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M*A*S*H*	11	5/1/98	8:00PM	30 MIN	NO
TERMINATOR	4	5/2/98	8:00PM	120 MIN	YES
WILD AFRICA	18	5/3/98	7:00PM	60 MIN	YES

SUPER PROGRAM

(57) **Abrégé/Abstract:**

An interactive television program guide system with digital storage is provided. The program guide gives users the ability to store information associated with recorded programs in a directory in the digital storage device thereby providing easy access to program information. The program guide may also provide a global media library for indicating the programs stored on removable storage media used with the program guide. The guide may also allow the user to manage and maintain a user media library to do the same. Non-time-sensitive data associated with recorded programs may be stored in a way that allows the user to interact with the data on playback as if the program were being originally aired. The program guide also allows the user to define "super-programs" for playback of a sequence of stored programs or program segments.

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Abstract

An interactive television program guide system with digital storage is provided. The program guide gives users the ability to store information associated with recorded programs
5 in a directory in the digital storage device thereby providing easy access to program information. The program guide may also provide a global media library for indicating the programs stored on removable storage media used with the program guide. The guide may also allow the user to manage and maintain a user
10 media library to do the same. Non-time-sensitive data associated with recorded programs may be stored in a way that allows the user to interact with the data on playback as if the program were being originally aired. The program guide also allows the user to define "super-programs" for playback of a
15 sequence of stored programs or program segments.

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ELECTRONIC PROGRAM GUIDE WITH
DIGITAL STORAGE

This is a divisional of Canadian National Phase Patent Application Serial No. 2,339,629 filed on September 16, 1999.

Background of the Invention

This invention relates to video systems, and more particularly, to interactive television program guide systems which allow for digital storage of programs and program related information.

Cable, satellite, and broadcast television systems provide viewers with a large number of television channels. Users have traditionally consulted printed television program schedules to determine the programs being broadcast at a particular time. More recently, interactive electronic television program guides have been developed that allow television program information to be displayed on a user's television.

Interactive program guides allow the user to navigate through television program listings using a remote control. In a typical program guide display, television listings are organized into subsets of listings according to multiple organization criteria and are sorted in various ways. One approach is to organize program listings into a program listings grid. Each row in the grid contains television program listings for a different channel. The columns in the

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grid correspond to a series of scheduled broadcast times. The user can scroll up or down to view program listings for different channels or may pan left or right to view information about programs being broadcast at different times.

5 Recently, interactive program guides have been developed that allow for storage of programs selected within the program guide on an independent storage device, typically a videocassette recorder. Usually, a control path involving an
10 infrared transmitter coupled to an infrared receiver in the videocassette recorder is used to control the videocassette recorder. The use of independent analog storage devices like videocassette recorders, however, does not allow for the more advanced features that might be implemented if a digital storage device were associated with the program guide.

15 Summary of the Invention

 Some embodiments of the present invention may provide an interactive program guide system with digital storage that allows the program guide to be used to provide more advanced features than previously offered by interactive program guide
20 systems.

 Accordingly, in one aspect of the present invention, there is provided a method for use in an interactive television program guide system in which program listings are available for broadcast television programs and recorded programs stored
25 on a digital storage device, the method comprising: receiving television program information from a main facility, wherein the television program information is associated with broadcast television programs; using the television program information

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to provide listings of a plurality of broadcast television programs; receiving a user selection of a broadcast television program from the listings of the plurality of broadcast television programs; in response to receiving the user
5 selection of a broadcast television program, recording on the digital storage device the broadcast television program associated with the user selection and television program information associated with the selected broadcast television program; displaying a list of selectable program listings each
10 associated with one of a plurality of channels displayed with the selectable program listings, the selectable program listings having at least one selectable program listing for a broadcast television program and at least one selectable program listing for a recorded program stored on the digital
15 storage device, wherein the at least one selectable program listing for the recorded program is associated with one of the plurality of channels that identifies the digital storage device on which the recorded program is stored; receiving a user selection of a broadcast television program from the list
20 of selectable program listings; in response to receiving the user selection of a broadcast television program, displaying television program information for the selected broadcast television program in a program information screen; receiving a user selection of a recorded program from the list of
25 selectable program listings; and in response to receiving the user selection of a recorded program, displaying television program information for the selected recorded program in a program information screen.

