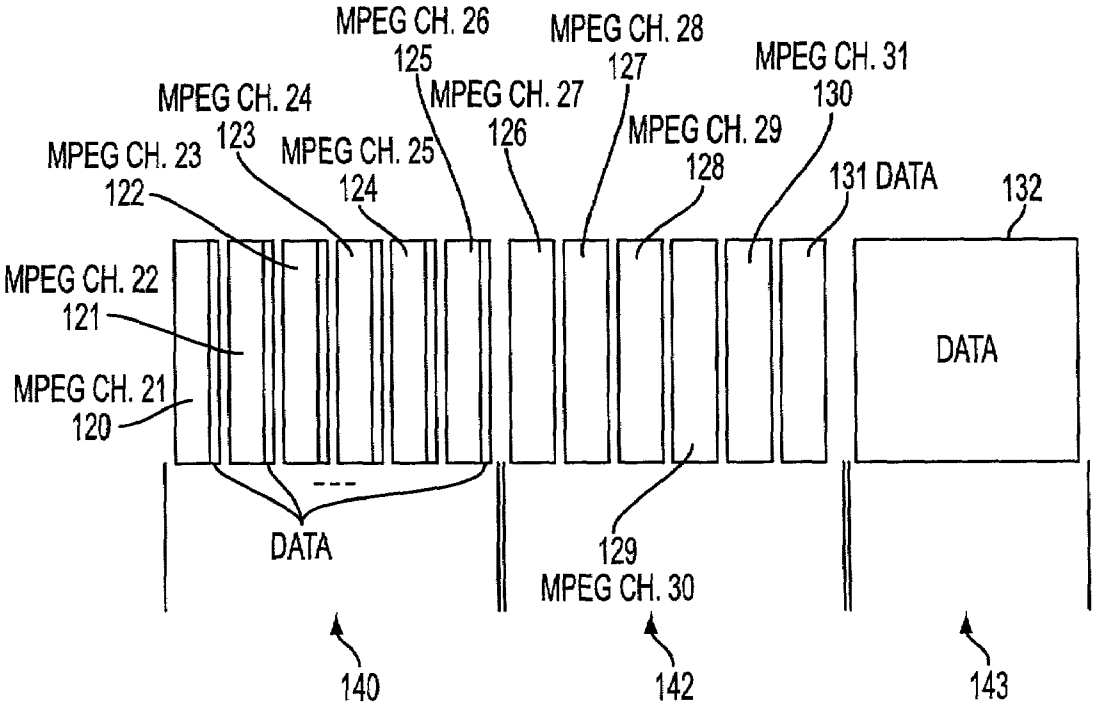
MPEG CH. 26
125
MPEG CH. 28
127
MPEG CH. 31
130
MPEG CH. 24
123
MPEG CH. 27
126
MPEG CH. 29
128
MPEG CH. 23
122
MPEG CH. 25
124
131 DATA
132
MPEG CH. 22
121
DATA
MPEG CH. 21
120
DATA
129
MPEG CH. 30
140
142
143

FIG. 2

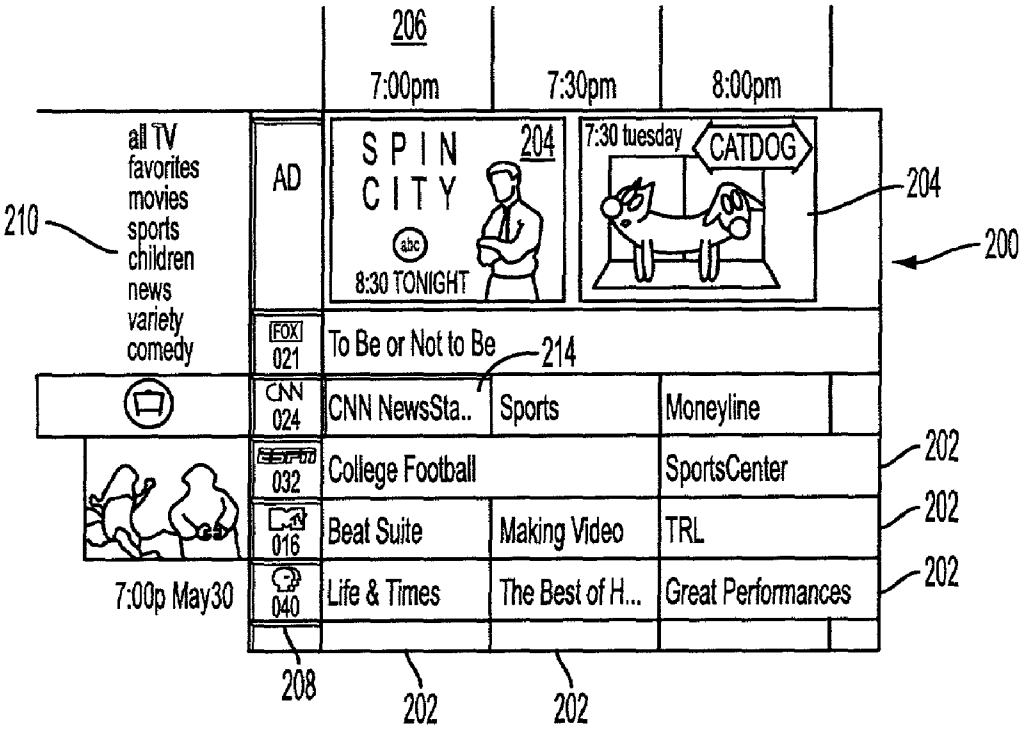
206
7:00pm
7:30pm
8:00pm
all TV
favorites
movies
sports
children
news
variety
comedy
210
AD
SPIN CITY
204
abc
8:30 TONIGHT
7:30 tuesday
CATDOG
204
200
FOX 021
To Be or Not to Be
214
CNN 024
CNN NewsSta..
Sports
Moneyline
ESPN 032
College Football
SportsCenter
202
016
Beat Suite
Making Video
TRL
202
040
Life & Times
The Best of H...
Great Performances
202
7:00p May30
208
202
202

FIG. 3

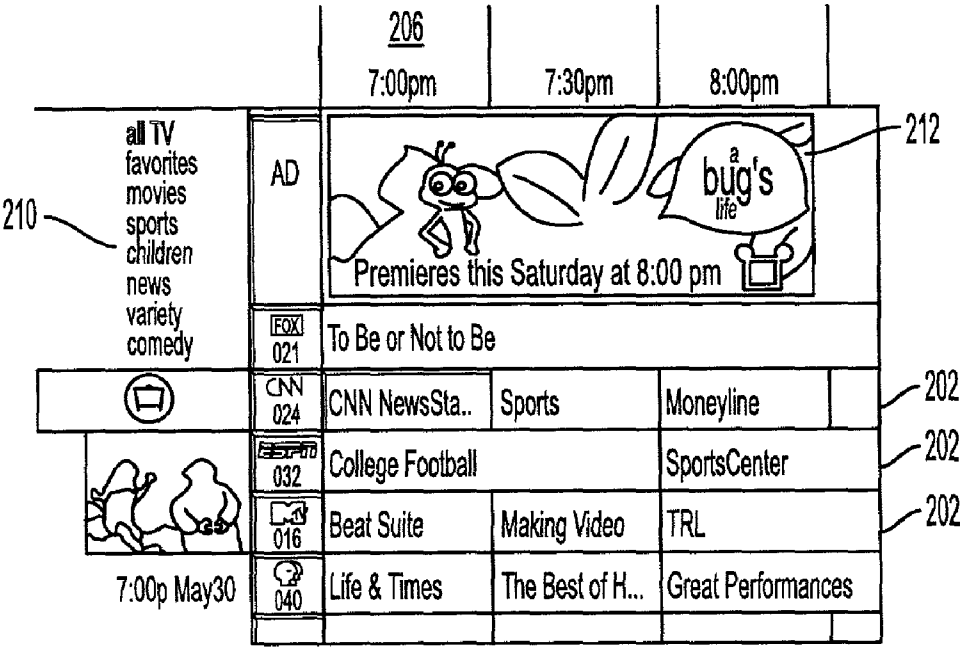
206
7:00pm
7:30pm
8:00pm
all TV
favorites
movies
sports
children
news
variety
comedy
210
AD
212
a bug's life
Premieres this Saturday at 8:00 pm
FOX 021
To Be or Not to Be
CNN 024
CNN NewsSta..
Sports
Moneyline
202
ESPN 032
College Football
SportsCenter
202
016
Beat Suite
Making Video
TRL
202
040
Life & Times
The Best of H...
Great Performances
7:00p May30

FIG. 4

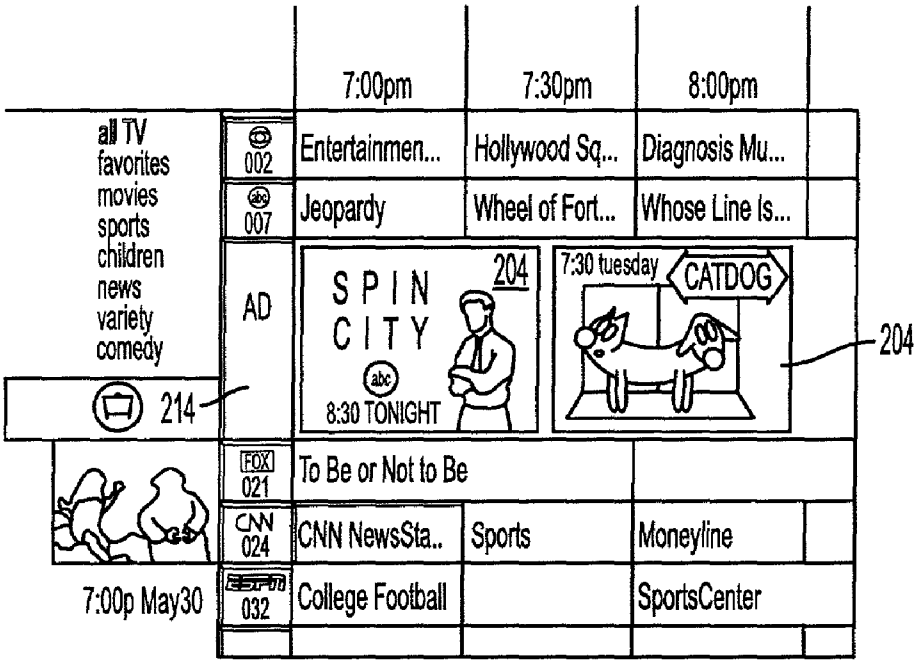
7:00pm
7:30pm
8:00pm
all TV
favorites
movies
sports
children
news
variety
comedy
002
Entertainmen...
Hollywood Sq...
Diagnosis Mu...
007
Jeopardy
Wheel of Fort...
Whose Line Is...
AD
SPIN CITY
204
8:30 TONIGHT
7:30 tuesday
CATDOG
204
214
021
To Be or Not to Be
024
CNN NewsSta..
Sports
Moneyline
7:00p May30
032
College Football
SportsCenter

FIG. 5

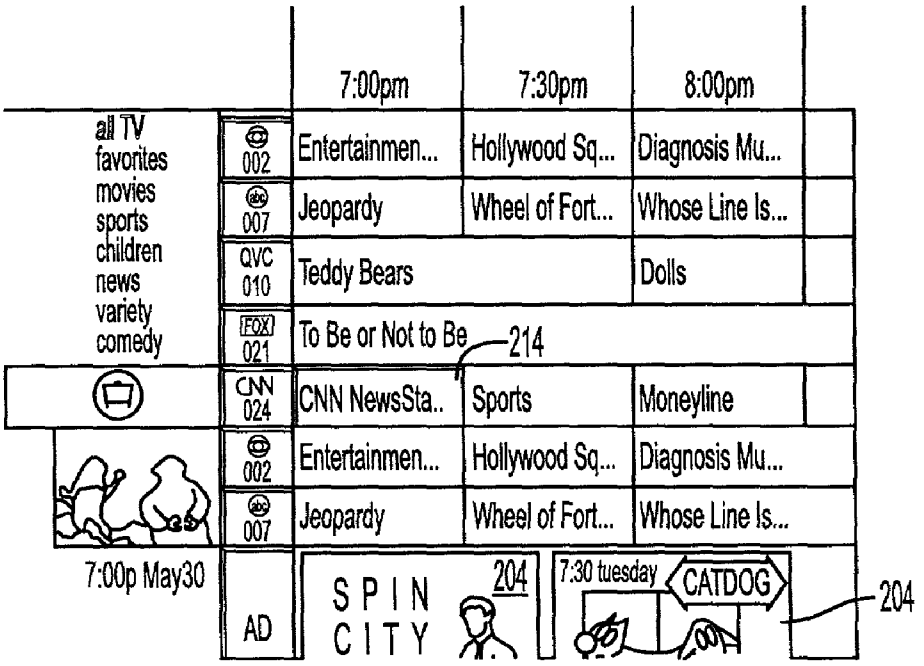
7:00pm
7:30pm
8:00pm
all TV
favorites
movies
sports
children
news
variety
comedy
002
Entertainmen...
Hollywood Sq...
Diagnosis Mu...
007
Jeopardy
Wheel of Fort...
Whose Line Is...
010
Teddy Bears
Dolls
021
To Be or Not to Be
214
024
CNN NewsSta..
Sports
Moneyline
002
Entertainmen...
Hollywood Sq...
Diagnosis Mu...
007
Jeopardy
Wheel of Fort...
Whose Line Is...
7:00p May30
AD
SPIN CITY
204
7:30 tuesday
CATDOG
204

FIG. 6

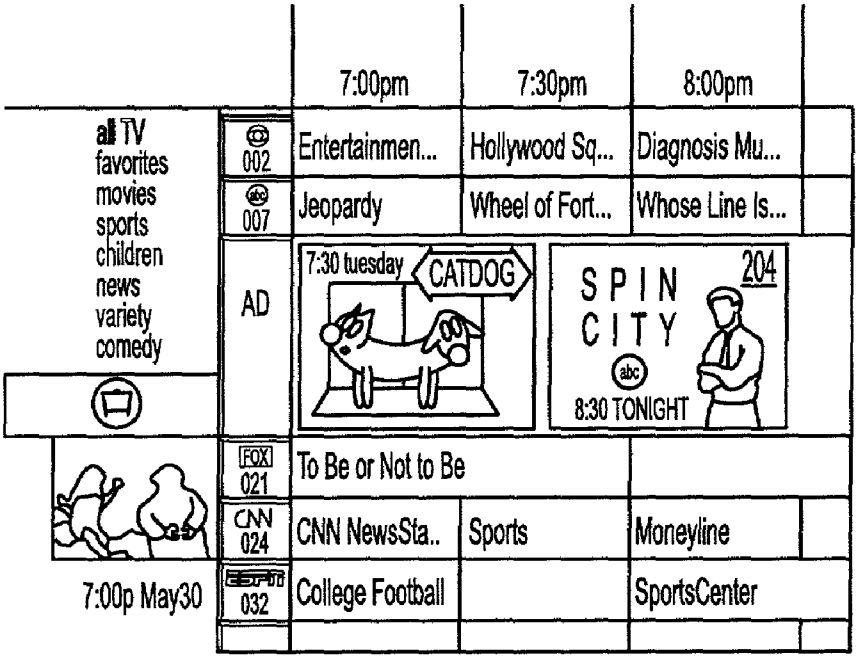
7:00pm
7:30pm
8:00pm
all TV
favorites
movies
sports
children
news
variety
comedy
002
Entertainmen...
Hollywood Sq...
Diagnosis Mu...
007
Jeopardy
Wheel of Fort...
Whose Line Is...
AD
7:30 tuesday
CATDOG
SPIN CITY
204
8:30 TONIGHT
021
To Be or Not to Be
024
CNN NewsSta..
Sports
Moneyline
032
College Football
SportsCenter
7:00p May30

