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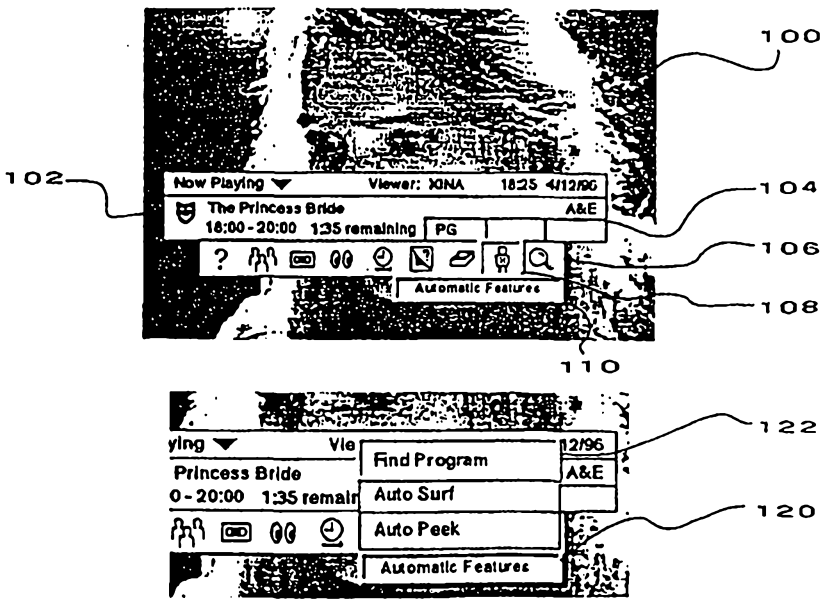

(57) Abstract

A method and apparatus are disclosed for locating desired television programs and categories of television programs. To facilitate viewer access to preferred programming, program guide information of an electronic program guide may be searched in accordance with viewer-specified or system default parameters. Viewer-specified parameters illustratively include program names, partial program names, categories of programming, and subcategories of programming. Once the search is complete, a means is provided for displaying information on television programs in the categories, or with titles, that match the television program titles or categories of interest.

METHOD AND APPARATUS FOR LOCATING A PROGRAM IN AN ELECTRONIC PROGRAM GUIDE

BACKGROUND OF THE INVENTION

Technical Field

The present invention relates to the location and presentation of television programs and television program guide information to a television viewer. More particularly, the present invention relates to a method and apparatus for locating a television program listed in an Electronic Programming Guide.

Discussion of the Related Art

Television viewing is a popular activity, and the number of available television channels has grown substantially since the early days of broadcast television, thereby providing viewers with greatly increased choices in programming. Programming guides have become important viewer tools, and indeed, are essential for efficiently locating desired programs.

Paper guides, such as those provided with newspapers, are plentiful but suffer from many drawbacks. These drawbacks include possible preemption after printing and the sheer amount of information placed before the reader with little, if any, visual distinction between programs. A reader interested in only a subset of the available programming is forced to search the entire listing to locate the desired program or programs.

More recent alternatives to paper guides, known as Electronic Program Guides ("EPG"), have been developed. EPGs provide television program listings directly on the viewer's television screen, and generally eliminate the possibility of relying on an obsolete guide as the program listings can be updated in real-time by the EPG provider. U.S. Patent No. 5,353,121 issued Oct. 4, 1994 to Young discloses just such an

EPG, wherein information is displayed on the viewer's television screen.

These known EPGs not only provide on-screen program listings, but also allow a viewer to tune to a desired program, if such program is listed in the program guide, by interacting with the EPG via a remote control instead of manually changing channels. EPGs typically present the television listings in a grid format and give the viewer control over a cursor or pointer with which to make selections. The grid may be organized in such a manner that one axis represents time and the other represents programming channels. Such grids typically present the program channels in a sequential manner such as numeric order by channel number or alphabetic order by programming source or other identifier.

Although known EPGs grant viewers the convenience of identifying available television programs without resorting to other less attractive sources of information, shortcomings still exist. For example, a viewer who greatly prefers sports programs over other programming will still have to search the entire grid of available programs to find those involving sporting events of interest. Further, when a viewer knows that a certain program is currently scheduled, or is scheduled sometime in the future, but does not recall the station or starting time of the program, the viewer must search the entire television program guide listing to locate the same.

SUMMARY OF THE INVENTION

The present invention addresses the above disadvantages by providing a method and apparatus for automatically searching a television program guide listing for a specific program or a particular category of programs.