In accordance with a second aspect of the present
30 invention, there is provided an interactive television program guide system for providing program listings of broadcast

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television programs and recorded programs stored on a digital storage device, comprising: means for receiving television program information from a main facility, wherein the television program information is associated with broadcast television programs; means for using the television program information to provide listings of a plurality of broadcast television programs; means for receiving a user selection of a broadcast television program from the listings of the plurality of broadcast television programs; means for recording on the digital storage device the broadcast television program associated with the user selection and television program information associated with the selected broadcast television program in response to receiving the user selection of a broadcast television program; means for displaying a list of selectable program listings each associated with one of a plurality of channels displayed with the selectable program listings, the selectable program listings having at least one selectable program listing for a broadcast television program and at least one selectable program listing for a recorded program stored on the digital storage device, wherein the at least one selectable program listing for the recorded program is associated with one of the plurality of channels that identifies the digital storage device on which the recorded program is stored; means for receiving a user selection of a broadcast television program from the list of selectable program listings; means for displaying television program information for the selected broadcast television program in a program information screen, in response to receiving the user selection of a broadcast television program; means for receiving a user selection of a recorded program from the list of selectable program listings; and means for displaying

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television program information for the selected recorded program in a program information screen, in response to receiving the user selection of a recorded program.

According to another aspect of the present invention,
5 there is provided a system implemented on user television equipment comprising: means for displaying programs and associated program data for users of the user television equipment; a digital storage device in the user television
10 equipment for digitally storing the programs and associated program data; means for enabling a user to define a program sequence based on selected digitally stored programs or segments of a digitally stored programs; and means for displaying the user selections with associated program data for
15 viewing according to the defined program sequence on the user television equipment.

According to still another aspect of the present invention, there is provided a method of arranging the display of programs and associated program data for users using user television equipment, comprising the steps of: digitally
20 storing the programs and associated program data using the user television equipment; defining a program sequence based on selected digitally stored programs or segments of digitally stored programs; and displaying the user selection with associated program data for viewing according to the defined
25 program sequence on the user television equipment.

According to yet another aspect of the present invention, there is provided a method of playing back programs or segments of programs using user equipment, comprising:
selecting, from a program guide, multiple programs for storage
30 on a digital storage device; storing the multiple programs on

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the digital storage device; receiving a user definition of a segment of a program of the stored multiple programs; updating the digital storage device in response to the user definition; defining a playback sequence of programs or segments of

5 programs stored on the digital storage device and wherein the playback sequence specifies an order in which the programs or segments of programs will be played back by the user equipment.

According to a further aspect of the present invention, there is provided a user system that provides means

10 for playing back programs or segments of programs using user equipment, comprising: means for selecting, from a program guide, multiple programs for storage on a digital storage device; means for storing the multiple programs on the digital storage device; means for receiving a user definition of a

15 segment of a program of the stored multiple programs; means for updating the digital storage device in response to the user definition; means for defining a playback sequence of programs or segments of programs stored on the digital storage device and wherein the playback sequence specifies an order in which

20 the programs or segments of programs will be played back by the user equipment.

According to yet a further aspect of the present invention, there is provided a method of managing stored information associated with a stored program using user

25 equipment comprising a user interface and an interactive television program guide comprising: storing a program on a digital storage device; storing information associated with the stored program; maintaining a directory of entries of stored associated program information; displaying the directory

30 information in response to a user command from the user

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interface, including an indication of whether the stored program has been played back; and in response to a user playing back the program from the digital storage device, updating the stored information associated with the stored program.

5 According to still a further aspect of the present invention, there is provided a system for managing stored information associated with a stored program using user equipment comprising a user interface and an interactive television program guide comprising: means for storing a
10 program on a digital storage device; means for storing information associated with the stored program; means for maintaining a directory of entries of stored associated program information; means for displaying the directory information in response to a user command from the user interface, including
15 an indication of whether the stored program has been played back; and means responsive to a user playing back the program from the digital storage device for updating the stored information associated with the stored program.