FIG. 7

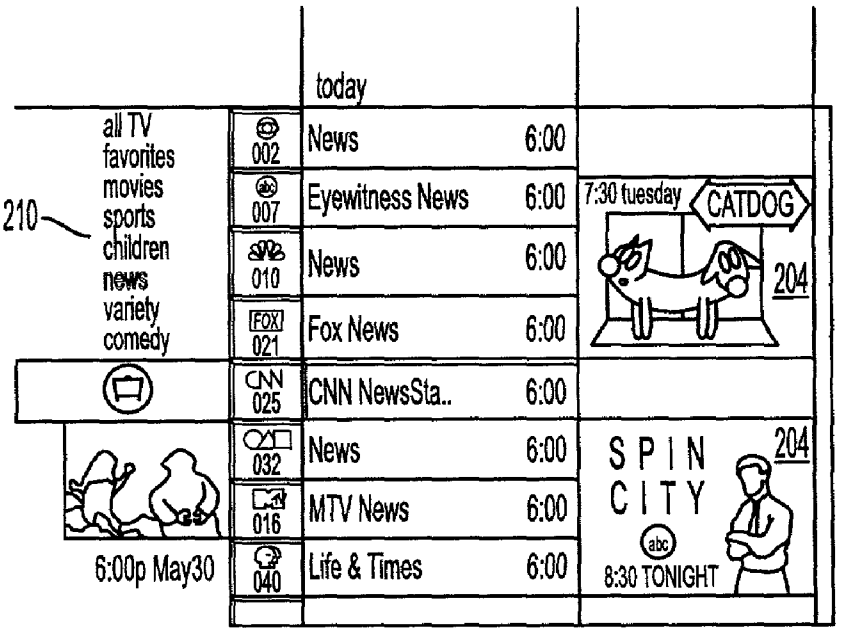
today
all TV
favorites
movies
sports
children
news
variety
comedy
210
002
News
6:00
007
Eyewitness News
6:00
010
News
6:00
021
Fox News
6:00
025
CNN NewsSta..
6:00
032
News
6:00
016
MTV News
6:00
040
Life & Times
6:00
7:30 tuesday
CATDOG
204
SPIN CITY
8:30 TONIGHT
6:00p May30

FIG. 8

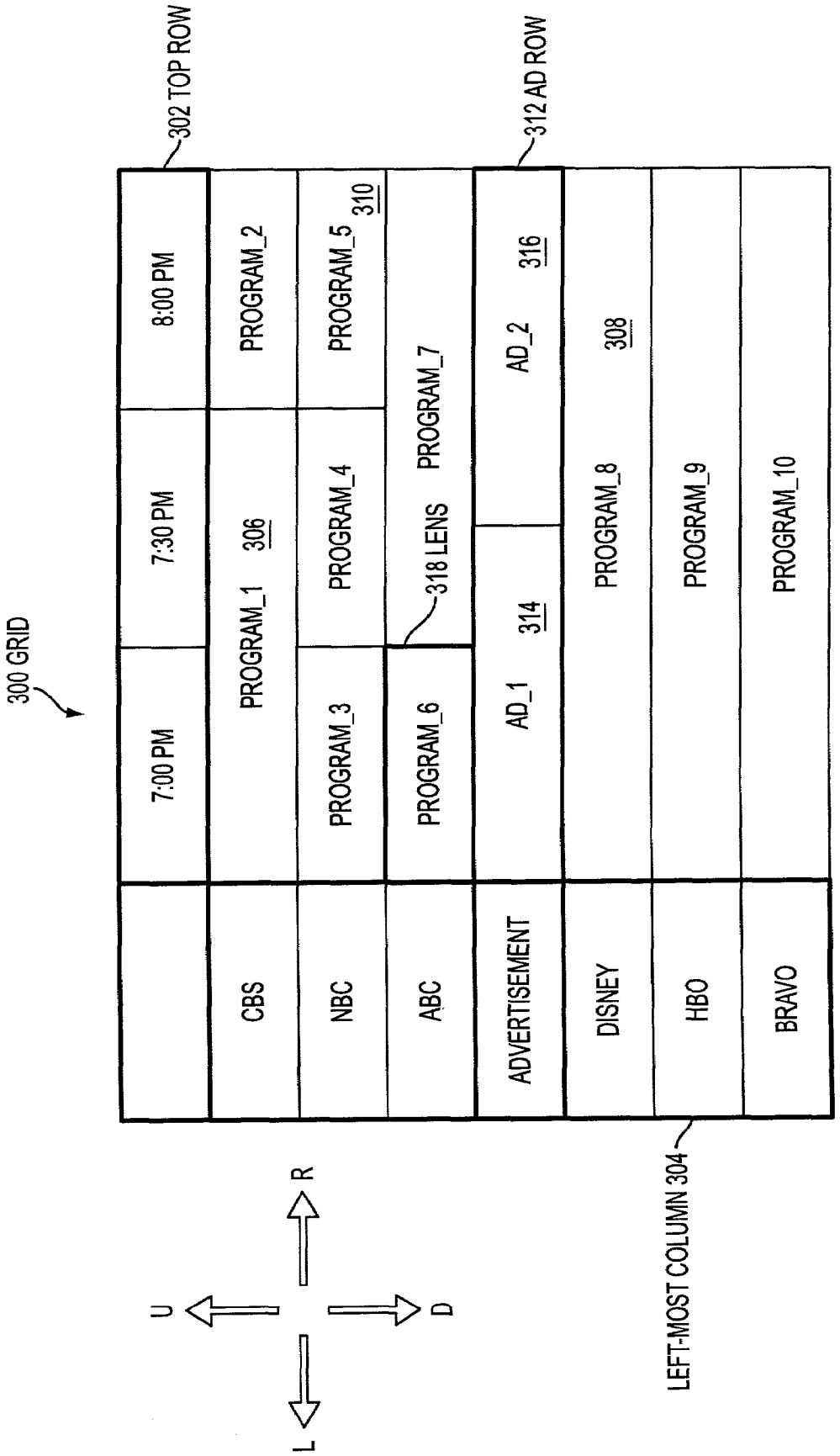
300 GRID
302 TOP ROW
312 AD ROW
7:00 PM
7:30 PM
8:00 PM
CBS
NBC
ABC
ADVERTISEMENT
DISNEY
HBO
BRAVO
PROGRAM_1 306
PROGRAM_2
PROGRAM_3
PROGRAM_4
PROGRAM_5 310
PROGRAM_6
PROGRAM_7
318 LENS
AD_1 314
AD_2 316
PROGRAM_8 308
PROGRAM_9
PROGRAM_10
LEFT-MOST COLUMN 304
U
R
L
D

FIG. 9

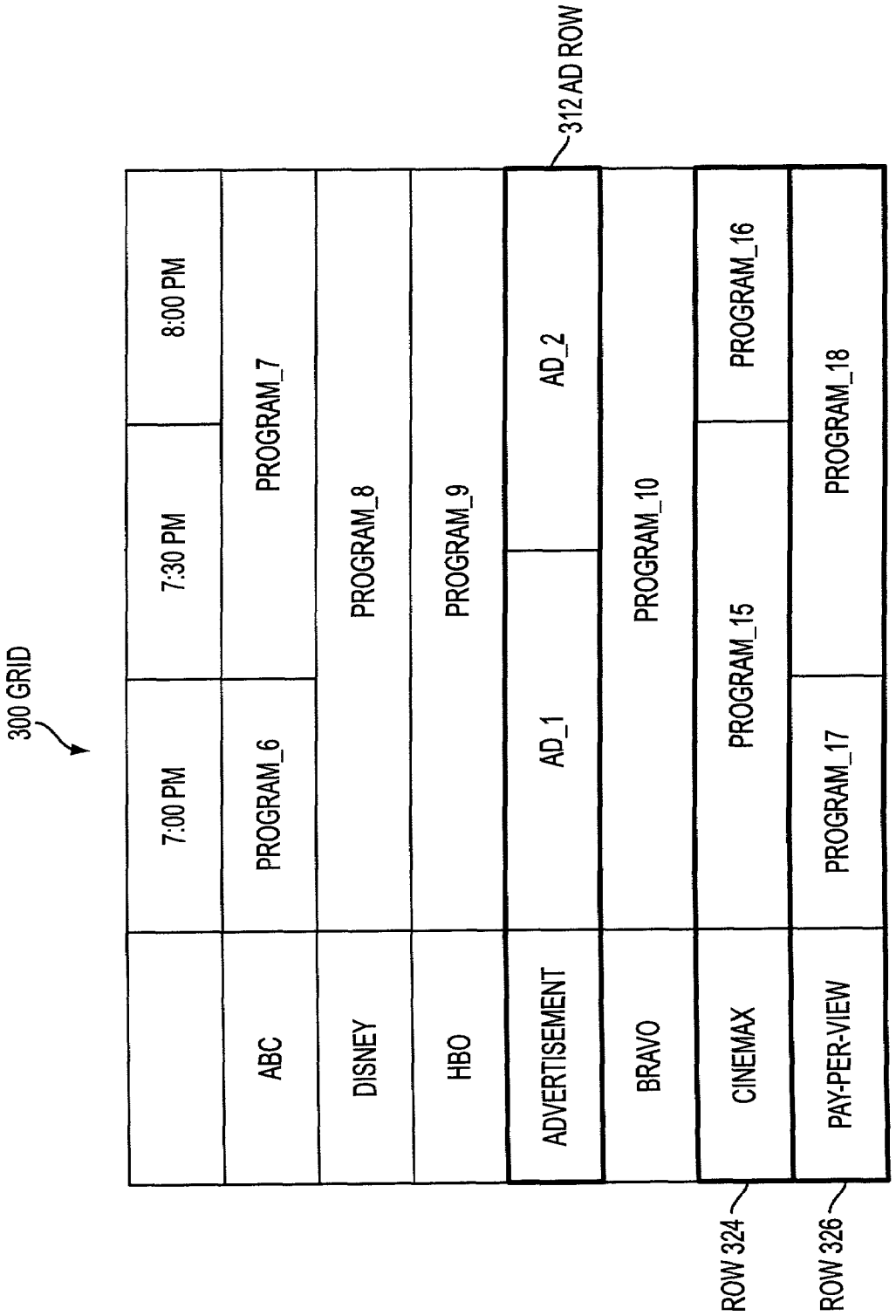
300 GRID
7:00 PM
7:30 PM
8:00 PM
ABC
PROGRAM_6
PROGRAM_7
DISNEY
PROGRAM_8
HBO
PROGRAM_9
ADVERTISEMENT
AD_1
AD_2
312 AD ROW
BRAVO
PROGRAM_10
CINEMAX
PROGRAM_15
PROGRAM_16
ROW 324
PAY-PER-VIEW
PROGRAM_17
PROGRAM_18
ROW 326

FIG. 10

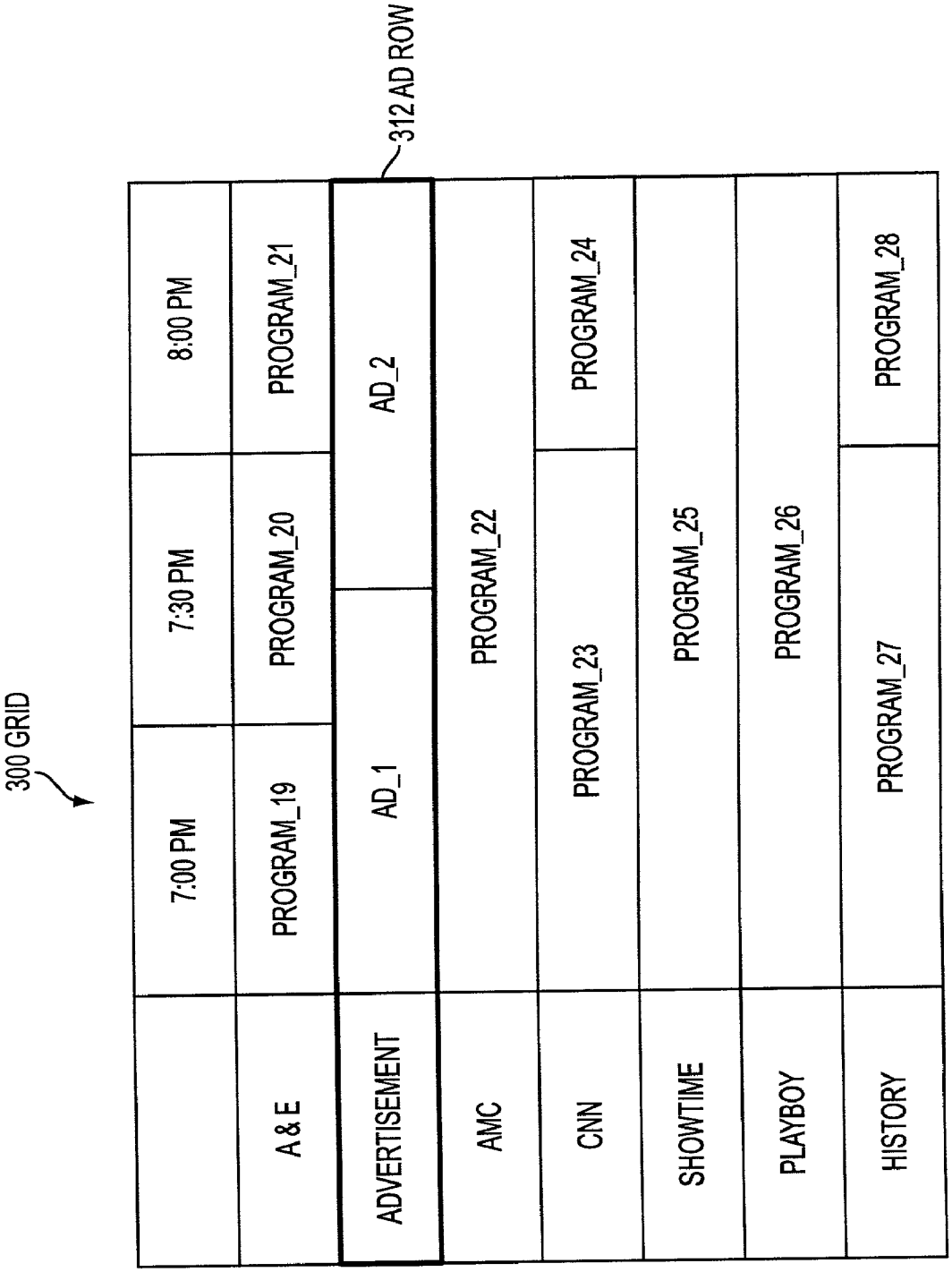
300 GRID
312 AD ROW
7:00 PM
7:30 PM
8:00 PM
A & E
PROGRAM_19
PROGRAM_20
PROGRAM_21
ADVERTISEMENT
AD_1
AD_2
AMC
PROGRAM_22
CNN
PROGRAM_23
PROGRAM_24
SHOWTIME
PROGRAM_25
PLAYBOY
PROGRAM_26
HISTORY
PROGRAM_27
PROGRAM_28