In accordance with the preferred embodiments, a novel method and apparatus is provided for searching television program guide listings. This novel method and apparatus may be used to locate a particular program or to locate programs

falling into particular categories (e.g., movies, sports, and news) or subcategories of television programming.

In accordance with one aspect of the present invention, there is provided a method of locating desired television programs, said method comprising the steps of:

acquiring television program scheduling information;

receiving user input specifying a television program title of interest;

searching said television program scheduling information for said television program title of interest; and

displaying information on television programs from said television program schedule information with titles that match said television program title of interest only if said television programs are scheduled within predetermined time constraints.

In accordance with another aspect of the present invention, there is provided an apparatus for locating television programming, said apparatus comprising:

means for acquiring television program scheduling information;

means for receiving user input specifying a television program title of interest;

means for searching said television program scheduling information for said television program title of interest; and

means for displaying information on television programs from said television program schedule information with titles that match said television program title of interest only if said television programs are scheduled within predetermined time constraints.

In accordance with another aspect of the present invention, there is provided a computer-readable medium which can be used to direct a computer to locate television programming, said medium comprising:

means for directing the computer to acquire television program scheduling information;

means for directing the computer to receive user input specifying a television program title of interest;

means for directing the computer to search said television program scheduling information for said television program title of interest; and

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means for directing the computer to display information on television programs from said television program schedule information with titles that match said television program title of interest only if said television programs are scheduled within predetermined time constraints.

In accordance with another aspect of the present invention, there is provided an apparatus for locating television programming in a set-top unit adapted for coupling to a television, said apparatus comprising:

means for acquiring television program scheduling information;

means for receiving user input specifying a television program title of interest;

means for searching said television program scheduling information for said television program title of interest; and

means for displaying information on television programs from said television program schedule information with titles that match said television program title of interest only if said television programs are scheduled within predetermined time constraints.

BRIEF DESCRIPTION OF THE DRAWINGS

The features and advantages of the present invention will be better understood by reference to the following detailed description, which should be read in conjunction with the accompanying drawings in which:

FIG. 1A is an Electronic Program Mini-Guide, with a primary television program displayed in the background;

FIG. 1B is an Electronic Program Mini-Guide, as in FIG. 1A, with a program finder option selected;

FIG. 2 discloses an exemplary embodiment of a program finder, with a primary television program displayed in the background; and

FIGS. 3A and 3B disclose an exemplary embodiment of an Electronic Program Guide displaying programming information that matches a viewer's search criteria.

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DETAILED DESCRIPTION OF THE INVENTION

The following embodiments of the present invention will be described in the context of Electronic Program Guides ("EPG") and general television viewing, although those skilled in the art will recognize that the disclosed methods and structures are readily adaptable for broader application. Note that whenever the same reference numeral is repeated with respect to different figures, it refers to the corresponding structure in each such figure.

A television viewing environment typically incorporates a television, a viewer interface, a viewer interface remote control, and one or more viewers. Viewer interfaces are known in the art, and are commonly found in the form of a television set-top unit. The viewer interface is often connected to, and between, the television and various television program/broadcast sources such as cable and satellite. The viewer interface receives input, such as television programs and television program guide information, from the broadcast sources and supplies this information to the television. The viewer interface may also perform additional functions such as decoding and encoding of the television programming, and generally includes a means for accepting viewer commands, such as to change television channels, from a remote control.

For the purpose of describing the present invention, the viewer interface additionally includes an EPG. However, one skilled in the art will understand that an EPG could be implemented in a variety of ways, including within the television or as part of an interactive television network coupled to the viewer interface. An example of a suitable EPG is disclosed in U.S. Application No. 08/556,624, entitled "Electronic Program Guide with Enhanced Presentation" and filed November 13, 1995, which is incorporated herein by reference.

In accordance with the present invention, a program finder that operates in conjunction with an EPG is provided for use in the above-described television viewing

environment. Drawing upon program guide information available through the EPG, the program finder may be instructed to search through the program guide information to locate specific programs, or categories (e.g., movies, sports, and news) and subcategories of programs, that are of interest. The program finder may be implemented in software and, like the EPG, downloaded into the viewer interface via an interactive television network or other means for loading software. The program finder may also be implemented as resident software in the viewer interface.