 According to another aspect of the present invention,
20 there is provided a method of accessing program listings using user equipment, including a digital storage device storing recorded programs and a display, the method comprising: receiving at the user equipment a user command to view on the display program listings based on an organizational criterion;
25 and in response to receiving the command: accessing stored program data associated with a stored program; accessing broadcast program data associated with a broadcast program; and displaying program listings on the display associated with the stored program data and the broadcast program data according to
30 the organizational criterion of the user command.

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According to yet another aspect of the present invention, there is provided a system of accessing program listings using user equipment, including a digital storage device storing recorded programs and a display, the system
5 comprising: means for receiving at the user equipment a user command to view on the display program listings based on an organizational criterion; and in response to receiving the command: means for accessing stored program data associated with a stored program; means for accessing broadcast program
10 data associated with a broadcast program; and means for displaying program listings on the display associated with the stored program data and the broadcast program data according to the organizational criterion of the user command.

According to another aspect of the present invention,
15 there is provided a method of setting up a television program guide comprising program listings for display on user equipment, the method comprising: storing program information for a plurality of programs, the information comprising components of program information for each program; displaying
20 a list of selectable component types; receiving a user selection of some of the selectable component types; receiving a user command to display the program guide; and in response to the command, displaying the components of the user selected component types for each displayed program listing.

25 According to still another aspect of the present invention, there is provided a program guide system for displaying program listings on user equipment, comprising: means for storing program information for a plurality of programs, the information comprising components of program
30 information for each program; means for displaying a list of

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selectable component types on the user equipment; means for receiving a user selection of some of the selectable component types; means for receiving a user command to display the program guide; and means responsive to the command for
5 displaying the components of the user selected component types for each displayed program listing on the user equipment.

According to yet another aspect of the present invention, there is provided a method of reviewing a recorded program using user equipment comprising: displaying a time bar
10 indicator associated with the recorded program on a display; receiving a user command to mark a position in the duration of the recorded program; in response to receiving the user command: determining the position in the recorded program; and displaying a marker in the time bar indicator, wherein the
15 marker in the time bar indicator corresponds to the position in the recorded program; and playing the recorded program from the position in response to a user command to view a portion of the recorded program from the position corresponding to the marker.

According to a further aspect of the present
20 invention, there is provided a system of reviewing a recorded program using user equipment comprising: means for displaying a time bar indicator associated with the recorded program on a display; means for receiving a user command to mark a position in the duration of the recorded program; in response to
25 receiving the user command: means for determining the position in the recorded program; and means for displaying a marker in the time bar indicator, wherein the marker in the time bar indicator corresponds to the position in the recorded program; and means for playing the recorded program from the position in

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response to a user command to view a portion of the recorded program from the position corresponding to the marker.

According to yet a further aspect of the present invention, there is provided a method for managing the storage of videos on a digital storage device, the method comprising:
5 receiving a user selection of a plurality of videos for storage on the digital storage device; generating a display with a plurality of identifiers representing the plurality of videos selected for digital storage; displaying, with a first
10 plurality of the video identifiers, a first indication that the video represented by a respective one of the first plurality of video identifiers will fit on a digital storage medium; and displaying, with a second plurality of the video identifiers, a
15 second indication that the video represented by a respective one of the second plurality of video identifiers will not fit on the digital storage medium.

According to still a further aspect of the present invention, there is provided a system for managing the storage of videos on a digital storage device, the system comprising:
20 means for receiving a user selection of a plurality of videos for storage on the digital storage device; means for generating a display with a plurality of identifiers representing the plurality of videos selected for digital storage; means for displaying, with a first plurality of the video identifiers, a
25 first indication that the video represented by a respective one of the first plurality of video identifiers will fit on a digital storage medium; and means for displaying, with a second plurality of the video identifiers, a second indication that the video represented by a respective one of the second

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plurality of video identifiers will not fit on the digital storage medium.