FIG. 11

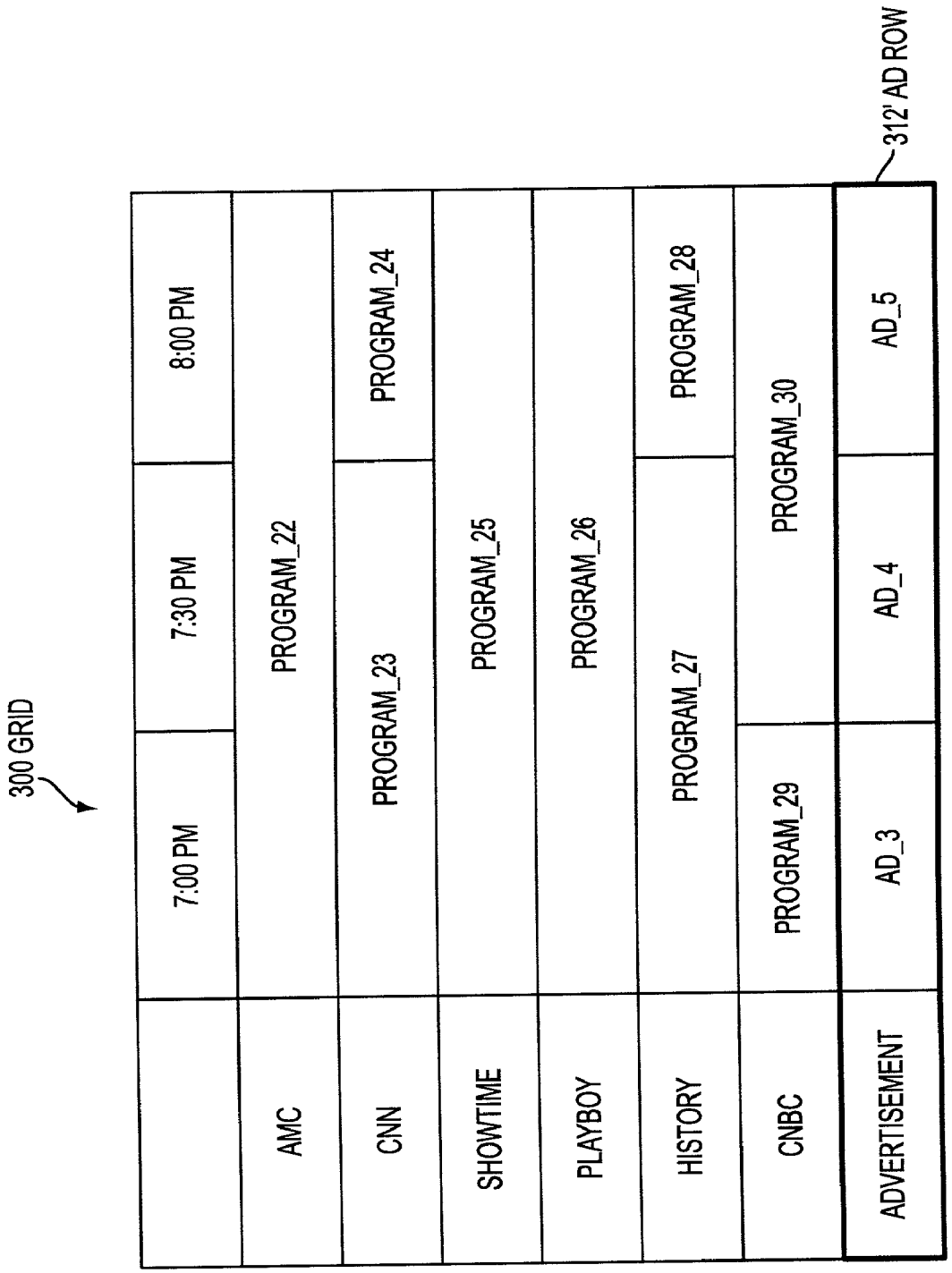
300 GRID
7:00 PM
7:30 PM
8:00 PM
AMC
PROGRAM_22
CNN
PROGRAM_23
PROGRAM_24
SHOWTIME
PROGRAM_25
PLAYBOY
PROGRAM_26
HISTORY
PROGRAM_27
PROGRAM_28
CNBC
PROGRAM_29
PROGRAM_30
ADVERTISEMENT
AD_3
AD_4
AD_5
312' AD ROW

FIG. 12

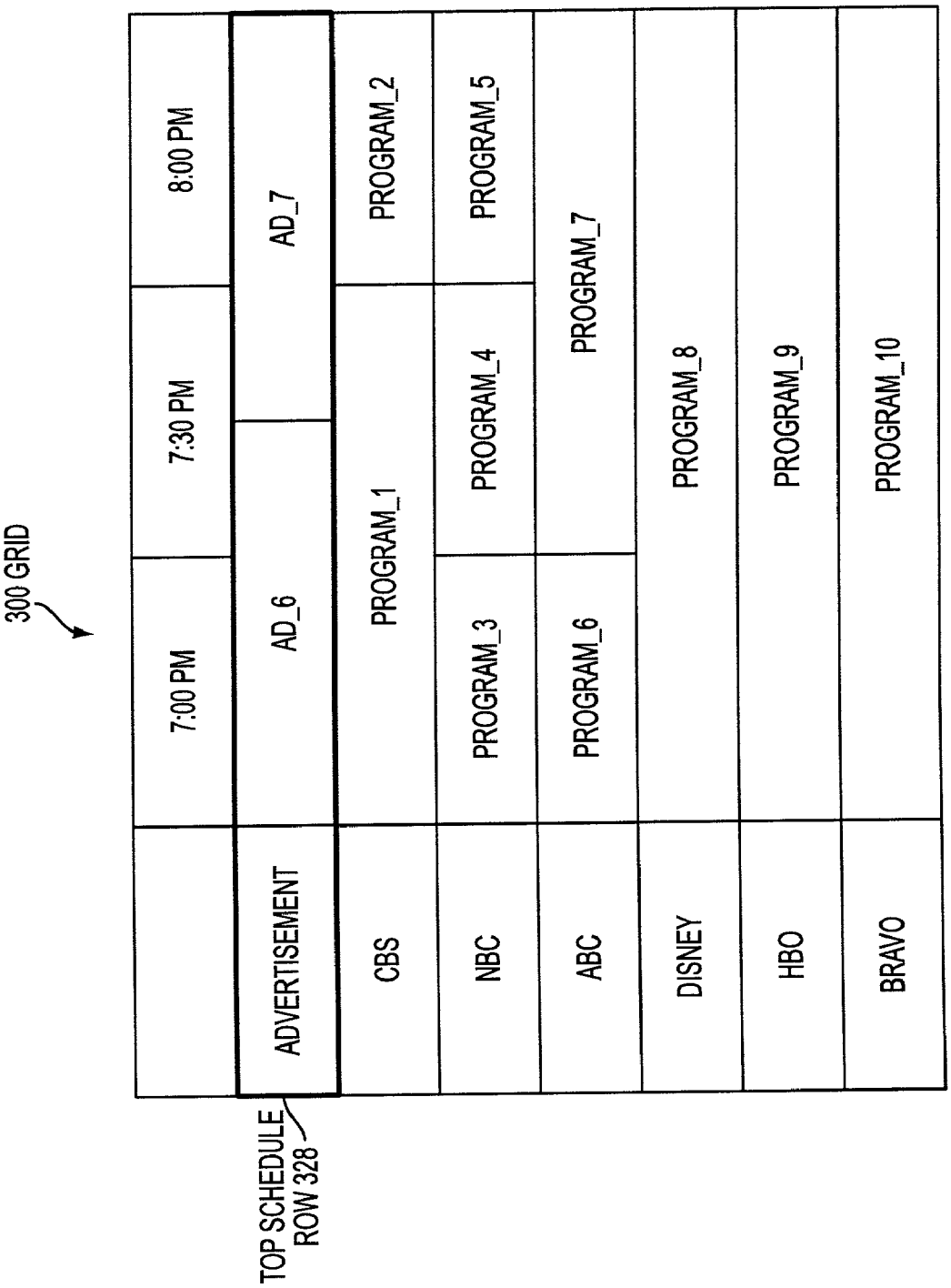
300 GRID
7:00 PM
7:30 PM
8:00 PM
ADVERTISEMENT
AD_6
AD_7
CBS
PROGRAM_1
PROGRAM_2
NBC
PROGRAM_3
PROGRAM_4
PROGRAM_5
ABC
PROGRAM_6
PROGRAM_7
DISNEY
PROGRAM_8
HBO
PROGRAM_9
BRAVO
PROGRAM_10
TOP SCHEDULE ROW 328

FIG. 13

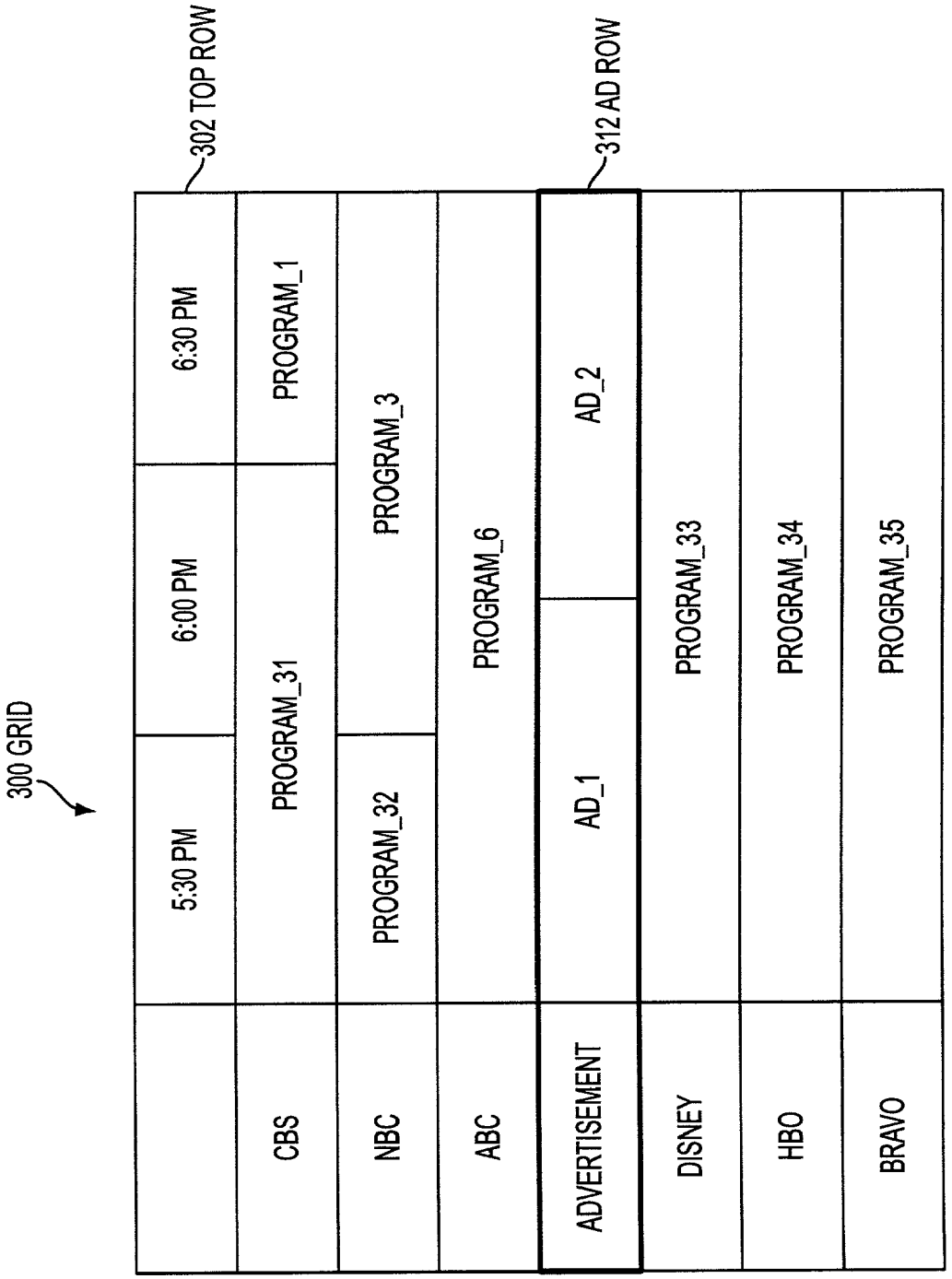
300 GRID
302 TOP ROW
312 AD ROW
5:30 PM
6:00 PM
6:30 PM
CBS
PROGRAM_31
PROGRAM_1
NBC
PROGRAM_32
PROGRAM_3
ABC
PROGRAM_6
ADVERTISEMENT
AD_1
AD_2
DISNEY
PROGRAM_33
HBO
PROGRAM_34
BRAVO
PROGRAM_35