Turning now to the figures, FIG. 1A discloses a mini-guide program display 102 of an Electronic Program Guide overlaying a primary television display 100. Mini-guide display 102 comprises an event description area 104 and options bar 106.

While mini-guide display 102 is displayed over primary television display 100, an option from options bar 106 may be selected by the viewer using, for example, a remote control, with text box 110 identifying the selected option. When option 108 is selected from options bar 106, as shown in FIGS. 1A and 1B, automatic features of the EPG may be utilized. FIG. 1B discloses an illustrative list 120 of automatic features available to a viewer, and in an exemplary embodiment of the invention, a program finder option 122 is one such feature.

Although FIGS. 1A and 1B disclose one method of accessing a program finder option 122, one skilled in the art will recognize that numerous methods of activation, such as a direct command from the viewer interface remote control, are possible without exceeding the scope of the invention.

FIG. 2 discloses a program finder user interface 200 overlaying primary television display 100. User interface 200 is displayed over television display 100 upon selection of program finder option 122, and is used by a viewer to specify the viewer's program search criteria. Program name field 202 displays the characters to be used in searching for a specific television program. The characters for program

name field 202 are input by a viewer through the viewer interface remote control, and may be limited to a particular number such as eight.

Category field 204 is used to specify a category or categories of programming, such as movies, sports, or news, that are to be searched for. Category field 204 expands (not shown), when selected, to display available categories and allow a viewer to select a category of programming for which to search. In one embodiment of the invention, a default choice of all categories is shown when program finder interface 200 is initially displayed, but can be subsequently modified by the viewer.

Subcategory field 206 is used to refine a category-type search for programming. For example, within a movies category, there may be subcategories of adventure, comedy, science fiction, etc. Subcategory field 206 also expands (not shown) when selected, to display available subcategories and allow a viewer to specify at least one subcategory. In one embodiment of the invention, a default choice of all subcategories is selected when program finder interface 200 is initially displayed, but can be subsequently modified by the viewer.

Day field 208 is used to choose the day or days of the programming guide listing in which to search for viewer-specified programming. Illustrative examples of possible choices include the present day, a specific day of the week, or any day. If a specific day of the week is chosen, including the present day, only that particular day is searched for the desired programming. If "any day" is chosen, all days for which programming information is available is searched. In one embodiment of the present invention, a default choice of the present day is automatically selected when program finder interface 200 is initially displayed, but can be changed by the viewer.

The programming days that can be searched will be limited to the amount of programming information that has been downloaded to the EPG. Therefore, the program finder

will only search the days for which programming guide information is available and that meet the viewer's day field 208 parameter.

Time field 210 is used to specify the programming time within the selected day or days from which to commence the search. The program finder will only search the programming listing starting at the specified time and continue to the end of the day. In an alternative embodiment, if "any day" is chosen for day field 208, the viewer will not be allowed to set a time in time field 210, as the ability to search after a certain time for "all days" would provide a benefit to the viewer in only the rarest of instances. Time field 210 will be automatically set to the current time when program finder interface 200 is displayed, but can be changed by the viewer.

A "show programs in progress" option 212 allows the viewer to specify whether programs that are currently being broadcast or displayed should be searched and identified. If option 212 is set to "no", then the program finder will only return programming guide information concerning programs that meet the viewer's specified criteria and that have not yet started. Alternatively, if option 212 is set to "yes", then the program finder will also return programming guide information that meet the viewer's specified criteria and that have already started.

When the viewer has finished selecting search criteria, find program button 214 is selected to initiate the search. Based on the specified criteria, the program finder will search the available program guide information for matching television programming. Certain techniques may be employed to ensure the accuracy of the search results. For example, the program finder can use "fuzzy" search logic to locate matches. If such a technique is implemented, slight misspellings -- whether in program name field 202 or in the program guide information itself -- will still result in a match.

FIGS. 3A and 3B illustrate an example of the results of a program finder search. A first display 300 and a second display 302 depict a primary television display 100 overlaid with a result box 304 displaying information concerning programs that match the viewer's selected search criteria. When more than one matching program is located by the program finder, result box 304 includes a scroll button 306 with which the viewer may scroll through information on the matching programs.

Various embodiments of the invention have been described. The descriptions are offered by way of illustration, not limitation. Thus, it will be apparent to those skilled in the art that modifications may be made to the invention as described without departing from the scope of the claims set out below.