According to another aspect of the present invention, there is provided a system in which programs and associated program data are displayed for users by an interactive television program guide implemented on user television equipment, comprising: a digital storage device in the user television equipment for digitally storing the programs and associated program data using the interactive television program guide in response to receiving a user request to digitally store the programs; and means for maintaining a directory of the digitally stored associated program data using the interactive television program guide.

According to yet another aspect of the present invention, there is provided a method in which programs and associated program data are displayed for users by an interactive television program guide implemented on user television equipment, comprising the steps of: digitally storing the programs and associated program data using the interactive television program guide in response to receiving a user request to digitally store the programs; and maintaining a directory of the digitally stored associated program data using the interactive television program guide.

According to another aspect of the present invention, there is provided a system in which programs and associated program data are displayed for users by an interactive television program guide implemented on user television equipment, comprising: a digital storage device in the user television equipment for digitally storing, using removable storage media, the programs and associated program data using

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the interactive television program guide; and means for maintaining a directory of the digitally stored associated program data for the storage media used with the interactive television program guide in a central storage.

5 According to still another aspect of the present invention, there is provided a method in which programs and associated program data are displayed for users by an interactive television program guide implemented on user television equipment, comprising steps of: digitally storing,
10 using removable storage media, the programs and associated program data using the interactive television program guide; and maintaining a directory of the digitally stored associated program data for the storage media used with the interactive television program guide in a central storage.

15 According to yet another aspect of the present invention, there is provided a method for use in an interactive television program guide system that provides a user with access to broadcast television programs and recorded programs stored on a digital storage device in the user's equipment, the
20 method comprising: recording programs and associated program information on a digital storage device; allowing a user to access a list of recorded programs stored on the digital storage device; displaying a display of selectable options, wherein the selectable options include an option for a
25 broadcast television program and an option for a recorded program stored on the digital storage device, and wherein the option for the recorded program is associated with a designated channel that identifies the digital storage device on which the recorded program is stored; receiving a user selection of a
30 selectable option for a recorded program; and displaying

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program information associated with the recorded program in response to receiving the user selection.

According to a further aspect of the present invention, there is provided an interactive television program guide system that provides a user with access to broadcast television programs and recorded programs stored on a digital storage device in the user's equipment, the system comprising:

5 means for recording programs and associated program information on a digital storage device; means for allowing a user to

10 access a list of recorded programs stored on the digital storage device; means for displaying a display of selectable options, wherein the selectable options include an option for a broadcast television program and an option for a recorded program stored on the digital storage device, and wherein the

15 option for the recorded program is associated with a designated channel that identifies the digital storage device on which the recorded program is stored; means for receiving a user selection of a selectable option for a recorded program; and means for displaying program information associated with the

20 recorded program in response to receiving the user selection.

According to yet a further aspect of the present invention, there is provided an interactive television program guide system that provides a user with access to broadcast television programs and recorded programs stored on a digital storage device in the user's equipment, the system comprising:

25 a digital storage device; a display device; and an interactive program guide implemented at least partially on circuitry, wherein the interactive program guide is programmed to: record programs and associated program information; allow a user to

30 access a list of recorded programs stored on the digital

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storage device; display a display of selectable options,
wherein the selectable options include an option for a
broadcast television program and an option for a recorded
program stored on the digital storage device, and wherein the
5 option for the recorded program is associated with a designated
channel that identifies the digital storage device on which the
recorded program is stored; receive a user selection of a
selectable option for a recorded program; and display program
information associated with the recorded program in response to
10 receiving the user selection.

According to still a further aspect of the present
invention, there is provided a machine readable medium for
providing a user with access to broadcast television programs
and recorded programs stored on a digital storage device in the
15 user's equipment, comprising machine program logic recorded
thereon for: recording programs and associated program
information on a digital storage device; allowing a user to
access a list of recorded programs stored on the digital
storage device; displaying a display of selectable options,
20 wherein the selectable options include an option for a
broadcast television program and an option for a recorded
program stored on the digital storage device, and wherein the
option for the recorded program is associated with a designated
channel that identifies the digital storage device on which the
25 recorded program is stored; receiving a user selection of a
selectable option for a recorded program; and displaying
program information associated with the recorded program in
response to receiving the user selection.