FIG. 14

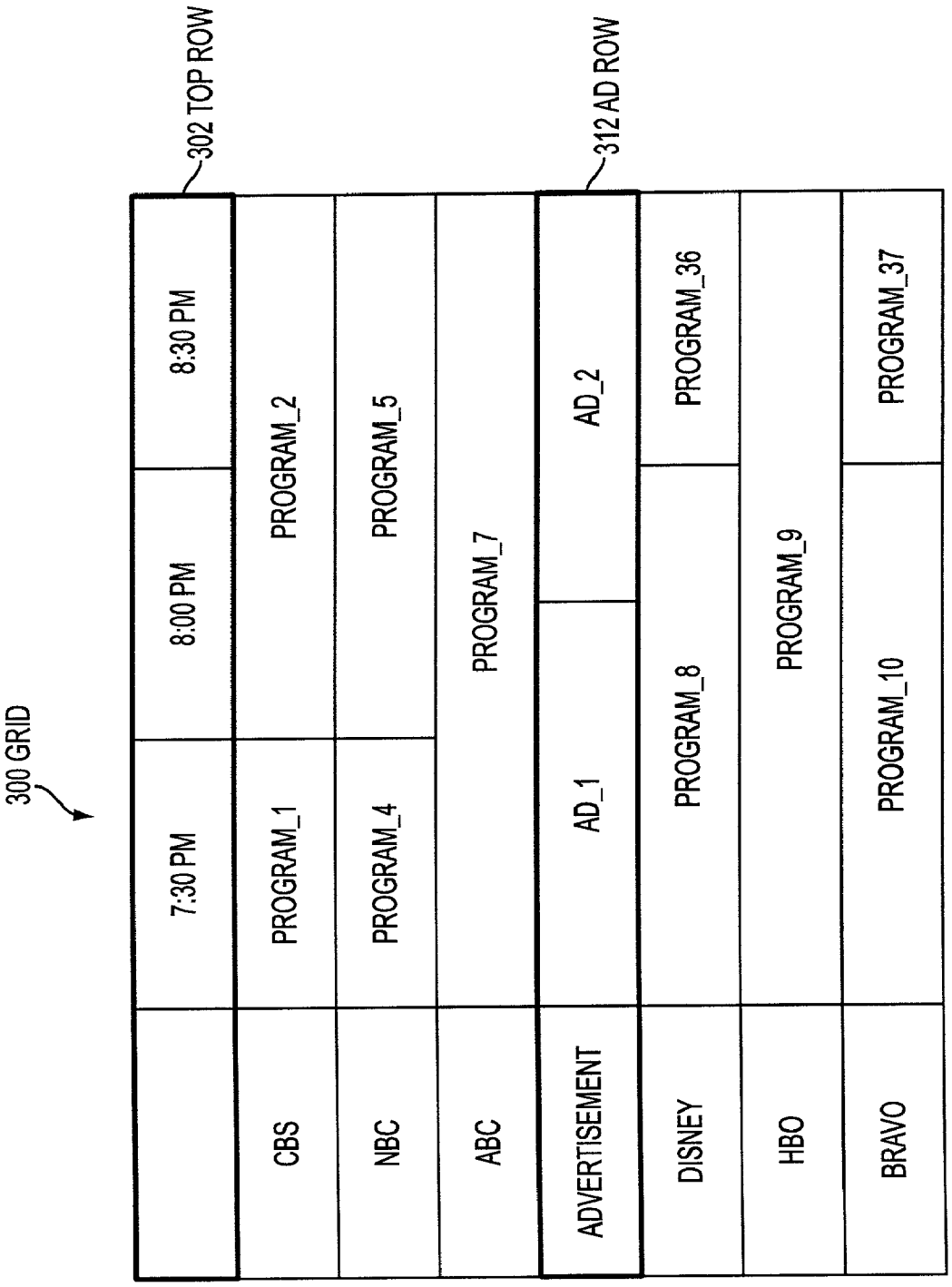
300 GRID
302 TOP ROW
312 AD ROW
7:30 PM
8:00 PM
8:30 PM
CBS
PROGRAM_1
PROGRAM_2
NBC
PROGRAM_4
PROGRAM_5
ABC
PROGRAM_7
ADVERTISEMENT
AD_1
AD_2
DISNEY
PROGRAM_8
PROGRAM_36
HBO
PROGRAM_9
BRAVO
PROGRAM_10
PROGRAM_37

FIG. 15

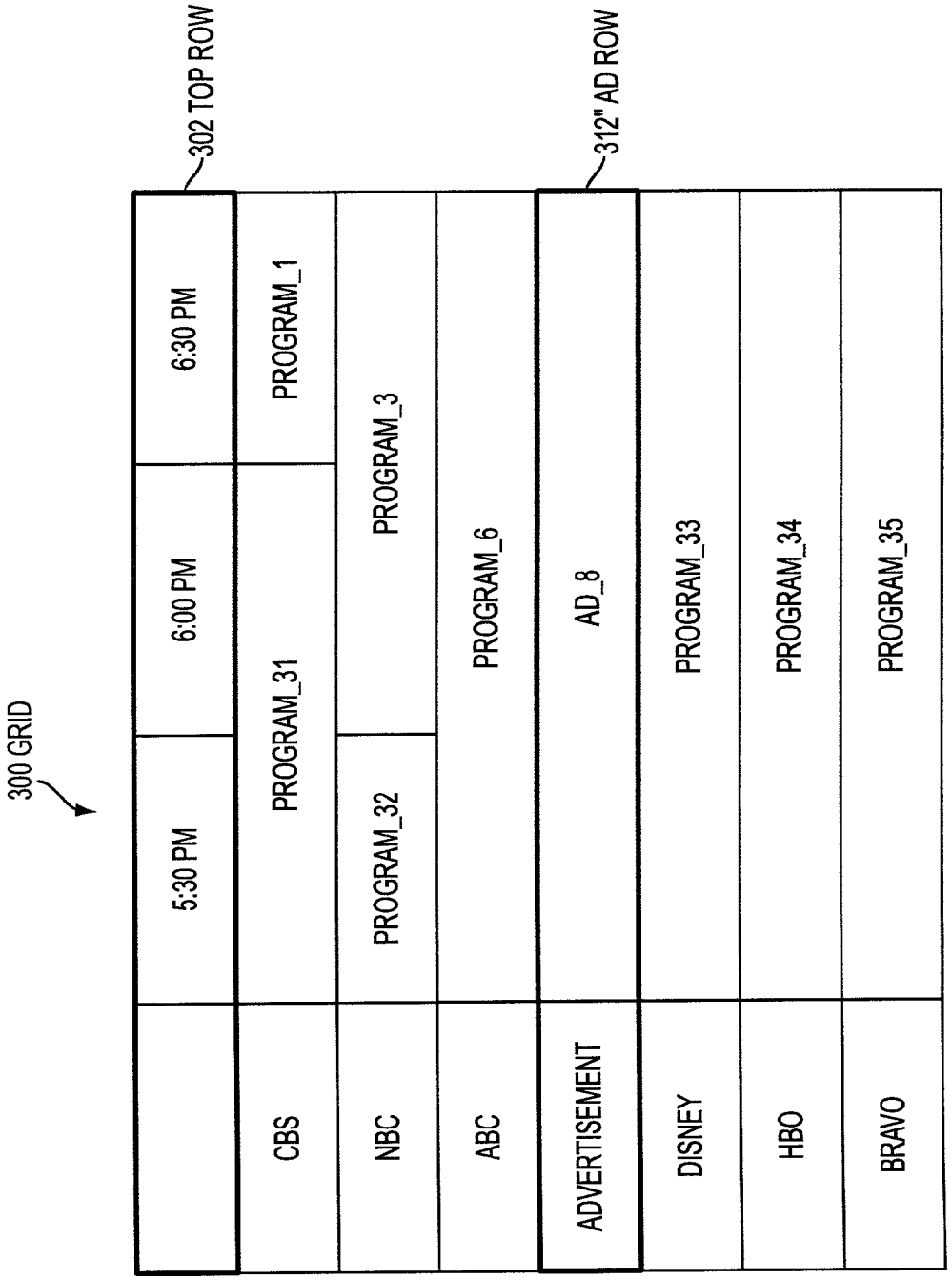
300 GRID
302 TOP ROW
312" AD ROW
5:30 PM
6:00 PM
6:30 PM
CBS
PROGRAM_31
PROGRAM_1
NBC
PROGRAM_32
PROGRAM_3
ABC
PROGRAM_6
ADVERTISEMENT
AD_8
DISNEY
PROGRAM_33
HBO
PROGRAM_34
BRAVO
PROGRAM_35

FIG. 16

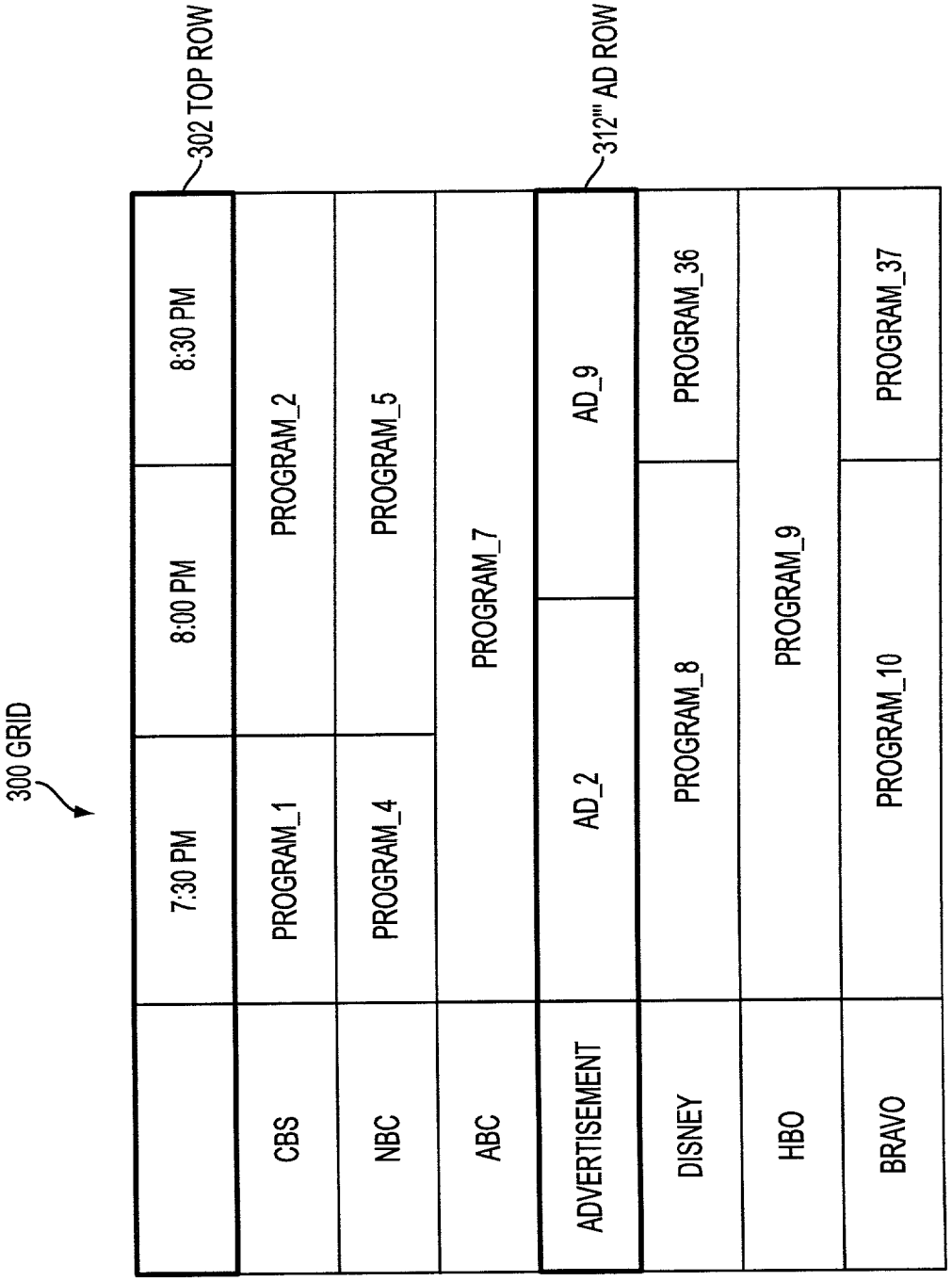
300 GRID
302 TOP ROW
312''' AD ROW
7:30 PM
8:00 PM
8:30 PM
CBS
NBC
ABC
ADVERTISEMENT
DISNEY
HBO
BRAVO
PROGRAM_1
PROGRAM_2
PROGRAM_4
PROGRAM_5
PROGRAM_7
AD_2
AD_9
PROGRAM_8
PROGRAM_9
PROGRAM_10
PROGRAM_36
PROGRAM_37

FIG. 17

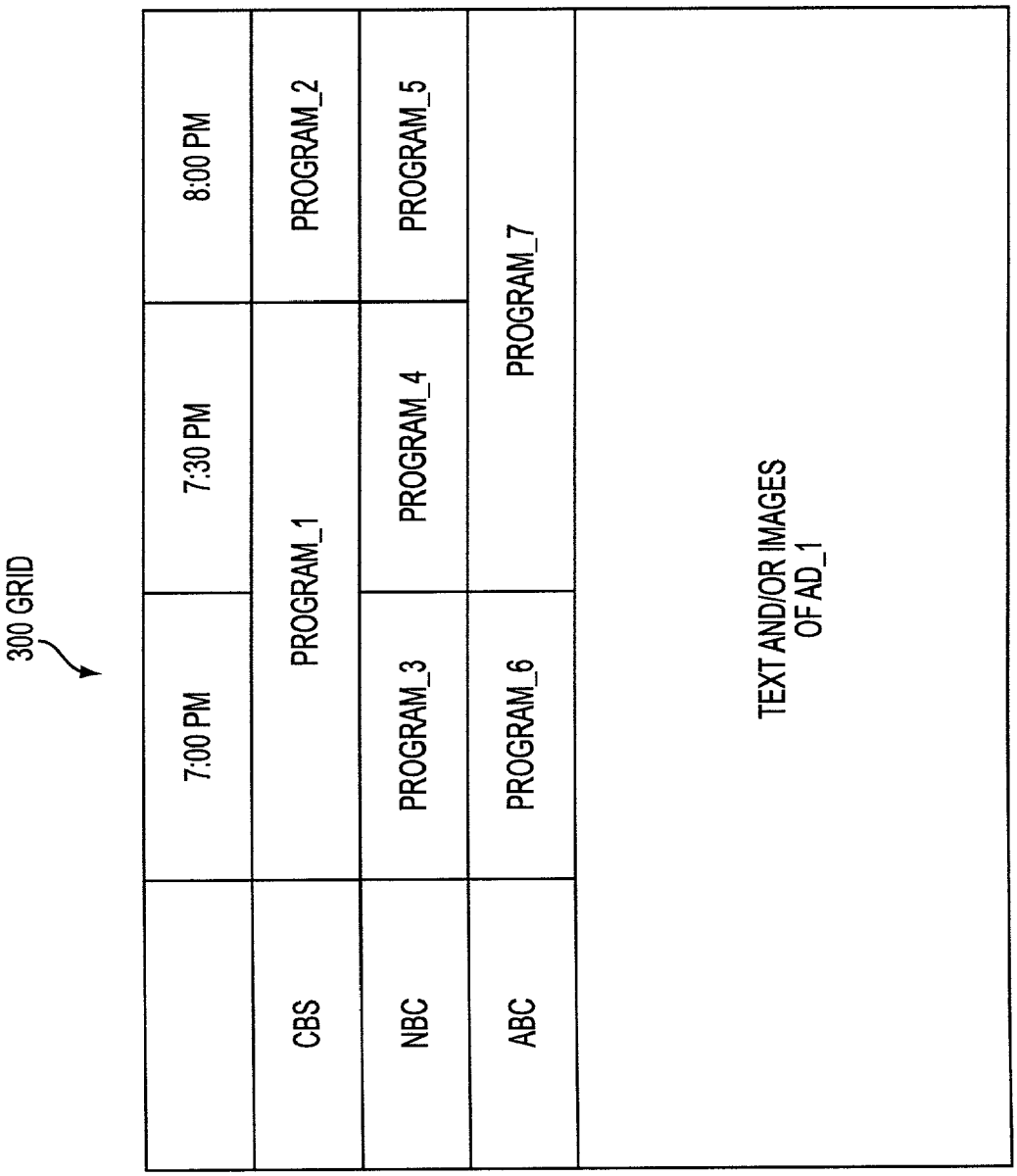
300 GRID
7:00 PM
7:30 PM
8:00 PM
CBS
PROGRAM_1
PROGRAM_2
NBC
PROGRAM_3
PROGRAM_4
PROGRAM_5
ABC
PROGRAM_6
PROGRAM_7
TEXT AND/OR IMAGES
OF AD_1