The claims defining the invention are as follows:

1. A method of locating desired television programs, said method comprising the steps of:

acquiring television program scheduling information;

receiving user input specifying a television program title of interest;

searching said television program scheduling information for said television program title of interest; and

displaying information on television programs from said television program schedule information with titles that match said television program title of interest only if said television programs are scheduled within predetermined time constraints.

2. An apparatus for locating television programming, said apparatus comprising:

means for acquiring television program scheduling information;

means for receiving user input specifying a television program title of interest;

means for searching said television program scheduling information for said television program title of interest; and

means for displaying information on television programs from said television program schedule information with titles that match said television program title of interest only if said television programs are scheduled within predetermined time constraints.

3. A computer-readable medium which can be used to direct a computer to locate television programming, said medium comprising:

means for directing the computer to acquire television program scheduling information;

means for directing the computer to receive user input specifying a television program title of interest;

means for directing the computer to search said television program scheduling information for said television program title of interest; and

means for directing the computer to display information on television programs from said television program schedule information with titles that match said television program title of interest only if said television programs are scheduled within predetermined time constraints.

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4. An apparatus for locating television programming in a set-top unit adapted for coupling to a television, said apparatus comprising:

means for acquiring television program scheduling information;

means for receiving user input specifying a television program title of interest;

means for searching said television program scheduling information for said television program title of interest; and

means for displaying information on television programs from said television program schedule information with titles that match said television program title of interest only if said television programs are scheduled within predetermined time constraints.

5. The method of claim 1, wherein said predetermined time constraints consist of at least one predetermined day of the week.

6. The method of claim 5, further comprising the step of receiving user input specifying said at least one predetermined day of the week.

7. The method of claim 5, wherein said predetermined time constraints further consist of a predetermined span of time within said at least one predetermined day of the week.

8. The apparatus of claim 2, wherein said predetermined time constraints consist of at least one predetermined day of the week.

9. The apparatus of claim 8, further comprising a means for receiving user input specifying said at least one predetermined day of the week.

10. The apparatus of claim 8, wherein said predetermined time constraints further consist of a predetermined span of time within said at least one predetermined day of the week.

11. The computer-readable medium of claim 3, wherein said predetermined time constraints consist of at least one predetermined day of the week.

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12. The computer-readable medium of claim 11, further comprising a means for directing the computer to receive user input specifying said at least one predetermined day of the week.

13. The computer-readable medium of claim 11, wherein said predetermined time constraints further consist of a predetermined span of time within said at least one predetermined day of the week.

14. The apparatus of claim 4, wherein said predetermined time constraints consist of at least one predetermined day of the week.

15. The apparatus of claim 14, further comprising a means for receiving user input specifying said at least one predetermined day of the week.

16. The apparatus of claim 14, wherein said predetermined time constraints further consist of a predetermined span of time within said at least one predetermined day of the week.

17. A method of locating desired television programs, said method being substantially as described herein in relation to any one embodiment with reference to the drawings.

18. An apparatus for locating desired television programs, said apparatus being substantially as described herein in relation to any one embodiment with reference to the drawings.

19. A computer-readable medium, said medium being substantially as described herein in relation to any one embodiment with reference to the drawings.

DATED this Twentieth Day of October, 2000

Mindport B.V.

Patent Attorneys for the Applicant

SPRUSON & FERGUSON

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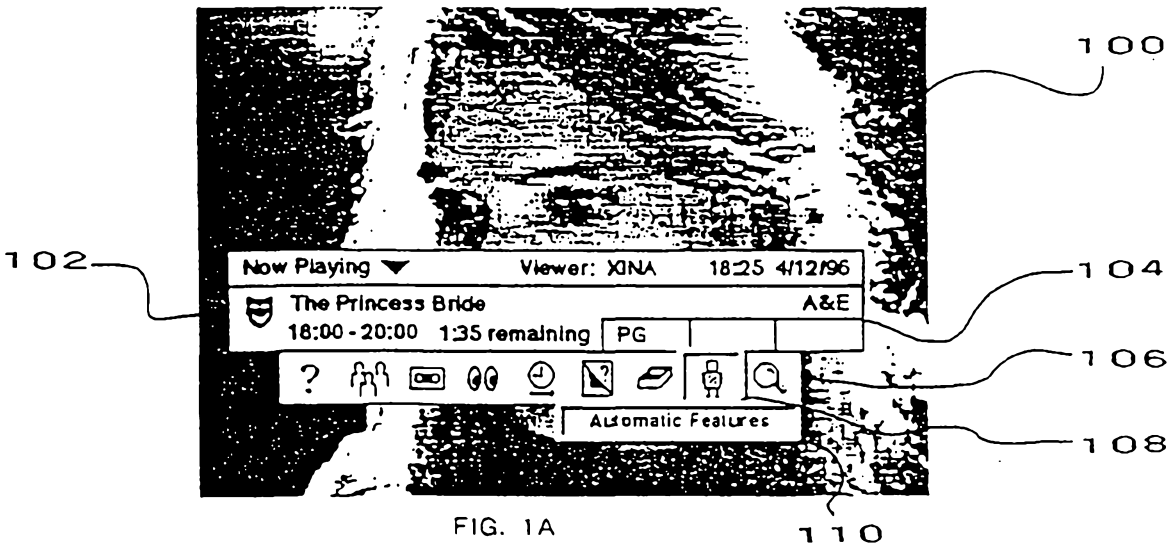