According to another aspect of the present invention,
30 there is provided a method for use in an interactive television

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program guide system that provides a user with access to broadcast television programs and recorded programs stored on a digital storage device in the user's equipment, the method comprising: allowing a user to access a list of recorded
5 programs stored on the digital storage device; displaying a display of selectable options for both broadcast television programs and recorded programs stored on the digital storage device, wherein options for broadcast television programs are associated with one or more television channels, and an option
10 is associated with a channel that identifies the digital storage device; and displaying information associated with the recorded programs stored on the digital storage device in response to the user selecting the option associated with the channel that identifies the digital storage device.

15 According to yet another aspect of the present invention, there is provided an interactive television program guide system that provides a user with access to broadcast television programs and recorded programs stored on a digital storage device in the user's equipment, the system comprising:
20 means for allowing a user to access a list of recorded programs stored on the digital storage device; means for displaying a display of selectable options for both broadcast television programs and recorded programs stored on the digital storage device, wherein options for broadcast television programs are
25 associated with one or more television channels, and wherein an option is associated with a channel that identifies the digital storage device; and means for displaying information associated with the recorded programs stored on the digital storage device in response to the user selecting the option associated with
30 the channel that identifies the digital storage device.

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According to another aspect of the present invention, there is provided an interactive television program guide system that provides a user with access to broadcast television programs and recorded programs stored on a digital storage
5 device in the user's equipment, the system comprising: allowing a user to access a list of recorded programs stored on the digital storage device; a display device for displaying a display of selectable options for both broadcast television programs and recorded programs stored on the digital storage
10 device, wherein options for broadcast television programs are associated with one or more television channels, and wherein an option is associated with a channel that identifies the digital storage device, and wherein the display device displays information associated with the recorded programs stored on the
15 digital storage device in response to the user selecting the option associated with the channel that identifies the digital storage device.

According to still another aspect of the present invention, there is provided a machine readable medium for
20 providing a user with access to broadcast television programs and recorded programs stored on a digital storage device in the user's equipment, comprising machine program logic recorded thereon for: allowing a user to access a list of recorded programs stored on the digital storage device; displaying a
25 display of selectable options for both broadcast television programs and recorded programs stored on the digital storage device, wherein options for broadcast television programs are associated with one or more television channels, and wherein an option is associated with a channel that identifies the digital
30 storage device; and displaying information associated with the recorded programs stored on the digital storage device in

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response to the user selecting the option associated with the channel that identifies the digital storage device.

According to yet another aspect of the present invention, there is provided a method for use in an interactive program guide system that provides a user with access to broadcast programs and recorded programs stored on a digital storage device in the user's equipment, the method comprising: recording programs and associated program information on a digital storage device; allowing a user to access a list of recorded programs stored on the digital storage device; displaying a display of selectable options, wherein the selectable options include an option for a broadcast program and an option for a recorded program stored on the digital storage device; receiving a user selection of a selectable option for a recorded program; and displaying program information associated with the recorded program in response to receiving the user selection.

According to a further aspect of the present invention, there is provided an interactive program guide system that provides a user with access to broadcast programs and recorded programs stored on a digital storage device in the user's equipment, the system comprising: means for recording programs and associated program information on a digital storage device; means for allowing a user to access a list of recorded programs stored on the digital storage device; means for displaying a display of selectable options, wherein the selectable options include an option for a broadcast program and an option for a recorded program stored on the digital storage device; means for receiving a user selection of a selectable option for a recorded program; and means for

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displaying program information associated with the recorded program in response to receiving the user selection.