FIG. 18

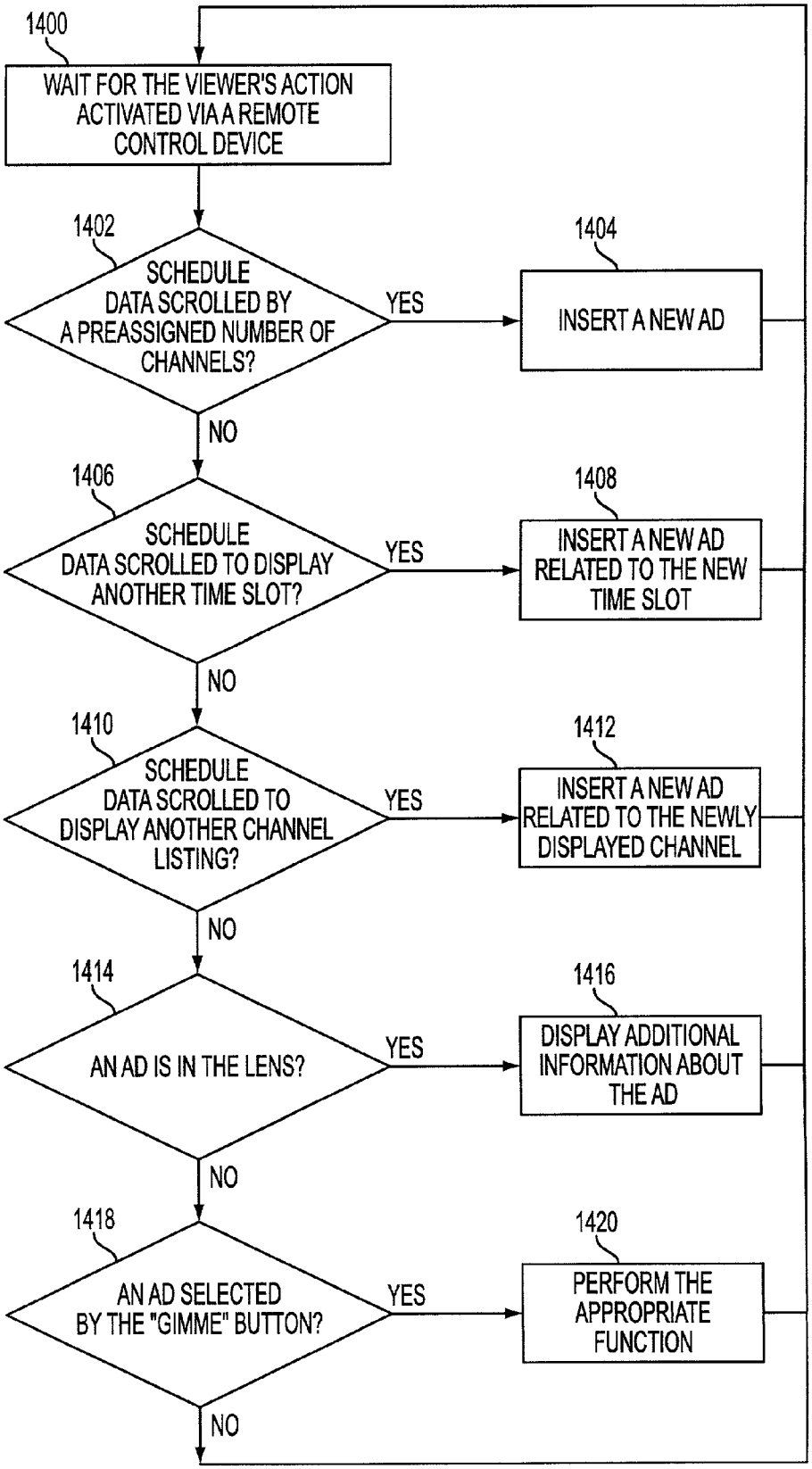
1400
WAIT FOR THE VIEWER'S ACTION ACTIVATED VIA A REMOTE CONTROL DEVICE
1402
SCHEDULE DATA SCROLLED BY A PREASSIGNED NUMBER OF CHANNELS?
YES
1404
INSERT A NEW AD
NO
1406
SCHEDULE DATA SCROLLED TO DISPLAY ANOTHER TIME SLOT?
YES
1408
INSERT A NEW AD RELATED TO THE NEW TIME SLOT
NO
1410
SCHEDULE DATA SCROLLED TO DISPLAY ANOTHER CHANNEL LISTING?
YES
1412
INSERT A NEW AD RELATED TO THE NEWLY DISPLAYED CHANNEL
NO
1414
AN AD IS IN THE LENS?
YES
1416
DISPLAY ADDITIONAL INFORMATION ABOUT THE AD
NO
1418
AN AD SELECTED BY THE "GIMME" BUTTON?
YES
1420
PERFORM THE APPROPRIATE FUNCTION
NO

FIG. 19

```
ad_ _table()                                  // rolling 12 hour tables
{
  table_version(8);
  format_version(8);
  block_size(16);
  offset_start_date_time(48);                 // 32 bits BCD dates 16 bits minutes from midnight
  display_page_size_tv(16);                   // The number of rows between Ad Banners in the Guide
  display_page_size_ec(16);                   // The number of rows between Ad Banners in the Guide
  display_page_size_croads(16);               // The number of rows between Ad Banners in the Guide
  1st_fixed_loop_size(16);
  record_count(16);
  for (i=0;i<record_count;i++)                // Ordered by time, then rotation sequence
  {
    lineup_bitmap(24);                        // 1st cut of Regional requirement
    navigator_zone(8);                        // Navigator zone in which this ad appears
    navigator_level(8);                       // Navigator level in which this ad appears
    start_time(16);                           // minutes from offset_start_date_time
    stop_time(16);                            // minutes from offset_start_date_time
    cycle_duration(16);                       // in minutes [0, ..., 65535]
    asset_type_part1(8);                      // type for initially viewable portion of ad
    asset_id_part1(16);                       // asset ID for initally viewable portion of ad
    asset_type_part2(8);                      // type for extended lens portion of ad
    asset_id_part2(16);                       // asset ID for extended lens portion of ad
    asset_type_PIP(8);                        // type for PIP portion of the ad
    asset_id_PIP(16);                         // asset ID for PIP portion of the ad
    priority(8);                              // Supports Ad rotation by priority
    intended_audience_bitmask(64);            // support for audience targeted ads
    category_id1(16);                         // support for Navigator Guide sort mapping
    category_id2(16);                         // support for Navigator Guide sort mapping
    category_id3(16);                         // support for Naivgator Guide sort mapping
    category_id4(16);                         // support for Navigator Guide sort mapping
    ad_type(8);                               // defines only the high level ad type
    beg_display_row(16);                      // for ad types 0x01, 0x02, 0x04, 0x06 and 0x07
    end_display_row(16);                      // for ad types 0x01, 0x02, 0x04, 0x06 amd 0x07
    display_row_package_count(8);             // for ad types 0x01, 0x02, 0x04, 0x06 and 0x07
    position_service_id(16);                  // used by ad types 0x03 and 0x05
    t_position(16);                           // Stub for Phase 3 ad position information
    v_position(16);                           // Stub for Phase 3 ad position information
    opacity(8);                               // Stub for Phase 3 ad opacity information
    astior_type(8);                           // specifies "G" key functionality
    service_id(16);                           // used by action type 0x02
    event_date_time(48);                      // used by action type 0x02
    marques_id(16);                           // used by action type 0x03
    product_id(64);                           // used by action type 0x04
    virtual_page_id(16);                      // used by action type 0x05
    variable_data_offset(32);
  }
  // (0 = variable_data_offset) points to here
  variable_data_count(16);
  for (j=0;j<variable_data_count;j++)         // variable data count
  {
    <<variable_data>>                         // eliminate duplicates in this loop
    url_string_length(16);
    url_string(-);                            // the URL associated with the action or ad
    display_row_package_length(16);           // ranges within or rows at which ads are displayable
    for (k=0;k<display_row_package_count;k++)
    ]
    beg_display_row_range[k](16);
    end_display_row_range[k](16);
    [
    ad_part1_text_length(16);
    ad_part1_text(-);
    ad_part2_text_length(16)
    ad_part2_text(-);
  }
{
```

FIG. 20

SYSTEM AND METHOD FOR DISPLAYING ADVERTISING IN AN INTERACTIVE PROGRAM GUIDE

Applicants claim the benefit of the following two provisional patent applications, each of which applications is hereby incorporated by reference herein in its entirety:

provisional application Ser. No. 60/225,209, titled "SYSTEM AND METHOD FOR DISPLAYING ADVERTISING IN AN INTERACTIVE PROGRAM GUIDE," filed Aug. 14, 2000; and

provisional application Ser. No. 60/283,921, titled "INTERACTIVE TELEVISION NAVIGATION SYSTEM," filed Apr. 16, 2001.

RELATED APPLICATIONS

This application is related to patent application Ser. No. 09/018,541, titled METHOD AND SYSTEM FOR NAVIGATING THROUGH CONTENT IN AN ORGANIZED AND CATEGORIZED FASHION, filed Feb. 4, 1998, now pending, which is hereby incorporated by reference into this application in its entirety.

This application is related to patent application Ser. No. 09/103,317, titled METHOD AND SYSTEM FOR PROVIDING USER INTERFACE FOR ELECTRONIC PROGRAM GUIDE, filed Jun. 24, 1998, now pending, which is hereby incorporated by reference into this application in its entirety.

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BACKGROUND OF THE INVENTION

The present invention disclosed herein relates generally to electronic program guides. More particularly, the present invention relates to a system and method for displaying more effective banner and tune-in ads in an interactive program guide.

The number of video channels that offer various programming content, including the Internet and other on-line content, continues to increase. Channel surfing is no longer a viable solution for viewers to find an interesting program by sequentially or randomly examining every channel. As a result, electronic program guides (EPG) that continuously list channels and their content televised at a particular time will become practically indispensable for viewers.

Because of this necessity to use an electronic program guide, an opportunity is presented to advertise various products and services in the EPG contemporaneously with program schedule data. Examples of the use of advertising with programs guides are shown in International Application No. PCT/US97/23852 titled "EPG with Advertising Inserts," and U.S. Pat. No. 5,940,073 titled "Method and System for Displaying Other Information in a TV Program Guide," both of which are hereby incorporated by reference into this application. PCT application PCT/US97/23852 discusses the insertion of an advertisement between television program listings in an EPG screen. The advertisement appears as a single line in the program guide grid and scrolls or otherwise moves

along with and in identical fashion as the rest of the program listings. U.S. Pat. No. 5,940,073 discusses an EPG having an area on the EPG display, separate from the program listings portion of the display, for advertising programs, products and services, where the advertising information changes as the user moves the EPG cursor from cell to cell or after the passage of a predetermined number of seconds.

In both cases, users are shown advertisements on the same screen as the program guide listings. However, neither reference is particularly sensitive to user viewing behavior, especially in the use of EPGs. Placing an advertisement in a separate region of the EPG display from the program guide listings requires a user to turn his or her eyes away from the program guide listings to view the advertisement. Since users pull up the EPG specifically to see the program guide listings, and usually only for a short period until a desired program to view is located, they are unlikely to pay any particular attention to the advertisement appearing on a separate portion of the display. Placing the advertisement in the program listings portion of the display appears to overcome this problem; however, users are likely to pay only brief attention to the ad as it scrolls past while searching through the program guide listings.

A need therefore continues to exist for an improved system and method that presents schedule data and advertising data to viewers in an effective but unobtrusive and flexible manner.

BRIEF SUMMARY OF THE INVENTION

The present invention provides a system and method for contemporaneously displaying schedule data and advertising data in an interactive program guide in a fashion which increases the likelihood of receiving user attention to the advertisement, but which keeps the ad from becoming obtrusive or annoying to the user. The advertising data may be related to programs scheduled for broadcast and time slots at which programs are scheduled for broadcast. As such, the advertisement may serve as a "tune-in" ad for upcoming programming.

One embodiment of the invention provides a method of displaying advertising in an electronic program guide on a display device, the electronic program guide having at least a list of program cells each containing a program choice available for viewing. The method includes scrolling the list of program cells on the display device in a first direction in accordance with a first scrolling scheme, displaying an advertisement cell within the list of program cells, and moving the advertisement cell in the first direction as the list of program cells scrolls, the advertisement cell moving in accordance with a second scheme different than the first scrolling scheme. The advertisement cell's scrolling scheme may be controlled from a remote location, such as by transmitting parameters for the scrolling scheme from a head end of a cable system to subscribers or such other comparable central station in a satellite, microwave or other television distribution system.

In particular embodiments, the second scrolling scheme involves scrolling the advertisement cell in concurrence with the scrolling of the program cell list during a first time portion in which the program cell list scrolls and keeping the advertisement cell stationary during a second time portion in which the program cell list scrolls. The scrolling may be in the vertical, horizontal or other direction on the display device. The second time portion may be determined based upon a first number of program cells which have moved past the adver-

tisement cell while the advertisement cell is kept stationary, with the first number of program cells being received from a remote location.

In addition to or as an alternative to this embodiment, the second scheme may include scrolling the advertisement cell in concurrence with the scrolling of the program cell list during a first time portion in which the program cell list scrolls and scrolling the advertisement cell during a second time portion in which the program cell list is stationary. This may occur, for example, in a system in which a highlight cell is displayed on the display device such that program and advertisement cells may enter the highlight cell. The advertisement cell may then be scrolled while the program cell list is kept stationary when the advertisement cell is entered in the highlight cell.

In some embodiments, the advertisement cell operates according to different scrolling schemes of these types for both vertical and horizontal directions in the program guide grid.

The highlight cell may be a fixed, stationary highlight cell in which the entire program guide moves behind the cell and program choices and the advertisement cell enter and leave the cell. Alternatively, the highlight cell may be a movable cursor or similar graphical user interface mechanism in which the program guide moves when the cursor reaches an extremity of the guide, such as the top or bottom thereof, to reveal more cells not previously visible on the display device. These new program choices may enter the screen one cell at a time or one page at a time; in either instance, the movement is generally referred to herein as scrolling.

In particular embodiments, the first direction is a vertical scrolling direction on the display device, and the program cell list contains a top cell and a bottom cell displayed on the display device. Keeping the advertisement cell stationary may then involve keeping the advertisement cell stationary when the advertisement cell reaches the top or bottom cell of the program cell list.

An advertisement is inserted into the advertisement cell. The advertisement may contain text, graphics, animation, or other multimedia components. In particular embodiments, the inserted advertisement is related to one or more program cells displayed in the program guide on the display screen. The advertisement may be replaced in the advertisement cell with another advertisement when the program choices displayed in the program guide change due to scrolling of the program cells. Advertisements may alternatively be attached to a particular channel. Also, the electronic program guide may contain program choices available for viewing at scheduled times, as opposed, for example, to program choices available on demand. The program cells would be arranged according to the scheduled times of the program choices, and the advertisement inserted into the advertisement cell may be for a program choice available for viewing at a time close in time to the scheduled times of program choices displayed on the display screen, such as an hour or two from the currently displayed time or later that evening.

The present invention further includes a method for providing an interactive program guide including schedule data and advertising data for display on a screen. According to the present invention, the schedule data is arranged into a grid containing rows and columns according to a listing of channels and starting times of programs that are broadcast via the channels. A plurality of cells is thus formed containing names of the programs. The advertising data is inserted into a predetermined row of the grid for display on the screen. Using a remote control, a viewer scrolls the schedule data in the grid to view the listing of other channels and the starting times of other programs broadcast via the other channels. While the viewer scrolls the schedule data, the advertising data remains on the screen in the predetermined row of the grid.