100
102
104
106
108
110
Now Playing
Viewer: XINA
18:25 4/12/96
The Princess Bride
A&E
18:00 - 20:00 1:35 remaining
PG
Automatic Features

FIG. 1A

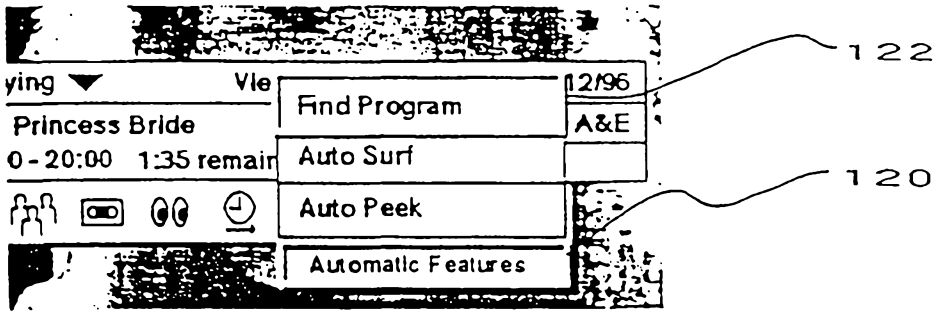

122
120
Find Program
Auto Surf
Auto Peek
Automatic Features
A&E

FIG. 1B

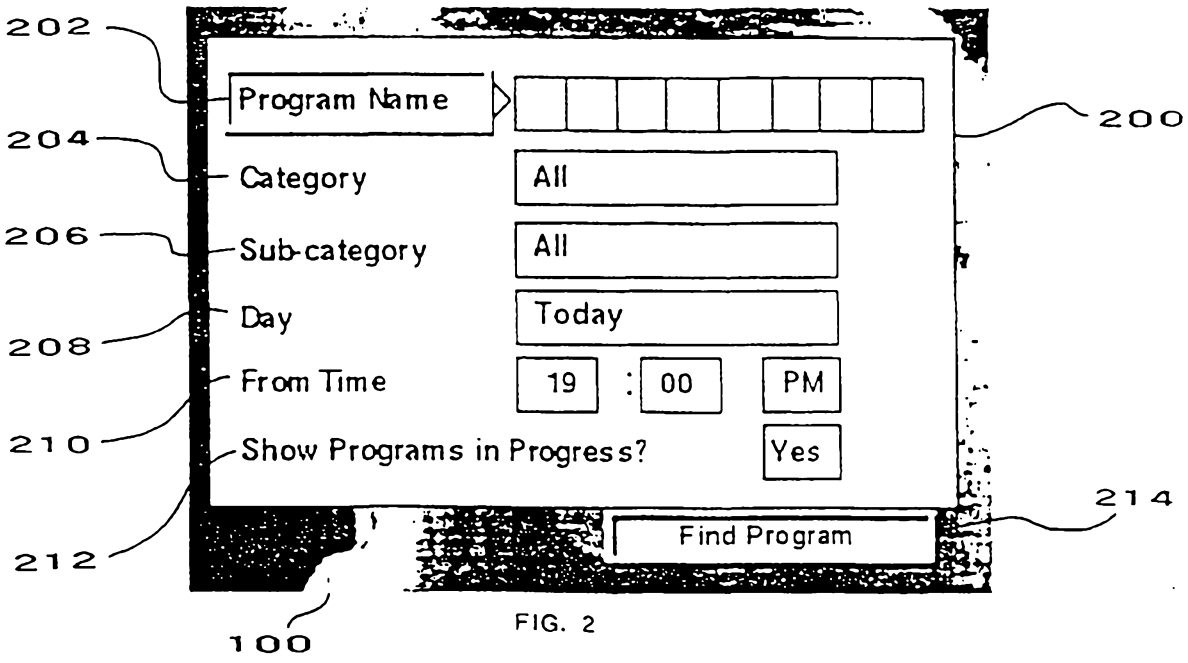
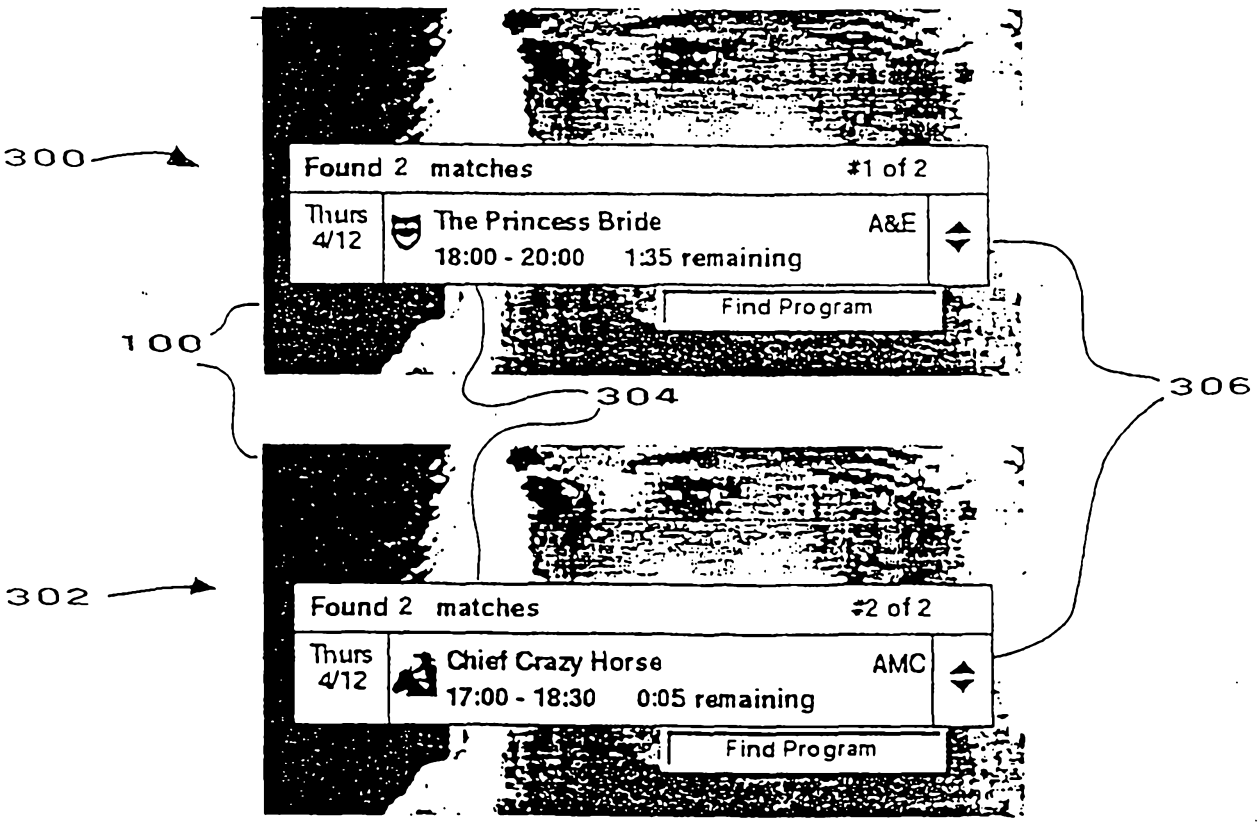

202
Program Name
200
204
Category
All
206
Sub-category
All
Day
Today
208
From Time
19
:
00
PM
210
Show Programs in Progress?
Yes
214
212
Find Program
100

FIG. 2

FIG. 3A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Found 2 matches
#1 of 2
Thurs 4/12
The Princess Bride
A&E
18:00 - 20:00 1:35 remaining
Find Program
100
304
306
302
Found 2 matches
#2 of 2
Thurs 4/12
Chief Crazy Horse
AMC
17:00 - 18:30 0:05 remaining
Find Program

FIG. 3B