According to yet a further aspect of the present invention, there is provided an interactive program guide system that provides a user with access to broadcast programs and recorded programs stored on a digital storage device in the user's equipment, the system comprising: a digital storage device; a display device; and an interactive program guide implemented at least partially on circuitry, wherein the interactive program guide is programmed to: record programs and associated program information; allow a user to access a list of recorded programs stored on the digital storage device; display a display of selectable options, wherein the selectable options include an option for a broadcast program and an option for a recorded program stored on the digital storage device; receive a user selection of a selectable option for a recorded program; and display program information associated with the recorded program in response to receiving the user selection.

According to still a further aspect of the present invention, there is provided a method for allowing a user to select storage options for storing programs using an interactive television program guide implemented on user television equipment, the method comprising: providing the user with an opportunity to select at least one storage option for storing a program to be recorded, wherein the at least one storage option relates to at least one storage setting configured to control how programs are to be digitally stored on a random access digital storage device; in response to a user selection of the at least one storage option, modifying the at least one storage setting; displaying in the interactive

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television program guide at least one program listing related to at least one program; providing the user with an opportunity to select a program listing from the at least one displayed program listing for recording on the random access digital storage device; and recording the program on the random access digital storage device based on the modification of the at least one storage setting.

According to another aspect of the present invention, there is provided a method for recording programs using an interactive television program guide implemented on user television equipment, the method comprising: displaying in a display screen at least one program listing relating to at least one program; providing a user with an opportunity to indicate a program to be recorded on a random access digital storage device by selecting a program listing from the at least one displayed program listing, wherein the selected program listing corresponds to the program to be recorded; providing the user with an opportunity to select at least one storage option for storing the program to be recorded, wherein the at least one storage option relates to at least one storage setting configured to control how the program is to be digitally stored on the random access digital storage device; in response to receiving the user selection of the at least one storage option, modifying the at least one storage setting for the program to be recorded; and recording the program on the random access digital storage device based on the modification of the at least one storage setting for the program.

According to yet another aspect of the present invention, there is provided a system for allowing a user to select storage options for storing programs, the system

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comprising: a display screen; a random access digital storage device; and an interactive television program guide implemented at least partially on circuitry, wherein the interactive television program guide is programmed to: provide the user
5 with an opportunity to select at least one storage option for storing a program to be recorded, wherein said at least one storage option relates to at least one storage setting configured to control how programs are to be digitally stored on the random access digital storage device; in response to a
10 user selection of the at least one storage option, modify the at least one storage setting; display in the display screen at least one program listing related to at least one program; provide the user with an opportunity to select a program listing from the at least one displayed program listing for
15 recording on the random access digital storage device; and record the program on the random access digital storage device based on the modification of the at least one storage setting.

According to another aspect of the present invention, there is provided a system for recording programs, the system
20 comprising: a display screen; a random access digital storage device; and an interactive television program guide implemented at least partially on circuitry, wherein the interactive television program guide is programmed to: display in the display screen at least one program listing related to at least
25 one program; provide a user with the opportunity to indicate a program to be recorded on the random access digital storage device by selecting a program listing from the at least one displayed program listing, wherein the selected program listing corresponds to the program to be recorded; provide the user
30 with an opportunity to select at least one storage option for storing a program to be recorded, wherein the at least one

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storage option relates to at least one storage setting configured to control how the program is to be digitally stored on the random access digital storage device; modify said at least one storage setting in response to said user selection; 5 in response to receiving the user selection of the at least one storage option, modify the at least one storage setting for the program to be recorded; and record the program on the random access digital storage device based on the modification of the at least one storage setting for the program.

10 According to still another aspect of the present invention, there is provided a method for transferring programs to a secondary storage device, the method comprising: using an interactive television program guide implemented on user television equipment to cause a first display in a display 15 screen of at least one program listing related to at least one program; using the interactive television program guide to enable a user to select a program listing from the at least one displayed program listing; using the interactive television program guide to cause the program related to the selected 20 program listing to be recorded on a digital storage device; using the interactive television program guide to cause a second display in the display screen that includes at least one recorded program listing for at least one program recorded on the digital storage device, wherein the at least one recorded 25 program listing includes a recorded program listing for the program recorded on the digital storage device; using the interactive television program guide to enable the user to select the recorded program listing and to transfer the recorded program from the digital storage device to a secondary 30 storage device; and using the interactive television program

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guide to transfer the recorded program from the digital storage device to a secondary storage device.