The advertising data is arranged into cells such that one or more advertising cells are displayed in the predetermined row of the grid. In accordance with one aspect of the present invention, each advertising cell contains an advertisement related to the starting times of the programs displayed on the screen. In accordance with another aspect of the present invention, each advertising cell contains an advertisement related to the channels substantially adjacent the predetermined row containing the advertising data displayed on the screen.

The present invention further includes improved user interface designs for an interactive program guide. According to one embodiment, the improved user interface contains a listing of program choices arranged in at least one row or column on a display device, the listing being navigated by a user through scrolling in accordance with a first scrolling scheme, and an advertisement cell contained within the program listing column or row. The advertisement cell is configured to move on the display device in accordance with a second scrolling scheme, the second scrolling scheme being different than the first scrolling scheme. In addition, a list of service identifiers, such as television channel numbers or operators, is displayed in association with the program choices in the program choice listings, and an advertisement identifier, such as the word "AD," is contained in the list of service identifiers and displayed in association with the advertisement cell. Thus, the content of the advertisement cell is clearly identifying as an ad and not necessarily a program choice such as may otherwise be displayed in a currently scheduled time slot in the guide.

Another embodiment of a user interface for an interactive program guide includes a set of first program cells arranged in at least one row or column on a display device, the set being navigated by a user through scrolling in accordance with a first scrolling scheme, and at least one second program cell arranged within the column or row, the second program cell being configured to move on the display device in accordance with a second scrolling scheme, the second scrolling scheme being different than the first scrolling scheme. A stationary highlight cell may be positioned over a portion of the column or row of program cells, wherein scrolling of the column or row causes one of the cells to enter the highlight cell, the stationary highlight cell being operative to allow user selection of a program cell entered in the highlight cell. The second program cell may be larger than the first program cells, and the stationary highlight cell then expands to accommodate the second program cell when the second program cell enters the highlight cell.

Another embodiment of a user interface for an interactive program guide includes a plurality of program cells arranged in at least one row or column on a display device and an advertisement cell contained within the program cell column or row. The program cells and the advertisement cell are configured to move on the display device in response to user input. During a first time period the program cells and advertisement cell move in concurrent fashion and during a second time period the program cells or advertisement cell remain stationary on the display device during movement of the other of the advertisement cell or program cells, respectively.

Another embodiment consists of a user interface for an interactive program guide with an advertisement in the guide whose movement is partially controlled from a remote location such as a cable system head end. The guide includes a plurality of program cells arranged in at least one row or

column on a display device and an advertisement cell contained within the program cell column or row. The program cells and the advertisement cell are configured to move on the display device in response to user input. The movement of the advertisement cell is controlled in part based on parameters addressed from the remote location.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated in the figures of the accompanying drawings which are meant to be exemplary and not limiting, in which like reference characters are intended to refer to like or corresponding parts, and in which:

FIG. **1** shows a block diagram of a digital broadcast system in accordance with one embodiment of the present invention;

FIG. **2** illustrates several representative digital video channels and data channels representing signals which are generated, transmitted, received and processed by the digital broadcast system shown in FIG. **1**;

FIGS. **3-8** show exemplary screen displays of an interactive program guide screen having an advertisement in the program listings in accordance with embodiments of the present invention;

FIG. **9** shows a block diagram of an interactive program guide displayed on the television monitor of the digital broadcast system;

FIG. **10** shows a block diagram of the interactive program guide when the viewer activates the "up" function to scroll the scheduling data in grid **300** in the direction of arrow U in FIG. **9**;

FIG. **11** shows a block diagram of the interactive program guide when the viewer scrolls the scheduling data up or down to view the scheduling information for other video channels and the advertising data in ad row **312** starts to move in the direction of the scrolling operation;

FIG. **12** shows a block diagram of the interactive program guide after the previous advertising data scrolls off the screen and new advertising data appears;

FIG. **13** shows a block diagram of the interactive program guide when the advertising data remains in the top schedule row until a predetermined number of rows is scrolled on the screen;

FIG. **14** shows a block diagram of the interactive program guide when the viewer activates the "left" function to scroll the scheduling data in grid **300** in the direction of arrow L in FIG. **9**;

FIG. **15** shows a block diagram of the interactive program guide when the viewer activates the "right" function to scroll the scheduling data in grid **300** in the direction of arrow R in FIG. **9**;

FIG. **16** shows a block diagram of the interactive program guide after the viewer moves the scheduling data in grid **300** to the left, and advertisement AD_**1** and AD_**2** are replaced by advertisement AD_**8**;

FIG. **17** shows a block diagram of the interactive program guide after the viewer moves the scheduling data in grid **300** to the right, AD_**1** is replaced by AD_**2**, and AD_**9** is inserted in place of AD_**2**;

FIG. **18** shows a block diagram of the interactive program guide after AD_**1** is in the lens **318**, and more extensive text and/or images pertaining to that advertisement (AD_**1**) appear on the screen;

FIG. **19** is a flowchart for navigating an interactive program guide with advertisements according to one embodiment of the present invention; and

FIG. **20** shows the data structure for a table for conveying ad data in accordance with one embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

As a general overview, the present invention includes a system and method for providing advertisements in an interactive program guide. The interactive program guide is displayed on a monitor such as in the form of a grid that contains multiple rows and columns, thereby dividing the grid into a number of cells. Each row of data in the interactive program guide represents programming data provided on a specific channel at sequential times, and the columns of information in the grid represent different programs available within a given time slot. According to the present invention, at least one of the rows does not contain the names of programs starting at particular times, but instead contains advertising data. In one aspect of the present invention, the advertising data is related to a time slot in which the advertising data is displayed. In another aspect of the present invention, the advertising data may also be related to substantially adjacent channels displayed on the screen. In addition, the viewer may interact with the advertisements appearing in the interactive program guide. These as well as additional features of the advertisements in the interactive program guide according to the present invention are described in detail below.

One embodiment of the present invention will now be described in detail with reference to the accompanying figures. In particular and as described in commonly owned U.S. Pat. No. 6,256,785, incorporated herein by reference, FIG. **1** shows a block diagram of a digital broadcast system **100** which includes a head end **102** and a receiving end **104**. The head end **102** includes a head end system **106** coupled, in a representative embodiment, to a microwave transmission dish **108**. The receiving end **104** includes microwave receiving antenna **110** coupled to a set-top box **112** which, in turn, is coupled to television monitor **114**. The transmission in this embodiment is direct dish-to-dish microwave. Alternatively, the digital broadcast may be transmitted from the head end system **102** to a satellite, where the broadcast is "bounced" off for retransmission to the receiving end **104**. Furthermore, a wire (cable) connection may be utilized as a digital broadcast medium. Those of skill in the art will appreciate that any conventional television distribution system may be used within the scope of the invention.

In operation, a digital video signal is generated at the head end system **106** and is transmitted from the microwave transmission dish **108**. The digital video signal is received by the microwave receiving antenna **110** and is converted by the set top box **112** into a usable signal which is then input into the television monitor **114** for viewing. The set top box operates an application for generating a navigator user interface for selecting channels for viewing, the navigator including an electronic or interactive program guide. The operation of one such guide is described in the above referenced commonly owned patent application Ser. No. 09/103,317.

Reference is next made to FIG. **2** which illustrates several digital video channels **120-130**. As shown in FIG. **2**, video channels **120-130** are representative of MPEG channels **21-31**, respectively. Digital video channels **120-130** and data channel **131** are transmitted in tunable bandwidths represented by frequency bands **140** and **142**. In this exemplary embodiment, frequency band **140** contains MPEG channels **21-26** (digital video channels **120-125**), and frequency band **142** contains MPEG channels **27-31** (digital video channels

126-130). Each of the digital video channels can have data embedded in its stream of data as shown for the frequency band **140** in FIG. **2**. Alternatively, a separate data channel **131** can be independent from each of the digital video channels **126-130** but within the same tunable bandwidth as in frequency band **142**. Alternatively, the data can be put on a data dedicated frequency band which receives only data and no digital video channels, such as data **132** tunable within frequency band **143**.

Frequency band **140** contains digital video channels **120-125** which include both video information and data. Frequency band **142** tunes digital video channels **126-130** and data channel **131**. Data channel **131** includes a continuous stream of data that is then synchronized to the separate digital video channels **126-130**. Alternatively, in the situation of frequency band **143**, one dedicated frequency band is provided to receive only data bits. Data is stored in memory and synchronized with video when tuned to a frequency band that has video.

The above-mentioned data, either embedded in the video channels or separately provided therefrom, may include, among other things, scheduling data for use in an interactive or intelligent program guide (IPG). The guide is an interactive electronic program display which lists programs by channel and time as described in U.S. patent application Ser. No. 09/103,317 incorporated herein by reference. The viewer can navigate the guide with a remote control and can select or tag a program listed in the guide for immediate or later viewing.

Exemplary screen displays for the IPG user interface of the present invention are shown in FIGS. **3-8**. As shown in FIG. **3**, this embodiment of an IPG consists of a grid **200** with program cells **202** having program choices contained therein, arranged in a two-dimensional grid of time **206** vs. channel **208**. An advertisement cell or cells **204** are contained within the grid portion **200** of the IPG, with the word "AD" contained in the channel list **208** displayed adjacent the advertisement cell **204**. The advertisement cell **204** is larger than the program cells **202**, having in this case about the height of three program cells **202**. The advertisement is a bit-mapped graphic arranged either horizontally or vertically, and may further contain animated graphics, such as with animated GIFs, sprite animation such as Flash or Shockwave, or other technology as allowed by the set top box and operating system.

FIG. **3** shows two advertisements in the advertisement cells. One ad is for a television show "Spin City" airing at 8:30 pm that night. Note that the grid is currently displaying shows airing at 7:00 pm, 7:30 pm and 8:00 pm, so that this ad is for a show just to the future of the current time slot. The second ad is for a program called "CatDog" scheduled to air at 7:30 pm on Tuesdays. This again relates the time of the program featured in the ad to the currently displayed time **206** in the grid **200**.

An alternative advertisement which may appear in the advertisement cell is shown in FIG. **4**. This ad **212** is a large sized ad, filling up over two columns of the grid row with a single ad. This ad **212** features a movie called "A Bug's Life," scheduled to air at 8:00 pm on an upcoming Saturday. Here to, the ad relates in time to the time of the program cells in the IPG.

The IPG screen in FIG. **3** also features a pick list **210** of categories such as favorites, movies, sports, children, etc. The operation of this pick list is described in the above referenced patent applications.

In accordance with one embodiment, the user enters the IPG screen with stationary highlight cell **214** (described in the above referenced application including Ser. No. 09/103,317) positioned over the last program that the viewer had been watching. The ad **204** appears at the top of the grid. If the viewer presses the down arrow on his or her remote control device, the grid lines move up off the screen, and the lines of the grid scroll up under the ad **204**. The ad **204** sticks in place until an addressable number of lines, sometimes referred to herein as a page, have scrolled beneath it, then unsticks and scrolls up off-screen with the text. As the ad **204** scrolls off the top of the grid, another ad scrolls up from the bottom, so that when the first ad has completely scrolled off screen, the new ad completely occupies the bottom three lines of the scrolling grid. If the viewer continues to scroll, the ad scrolls up into the highlight lens **214**, which expands or "trombones" vertically and horizontally to accommodate the different size of the ad. This is shown in FIG. **5**. If the viewer scrolls the ad out of the lens **214**, it sticks in place when it reaches the top of the screen, restarting the cycle.

If the viewer presses the up arrow, causing the grid lines to move down off the screen, the ad **204** sticks in place until an addressable number of lines, a page, have scrolled out from beneath it. The ad **204** then unsticks and scrolls into the lens **214**, which expands as explained above and as shown in FIG. **5**. If the viewer scrolls down further, the ad **204** reaches the bottom of the grid **200**, as shown in FIG. **6**, at which point it may stick or may scroll off the bottom of the screen. A new ad scrolls in from the top, and, when that entire ad is visible, it sticks in place, restarting the cycle. This provides that the ad **204** will be prominently visible for a set time, as determined by a set number of program cells scrolled, while the viewer uses the IPG to find a desired program to watch. At some point the ad scrolls off, making way for a new one.

The number of lines that scroll under the ad is addressable, so that it can be changed during the day to support greater or lesser repetition frequency. For example, if there are many ads in the set top box, the number of lines might be set to 15 to allow more ads to be shown over a shorter time. If there are few ads in the box, the number of lines could be set to 25, or even to the total number of lines in the grid, which would mean the ad wouldn't scroll off at all. As such, the page size is dynamically configurable per each instance of the ad banner table, as described further below. If a single 24-hour table is used, the page size is the same for the entire 24-hour period.

Further in accordance with embodiments of the invention, when an ad is not in the lens **214**, left/right scrolling of the grid has no effect on the ad. The scrolling grid scrolls independently of the ad. Likewise, when an ad is in the lens, left/right scrolling has no effect on a the grid. When an ad is in the lens, left/right scrolling causes the ads to scroll at the rate of one complete ad per left/right arrow execution. Ads are not "slippery" and do not get truncated as program cells do. If an ad is in the lens and the viewer presses the right arrow, the ad to the right of the ad in the lens scrolls into the lens, and a new ad scrolls in from off-screen to replace it, as shown in FIG. **7**. Depending upon the size of an ad buffer, as described further below, the new ad may be the ad that was originally in the lens, or it may be an entirely new ad. If the system only supports two ads at a time, the same two ads will simply loop, as shown in FIG. **7**, where the ad for Spin City moved in from the right as the new ad.

The number of ads that may be supported by a system simultaneously depends on set top box memory and bandwidth considerations. A minimum of two half-grid-wide ads or one full-grid-wide ad should be available at any time. Ads may be made available to the system in 30 minute blocks and for 60-second avails. The system also supports descriptive text, graphics or an HTML page about the ad to be sent and shown in a description box on the IPG grid screen.

The advertisement cell and inserted advertisement has many interactive capabilities as the program cells. For example, for ads for television programming, pressing an enter button on an ad in the highlight lens produces an action corresponding to the behavior of program cells when in the lens, as described in the above referenced related applications. This action includes tuning to the station of a currently airing show, marking a show for future viewing, or in the case of product-based advertising, taking the viewer to a virtual channel or initiating an e-commerce purchase.

Advertisements may support the following additional functionality. They may be changed according to guide page, and may be replaced after scrolling through a defined number of channels. When scrolling, new ads should appear in a manner that leaves a full ad visible. Ads may changed according to priority, current time, and category, as selected from the pick list. Ads may be set not to change until a viewer moves to a different page, after which time the ad updates as scheduled. Multiple ads may be associated with a page, and have a priority that determines when they will be displayed. The first time a page is viewed, the highest priority ad is displayed. Upon the next viewing occasion, the second highest priority ad is displayed, and so on, up to, in one embodiment, four priority levels. Default ads should appear when no ad is scheduled at a particular time, and will be indicated as such by assigning them the lowest priority. These ads may be sent as part of every ad banner table, as described below and in the attached Appendix, so that they need not be stored at startup.

For a program guide which is list-based, FIG. **8** shows how two or more ads are arranged vertically. Vertically stacked ads are displayed when the viewer has displayed a category sort through use of the pick list **210**, as shown in FIG. **8** in which the program choices for the news category are displayed.

FIG. **9** shows in block diagram form an IPG as it may be representatively displayed on television monitor **114**. The IPG contains scheduling data for the video channels. The scheduling data is arranged along rows and columns forming grid **300**. In one embodiment of the present invention, the top row **302** displays time slots representatively shown in half-hour periods, and the left-most column **304** displays the names of video channels. Thus, according to the IPG shown in FIG. **9**, program_**1** displayed in cell **306** of grid **300** is scheduled for broadcast at 7:00 p.m. on the CBS channel. FIG. **9** shows scheduling data displayed in the rows of grid **300** for the following video channels between 7 p.m. and 8 p.m. (top to bottom in grid **300**): CBS, NBS, ABC, Disney, HBO, and Bravo.

As further illustrated in FIG. **9**, the cells of grid **300** have variable sizes. The cell size depends on the length of the program for a particular video channel. As an example, program_**8** shown in cell **308** is at least 1 hour long, such that cell **308** occupies the entire row in grid **300**. As another example, program_**5** broadcast on the NBC channel is half-hour long and consequently occupies cell **310** which is one-third of the entire row and is smaller than cell **308**. Hence, the cells of grid **300** containing program names and starting/ending at the columnar boundaries of time slots may have different sizes depending on the program length.

According to one aspect of the present invention, one row in grid **300** is occupied by advertising data instead of scheduling data described above, as shown in FIG. **9**. In one embodiment of the present invention, the advertising data takes up row **312** of grid **300**. Since the ad data does not start at a particular time slot as opposed to a particular program, the cells in ad row **312** are variably sized and do not have to start/end at the columnar boundaries of the time slots. For example, AD_**1** occupies cell **314** which does not truncate at the time slot boundaries displayed in FIG. **9**. Similarly, AD_**2** occupying cell **316** is not restricted to the time slot boundaries for schedule data.

Further shown in FIG. **9** is lens **318** responsive to a remote control (not shown) operated by the viewer. By activating directional buttons (left, right, up, down) on the remote control, the viewer moves the lens **318** from one cell to another in grid **300**. As described in detail in U.S. patent application Ser. No. 09/103,317, the lens may be stationary while the grid scrolls behind it. Alternatively, lens **318** may move or "slide" in a desired direction across the cell boundaries, or alternatively may "jump" to the next cell to accommodate the size of that cell when the viewer presses the directional button.

As also described in U.S. patent application Ser. No. 09/103,317, the current video program is presented to the viewer on the screen when the viewer presses a "Gimme" or enter button on the remote control, provided the activated video program is currently in progress. Alternatively, another function activated in response to the viewer pressing the "Gimme" button on the remote control allows the viewer to tag future video programs for later viewing or recording. Thoroughly explained in U.S. patent application Ser. No. 09/103,317, the description of these functions will not be repeated herein in order not to detract from the present invention.

The IPG data, including scheduling and advertising data, presented in grid **300** may be scrolled up, down, left or right in response to the viewer pressing directional buttons on the remote control. For example, when the viewer activates the "down" function to scroll the scheduling data in grid **300** in the direction of arrow D in FIG. **9**, the program schedule data moves down. In accordance with the present invention, the advertisement in ad row **312** does not move down immediately but rather stays in the same position on the display, at least for a given number of program cells scrolled. In contrast to the embodiments described above with reference to FIGS. **3-8** in which the advertisement data became temporarily stationary at the top or bottom while a certain number of program cells scrolled past, the advertisement row **312** in this embodiment is shown to be temporarily stationary in the middle portion of the grid **300**. The exact position of the advertisement during its period of temporary non-movement is a matter of design choice. Scheduling data for new video channels appear at the top of the grid while the scheduling data for video channels HBO and Bravo scrolls off the monitor screen.

Similarly, when the viewer activates the "down" function to scroll the scheduling data in grid **300** in the direction of arrow U in FIG. **9**, grid **300** acquires the appearance as shown in FIG. **10**. Scheduling data for new video channels Cinemax and Pay-Per-View appears in rows **324** and **326**, respectively, for time slots 7:00 p.m., 7:30 p.m. and 8:00 p.m., while the scheduling data for video channels CBS and NBC scrolls off the monitor screen. FIG. **10** shows grid **300** after the viewer moved it up by 2 rows such that the scheduling data is displayed in the rows for the following channels (top to bottom in grid **300**): ABC, Disney, HBO, Bravo, Cinemax, Pay-Per-View. The advertisements in ad row **312** have not moved during this brief scrolling operation.

It is understood, of course, that the viewer may move the scheduling data within grid **300** by any number of rows.

FIG. **10** shows that ad row **312** containing the advertising data remains in the same position as before the scrolling operation of the scheduling data. As the viewer activates the "down" or "up" function for moving the scheduling data within grid **300**, the scheduling data for adjacent video channels (Disney, HBO in FIG. **10**) scrolls underneath ad row **312**

containing advertisements. The scheduling data re-appears below or above ad row **312** during the scrolling operation.

In one aspect of the present invention, the contents of ad row **312** are replaced with different advertising material after a predetermined number of channels are scrolled off the screen in response to the viewer using "up" and/or "down" buttons on the remote control device. As the viewer chooses to scroll the scheduling data up or down to view the scheduling information for other video channels, ad row **312** starts moving in the direction of the scrolling operation. As shown in FIG. **11**, ad row **312** "unsticks" and moves in the scrolling direction, along with other video channels displayed in the grid **300**, after a predetermined number of video channels are scrolled off the screen. Thus, as the viewer scrolls the scheduling data up or down in grid **300**, ad row **312** starts moving as illustrated in FIG. **11**.

After ad row **312** scrolls off the screen, another row of ad data **312'** appears at the top or bottom of the screen, depending on the scrolling direction. Hence, if the previous ad data scrolls off the screen as shown in FIG. **11**, new ad data in ad row **312'** appears at the bottom of the screen as shown in FIG. **12**. If the viewer continues the scrolling operation in the same direction, the new ad data in ad row **312'** scrolls in that direction until it gets to a predetermined location on the screen. In this embodiment of the present invention, the predetermined location for the ad row is substantially in the center of the screen. At that time, the new advertising data in ad row **312'** "sticks" in the predetermined location despite the viewer's scrolling operation of the scheduling data in grid **300**. Of course, the viewer may reverse the scrolling direction prior to the new advertising data in ad row **312'** reaching its destination. In this situation, ad row **312'** does not "stick" anywhere, and instead, the new advertising data continues to scroll off the screen in the new direction and may once again re-appear on the screen from a different direction.

In another aspect of the present invention, the advertising data is related to substantially adjacent or nearby video channels displayed in grid **300**. For example, AD_**1** and AD_**2** displayed in cells **314** and **316**, respectively, as shown in FIG. **9** may be related to any one or more of the displayed video channels: CBS, NBC, ABC, Disney, HBO, and Bravo. When the viewer scrolls the scheduling data up or down in grid **300**, the new ad appearing at the top or bottom of the screen is related to the nearby video channels as they appear in view. As a result, the advertising data is replaced according to the contents and names of the video channels that scroll onto the screen and become adjacent ad row **312** in grid **300**.

Referring to FIG. **12**, AD_**3** in ad row **312** may be an advertisement for an adult program starting at 9:00 p.m. on the Playboy channel. The advertisement is related to the channel listing substantially adjacent or nearby ad row **312**. In another example with reference to FIG. **12**, AD_**4** in ad row **312** may be an advertisement for an on-line discount broker. This advertisement is contextually related to the CNBC channel for broadcasting financial news and information, as known to those skilled in the art.

In another aspect of the present invention, if the viewer scrolls the scheduling data up or down causing the rows of grid **300** to move off the screen and causing the advertisements to move from the center row, the ads "stick" at the top and/or bottom of the screen depending on the scrolling direction. As shown in FIG. **13**, the advertisements remain in the top schedule row **328** until a predetermined number of rows is scrolled beneath the ads. Then, the advertisements in the top schedule row **328** "unstick" and scroll off the screen. Alternatively, the ads in the top schedule row **328** may "unstick" and are replaced by a new advertisement based on the video channels that scroll into view and are in proximity of the top schedule row **328** in grid **300** as described hereinabove.

As briefly mentioned, the viewer may scroll the scheduling data in grid **300** to the left in the direction of arrow L or to the right in the direction of arrow R shown in FIG. **3**. For example, when the viewer activates the "left" function to scroll the scheduling data in grid **300** in the direction of arrow L in FIG. **9**, grid **300** has the appearance as shown in FIG. **14**. The scheduling data for the same video channels as in FIG. **9** appears in grid **300** for the new time slots 5:30 p.m., 6:00 p.m. and 6:30 p.m. FIG. **14** shows grid **300** after the viewer moved it to the left by 3 columns.

Similarly, when the viewer activates the "right" function to scroll the scheduling data in grid **300** in the direction of arrow R in FIG. **9**, grid **300** has the appearance as shown in FIG. **15**. The scheduling data for the same video channels as in FIG. **9** appears in grid **300** for time slots 7:30 p.m., 8:00 p.m. and 8:30 p.m. FIG. **15** shows grid **300** after the viewer moved it right by 1 column.

FIGS. **14** and **15** further show that the advertising data "sticks" in ad row **312** remains in the same position as before the left scrolling or right scrolling operation of the scheduling data. That is, as the viewer activates the "left scroll" or "right scroll" function for moving the scheduling data within grid **300**, the advertisements do not change. As explained above, this occurs when the advertisement data is not positioned in the lens **318** (the lens not being specifically shown in FIGS. **14** and **15**). Left/right scrolling has no effect on the ads, and the scheduling data in grid **300** scrolls independently of the ads.

In yet another aspect of the present invention, the advertisements in ad row **312** are replaced during the left/right scrolling operation after browsing through a predetermined number of time slots for the scheduling data. A new ad scrolls into place from the scrolling direction on the screen at a representative rate of one complete advertisement per left/right arrow button press.

In still another aspect of the present invention, the replacement of ads in ad row **312** during the left/right scrolling operation is directly related to and depends on time slots displayed in grid **300**. For example, AD_**1** located in cell **314** shown in FIG. **9** may be an advertisement for a program that starts on the NBC channel at 8:00 p.m. If the viewer moves the scheduling data in grid **300** to the left, AD_**1** and AD_**2** located in ad row **312** may be replaced by AD_**8** as shown in FIG. **16**. AD_**8** contains an advertisement for a program on the HBO channel that starts at 7:30 p.m.

Similarly, if the viewer moves the scheduling data in grid **300** to the right, AD_**1** located in cell **314** may be replaced by AD_**2** located in cell **316**, and AD_**9** is inserted in place of AD_**2** as shown in FIG. **17**. As an example, AD_**9** may contain an advertisement for a program on the Bravo channel that starts at 10:30 p.m.

As described above, the viewer may move lens **318** from one cell to another over the entire grid, or may move the grid around while the lens stays stationary on the display and cells enter and leave it, in either case thereby selecting different cells. Using lens **318**, the viewer may highlight the ad cell. In this situation, lens **318** "trombones" both vertically and horizontally in order to properly display the ad because the ad will generally not be the precise width of the grid columns surrounding it. This "tromboning" action is functionally similar to the "tromboning" that takes place with program cells in the program guide; that is, lens **318** changes size dynamically as the ad scrolls into it. With ad cell scrolling, lens **318** "trombones" vertically and/or horizontally to accomodate the difference in height and/or width between ad cells and program cells.

In another aspect of the present invention, when the viewer selects the ad cell using lens **318** as described above, additional details of the ad may appear on the screen for a predetermined period of time. For example, when AD_**1** in ad row **312** is in lens **318**, more extensive text and/or images pertaining to that advertisement appear on the bottom half of the screen as shown in FIG. **18**. After the expiration of the predetermined time period, AD_**1** returns to its original condensed version to occupy cell **314**.

The viewer may press a "Gimme" button on the remote control while the ad is in lens **318**. The following operations may take place depending on the contents of the ad which was activated by the viewer. If the ad is for a currently airing program, or a program airing within a predetermined time period, pressing the "Gimme" button while the ad is in the lens takes the viewer to the channel showing the program. If the ad is for a program that is airing at some time in the future, pressing the "Gimme" button initiates a tag sequence at an appropriate point for later viewing. If the ad is for a Pay-Per-View event, pressing the "Gimme" button begins a buy sequence at an appropriate point to purchase the requested event. If the ad is for another product or service, pressing the "Gimme" button takes the viewer to the information page for that service. Alternatively, a store-and-forward or other type of purchase may be initiated for the advertised product or service upon pressing of the "Gimme" button.

FIG. **19** is a flowchart for displaying on a screen the interactive program guide with advertisements according to the present invention. In particular, FIG. **19** shows a process by which ads may be selected for insertion into the advertisement cell based upon navigational movement in the IPG. In block **1400**, the viewer activates a particular function in the interactive program guide via the remote control device. In block **1402**, a decision is made whether the viewer scrolled schedule data up or down in grid **300** by a predetermined number of channels. If so, a new ad is provided on the screen in block **1404**. Otherwise, in block **1406**, a decision is made whether the viewer scrolled the schedule data to display another time slot in grid **300**. If so, a new ad related to the new time slot in grid **300** is inserted in ad row **312** in block **1408**.

As further shown in FIG. **19**, in block **1410** it is determined whether the viewer scrolled the schedule data to display another channel listing. If so, in block **1412** a new ad related to the new channel listing in grid **300** is provided in ad row **312**. Otherwise, in block **1414** a decision is made whether the viewer placed lens **318** over the ad in row **312**. If this is the case, additional information about the ad in the lens is displayed on the screen in block **1416**. In block **1418**, another decision is made whether the viewer selected an ad using the "Gimme" button. If so, in block **1420** various functions are performed depending on the contents of the ad as described above.

In the preferred embodiment, the top row displays time slots representatively shown in half-hour periods, and the left-most column on the screen displays the names of video channels. Those skilled in the art will recognize that the present invention is not limited to such implementation. Among other things, time slots in grid **300** may be of any duration, and the position of time slots and channel listing on the screen may be arranged differently. For example, time slots may occupy the bottom row, and the right-most column on the screen may be allocated to the channel listing.

Further in the preferred embodiment, the advertisements are displayed in substantially the center row of grid **300**. Those skilled in the art, however, will recognize from the disclosure herein that the present invention is not limited thereto. Any row of grid **300** may be assigned to the ads.

Still further according to the present invention, one or several ads may appear in one row. Furthermore, the advertisements may occupy more than one row in grid **300**.

Still further in the preferred embodiment, more extensive text and/or images pertaining to that advertisement appear on the bottom of the screen if the ad is highlighted by the lens **318**. Those skilled in the art will recognize from this disclosure that additional text and/or images may occupy any portion of the screen, including any top portion.

FIG. **20** shows a data structure for storing data transmitted from a head end or other central station to subscriber stations having display devices. The data structure specifies the format of an ad table. The table defines the time(s) that an ad is ready for display in the program guide, the priority in the rotation sequence, the duration of its display for a given rotation, and its location within the guide. The table is sent to subscriber devices at regular intervals, such as in a rolling 12-hour present and following format. The definitions for the entries in the ad table in FIG. **20** are contained in the Appendix to this specification, which fully forms part of this application.

While the invention has been described and illustrated in connection with preferred embodiments, many variations and modifications as will be evident to those skilled in this art may be made without departing from the spirit and scope of the invention, and the invention is thus not to be limited to the precise details of methodology or construction set forth above as such variations and modification are intended to be included within the scope of the invention.

APPENDIX

The Appendix, which forms part of the present application, contains the definitions for the fields in the advertisment delivery table shown in FIG. **20**. Some of the terminology, including names of levels and zones, is best understood with reference to prior applications incorporated herein by reference, such as Ser. No.09/018,541.

The definitions for the fields in the above table are as follows:

	Description	Type	
table_version	Version of the content contained in this table.	uint8	M
format_version	Version of the table format definition. For this release, this value should be 3.	uint8	M
block_size	Size of the fields in bytes between block size and 1st _loop_size.	Uint16	M
offset_start_date_time	The date and time from which all time and date bitmaps are relative to.	cdatetime[48]	M

-continued

	Description	Type	
display__page__size__tv	For the Guide Level in the TV Zone, the number of Guide rows to be placed between successive Ad Banners (0 means not applicable).	uint16	M
display__page__size__ec	For the Guide Level in the express cinema Zone, the number of Guide rows to be placed between successive Ad Banners (0 means not applicable).	uint16	M
display__page__size__croads	For the Guide Level in the Crossroads Zone, the number of Guide rows to be placed between successive Ad Banners (0 means not applicable).	uint16	M
1st fixed loop size	Size of the first fixed length loop.	Uint16	M
record__count	Number of fixed-length records in this table before the variable-length blob at the end of the table.	uint16	M
lineup__bitmap	A bitmap of lineups where least significant bit is lineup 1 and most significant bit is lineup 24. Values of each bit are: 0: Record is not applicable to this lineup. 1: Record is applicable to this lineup.	bit__flag[24], see definition	M
navigator__zone	Navigator zones in which this ad appears (Phase I only supports TV): 0 × 01 TV zone; 0 × 02 Express zone; 0 × 04 Crossroads zone; 0 × 08 through 0 × 80 are reserved.	dom__flags	M
navigator__level	Navigator levels in which this ad appears (Phase I only supports Guide): 0 × 01 Host level; 0 × 02 Multiview level; 0 × 04 Guide level; 0 × 08 Channel level; 0 × 10 Info level; 0 × 20 Custom level; 0 × 40 through 0 × 80 are reserved.	active__flags	M
start__time	Date/time when this data becomes effective.	Uint(16)	M
stop__time	Date/time when this data expires	Uint(16)	M
cycle__duration	The duration (in minutes) that Ad remains on the screen before cycling off during a single rotation sequence. This field allows each Ad to have a unique weight as measured by time. A value of 0 means always visible (i.e. never rotates out).	Unit16	M
asset__type__part1	The type of asset used for the initially viewable portion of the ad (Phase I only supports asset type Graphic) 0 × 00 Not applicable, 0 × 01 Text; 0 × 02 Graphic; 0 × 03 Video; 0 × 04 Shock 0 × 05 URL; 0 × 06 HTML; 0 × 07 through 0 × FF are reserved.	uint8	M
asset__id__part1	Unique identifier for the initially viewable portion of the ad (0 indicates no ad banner asset to identify, 1 means the ad asset is text, as defined in the variable__data section)	uint16	M
asset__type__part2	The type of asset used for extended lens portion of the ad (Phase I only supports Text): 0 × 00 Not applicable; 0 × 01 Text; 0 × 02 Graphic; 0 × 03 Video; 0 × 04 Shock; 0 × 05 URL; 0 × 06 HTML; 0 × 07 through 0 × FF are reserved.	uint8	O

-continued

	Description	Type	
asset_id_part2	Unique identifier for the extended lens portion of the ad (0 means no ad asset to identify, 1 means the ad banner asset is text; as defined in the variable_data section).	uint16	O
asset_type_PIP	The type of asset used for display in the PIP when this ad is activated (PIP ad portions are Phase 3/3+): 0 × 00 Not applicable; 0 × 01 Text; 0 × 02 Graphic; 0 × 03 Video; 0 × 04 Shock; 0 × 05 URL; 0 × 06 HTML; 0 × 07 through 0 × FF are reserved. Note, still/animated graphics and video are the only reasonable asset types that would be presented in the PIP.	uint8	O
asset_id_PIP	Unique identifier for the PIP portion of the ad (0 means no ad asset to identify).	uint16	O
priority	The Priority of the AD. A value of 0 is highest and 255 is lowest priority.	Uint8	M
intended_audience_bitmask	Bitmask which indicates the audience for which this ad is intended: 0: ad not intended for this audience; 1: ad intended for this audience. The use of this field to present ads specific to a viewer will require the STB to know demographic information for the americast subscriber	audience_flags	O
category_id1	The ID of the pre-defined or user-defined category #1. A value of 0 indicates a null pointer.	uint16	O
category_id2	The ID of the pre-defined or user-defined category #2. A value of 0 indicates a null pointer.	uint16	O
category_id3	The ID of the pre-defined or user-defined category #3. A value of 0 indicates a null pointer.	uint16	O
category_id4	The ID of the pre-defined or user-defined category #4. A value of 0 indicates a null pointer.	uint16	O
ad_type	Defines the type of ad for this record (Phase 1 supports 0 × 00, 0 × 01, 0 × 02, 0 × 06 and 0 × 07 ads) 0 × 00 reserved 0 × 01 half length banner ad; 0 × 02 full length banner ad; 0 × 03 Parent Virtual Channel Ad (PVCA); 0 × 04 Fixed Virtual Channel Ad (FVCA); 0 × 05 Highlighted Channel Ad (HCA); 0 × 06 sort category banner ad (upper); 0 × 07 sort category banner ad (lower); 0 × 09 Hot Spot ad; 0 × 10 Message ad; 0 × 1A through 0 × FF are reserved.	uint8	M
beg_display_row	For full and half ads, the first row in the guide after which this ad is intended to be displayed. Note, a 0 indicates that no row ranges are specified and that the ad is displayable at any point in the Guide. For FVCA ads, the first row in the guide on which this ad should be placed. For ads other than full, half and FVCA, this field will be 0 and will be ignored.	uint16	O
end_display_row	For full and half ads, the last row in the guide before which this ad is intended to be displayed. Note, a 0 indicates that no row ranges are specified and that the ad is displayable at any point in the Guide. For FVCA ads, the last row in the guide on which this ad should be placed. For ads other than full, half and FVCA, this field will be 0 and will be ignored.	uint16	O

-continued

	Description	Type	
display_row_package_count	For full, half and FVCA ads, the number of discrete row ranges in/on which ad display is intended.	uint8	O
position_service_id	For PVCA ads, the parent service ID for the row in the guide below which the ad should be displayed. For HCA ads, the service ID for the row in the guide to be highlighted. This field will be 0 and will be ignored For ad types other than PVCA and HCA.	uint16	M: PVCA and HCA
h_position	The left/right display information for the position of the ad. This is a stub for future (Phase 3) ads, such as hot spot and message ads, which may be placed at specific screen locations. This coordinate may be a pixel offset from screen left, or a table's column index, depending on the ad type. This field will be 0 and will be ignored for ad types other than hot spot and message.	unit16	M: hot spot and message
v_position	The top/bottom display information for the position of the ad. This is a stub for future (Phase 3) ads, such as hot spot and message ads, which may be placed at specific screen locations. This coordinate may be a pixel offset from screen top, or a table's row index, depending on the ad type. This field will be 0 and will be ignored for ad types other than hot spot and message.	unit16	M: hot spot and message
opacity	The percent opacity of the ad. This is a stub for future (Phase 3) ads, such as hot spot and message ads, which may lay graphics over video and require an opacity specification. This field will be 0 and will be ignored for ad types other than hot spot and message.	uint8	M hot spot and message
action_type	Action type associated with "G" key (Phase I only supports 0 × 00): 0 × 00 no action is associated with the ad; 0 × 01 a destination URL will carry out the action using the URL string defined in the variable_data section; 0 × 02 event for autotune/mark/mark-to-record; 0 × 03 marquee for autotune/purchase/purchase-and-record; 0 × 04 generally purchasable product (purchasable through Generic Buy Process using e-commerce engine); 0 × 05 a destination virtual channel page in the Crossroads zone will carry out the action.	uint8	M
service_id	The identifier for the service on which the advertised program in the ad is to be aired. This helps identify programs associated with action type 0 × 02 (i.e. event for autotune/mark/mark-to-record). For action types other than 0 × 02, this value will be 0 and will be ignored.	uint16	M: action type 0 × 02
event_date_time	GMT date and time the program's broadcast begins. This helps identify programs with action type 0 × 02 (i.e. event for autotune/mark/mark-to-record). For action types other than 0 × 02, this value will be 0 and will be ignored.	cdatetime[48]	M: action type 0 × 02
marquee_id	The identifier for the marquee record for autotune/purchase/purchase-and-record. For action types other than 0 × 03, this value will be 0 and will be ignored.	uint16	M: action type 0 × 03
product_id	The identifier for the generally purchasable item.	TBD (dependent on e-commerce engine)	M: action type 0 × 04

-continued

	Description	Type	
virtual_page_id	The identifier for the virtual page to be accessed in order to carry out the action. This is used for ads with action type 0 × 05 (i.e. a page in the Crossroads zone). Note, if all pages in the Crossroads zone have associated URLs, then this field should be eliminated and the URL string defined in the variable_data section should be used.	TBD (depends on how Crossroads virtual pages are referenced)	M: action type 0 × 05
variable_data_offset	Starting position offset (in Bytes) of the data in the variable-length record data. An offset of 0 points to the variable data_count field	Uint32	M
variable_data_count	Number of records that follow	Unit16	M
url_string_length	Specifies the length of the URL field	uint16	M
url_string	For URL ad types, the URL associated with the ad. For URL action types, the URL to visit in order to fulfill the action.	vstring[~]	O
display_row_package_length	Specifies the length of the display row package field.	uint16	M
beg_display_row_range[]	The first row in this guide range after which this ad is intended to be displayed. For FVCA ads, the first row in this guide range on which this ad should be placed.	uint16[]	O
end_display_row_range[]	For half and full ads, the last row in this guide range before which this ad is intended to be displayed. For FVCA ads, the last row in this guide range on which this ad should be placed.	uint16[]	O
ad_part1_text_length	Specifies the length of the text for part 1, the initially viewable portion, of the ad.	uint16	M
ad_part1_text	Ad text.	vstring[~]	O
ad_part2_text_length	Specifies the length of the text for part 2, the extended lens portion, of the ad.	uint16	M
ad_part2_text	Description of the ad.	vstring[~]	M

What is the claimed is:

1. A method for displaying advertising in an electronic program guide on a display device, the electronic program guide comprising at least a list of program cells each containing a program choice available for viewing, the method comprising:

scrolling the list of program cells on the display device in a first direction in accordance with a first scrolling scheme;

displaying an advertisement cell within the list of program cells; and

moving the advertisement cell in the first direction in accordance with a second scheme different than the first scrolling scheme as the list of program cells scrolls in the first direction, wherein moving the advertisement cell in accordance with the second scheme comprises scrolling the advertisement cell in concurrence with the scrolling of the program cell list during a first time portion, keeping the advertisement cell stationary during a second time portion in which the program cell list scrolls, the second time portion based upon a first number of program cells which will move past the advertisement cell while the advertisement cell is kept stationary, and scrolling the advertisement cell in concurrence with the scrolling of the program cell list upon expiration of the second time portion.

2. The method of claim **1**, comprising controlling the second scheme from a location remote from the display device.

3. The method of claim **1**, comprising receiving the first number of program cells from a location remote from the display device.

4. The method of claim **1**, wherein the first direction comprises a vertical scrolling direction on the display device.

5. The method of claim **4**, wherein the program cell list contains a top cell and a bottom cell displayed on the display device, wherein keeping the advertisement cell stationary comprises keeping the advertisement cell stationary when the advertisement cell reaches the top or bottom cell of the program cell list.

6. The method of claim **1**, wherein keeping the advertisement cell stationary comprises keeping the advertisement cell stationary during scrolling of a set number of program cells in the program cell list.

7. The method of claim **1**, comprising inserting an advertisement into the advertisement cell which advertisement is related to one or more program cells displayed in the program guide on the display screen.

8. The method of claim **7**, comprising replacing the inserted advertisement in the advertisement cell with another advertisement when the program choices displayed in the program guide change due to scrolling of the list of program cells.

9. The method of claim **1**, wherein the electronic program guide comprises program choices available for viewing at scheduled times, and wherein the list of program cells are arranged according to the scheduled times of the program choices.

10. The method of claim **9**, comprising inserting an advertisement into the advertisement cell which advertisement is related to a program choice available for viewing at a time close in time to the scheduled times of the program choices displayed on the display screen.

11. The method of claim **10**, wherein inserting the advertisement comprises inserting the advertisement related to a

program choice available for viewing at a time which is past the scheduled times of the program choices displayed on the display screen.

12. The method of claim **1**, comprising:

receiving a scrolling scheme parameter from a central station, the scrolling scheme parameter defining the first number of program cells,

wherein the second time portion is based upon the scrolling scheme parameter and the first number of program cells that will move past the advertisement cell while the advertisement cell is kept stationary.

13. The method of claim **12**, wherein the remote location includes a head end of a cable system.

14. The method of claim **12**, wherein the scrolling scheme parameter further defines a position of the advertisement prior to the moving of the advertisement cell in the first direction.

15. An apparatus to present an interactive program guide displayable on a display device, comprising:

a processor and memory;

a plurality of program cells deployed in the memory, executable by the processor, and arranged in at least one row or column on a display device, the program cells being movable on a display device in response to user input; and

an advertisement cell contained within the program cell column or row, the advertisement cell being configured to move on the display device in response to user input;

wherein during a first time the program cells and advertisement cell move in concurrent fashion and during a second time the advertisement cell remains stationary on the display device during movement of the program cells, wherein the first time and the second time occurs during a single scrolling movement of program cells in one direction, the second time is based upon a first number of program cells which will move past the advertisement cell while the advertisement cell is kept stationary and moving the advertisement cell in concurrent fashion with the program cells upon expiration of the second time.

16. An apparatus to present an interactive program guide displayable on a display device comprising:

a processor and memory;

a list of program choices deployed in the memory, executable by the processor, and arranged in at least one row or column on a display device, the listing being navigated by a user through scrolling in accordance with a first scrolling scheme; and

an advertisement cell contained within the program listing column or row, the advertisement cell being configured to move on the display device in accordance with a second scrolling scheme different than the first scrolling scheme while the listing is scrolling in accordance with the first scrolling scheme, wherein moving the advertisement cell in accordance with the second scrolling scheme comprises scrolling the advertisement cell in concurrence with the scrolling of the program cell list during a first time portion, keeping the advertisement cell stationary during a second time portion in which the program cell list scrolls, the second time portion is determined based upon a first number of program cells which will move past the advertisement cell while the advertisement cell is kept stationary, and scrolling the advertisement cell in concurrence with the scrolling of the program cell list upon the expiration of the second time portion.

17. The apparatus of claim **16**, comprising a list of service identifiers displayed in association with the program choices in the program choice listings and an advertisement identifier contained in the list of service identifiers and displayed in association with the advertisement cell.

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