According to yet another aspect of the present invention, there is provided a system for transferring recorded programs, the system comprising: a display screen; a digital storage device; a secondary storage device; and an interactive television program guide implemented at least partially on circuitry, wherein the interactive television program guide is programmed to: display in the display screen at least one program listing related to at least one program; allow a user to select a program listing related to the at least one displayed program listing; record the program related to the selected program listing on the digital storage device; display in the display screen at least one recorded program listing for at least one program recorded on the digital storage device, wherein the at least one recorded program listing includes a recorded program listing for the program recorded on the digital storage device; allow the user to select the recorded program listing to transfer the recorded program from the digital storage device to the secondary storage device; and transfer the recorded program from the digital storage device to the secondary storage device.

According to a further aspect of the present invention, there is provided a method comprising: causing a program recorded on a first storage device to be transferred from the first storage device to a second storage device; receiving, with the second storage device, the program from the first storage device; and storing the program on the second storage device.

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According to yet a further aspect of the present invention, there is provided a system comprising: control circuitry configured to: cause a program recorded on a first storage device to be transferred from the first storage device
5 to a second storage device; receive, with the second storage device, the program from the first storage device; and store the program on the second storage device.

Program guide data is provided by a data source in a satellite uplink facility. This information is transmitted to
10 a television distribution

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facility such as a cable headend via satellite link. The television distribution facility distributes the information (and television programming signals) to user television equipment on which an interactive
5 television program guide is implemented. One suitable distribution scheme involves transmitting television channels and distributing the information for program listings in the vertical blanking interval of one of the channels or a sideband.

10 The user television equipment for receiving and processing the television program listings and program data may include a set-top box. The set-top box is also able to receive the television programming distributed by the television distribution facility.
15 The program guide implemented on the set-top box processes television program listings information and generates display screens (e.g., an interactive television program guide grid) for display, e.g., on a standard television monitor. The user can interact
20 with the television program guide by entering commands via a user input interface. An illustrative input interface is an infrared remote control with cursor keys, a "guide" button, a "record" button, a "play" button, an "exit" button, an "info" button, and an
25 "enter", "select", or "OK" button. The set-top box may store television programming and program information in a digital storage device associated with the program guide. The digital storage device may be an optical or a magnetic storage device (e.g., a device using
30 writable digital video discs, magnetic disks, or a hard drive or random access memory (RAM), etc.).

The use of a digital storage device

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associated with the program guide provides the user with more advanced features than could be performed using an independent analog storage device. For example, the current invention gives the user the ability to store information associated with recorded programs in a directory in the digital storage device thereby providing easy access to program information. The program guide may also provide a global media library for indicating the programs stored on removable storage media used with the program guide. Non-time-sensitive data associated with recorded programs may be stored in a way that allows the user to interact with the data on playback as if the program were being originally aired. The program guide also allows the user to define "super-programs" for playback of a sequence of stored programs or program segments. The program guide may also provide for the transfer of programs and super-programs to other volumes of the digital storage device or to a secondary storage device.

Further features of the invention, its nature and various advantages will be more apparent from the accompanying drawings and the following detailed description of the preferred embodiments.

Brief Description of the Drawings

FIG. 1 is a schematic block diagram of a system in accordance with the present invention.

FIG. 2 is a schematic block diagram of illustrative user television equipment in accordance with the present invention.

FIG. 3 is a generalized schematic block

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diagram of portions of the illustrative television equipment of FIG. 2.

FIGS. 4-14 are illustrative display screens in accordance with the present invention. -

5 FIGS. 15-22 are flow charts of steps involved in the operation of the present invention.

Detailed Description of the Preferred Embodiments

An illustrative system 10 in accordance with the present invention is shown in FIG. 1. Main
10 facility 12 provides data from program guide data source 14 to television distribution facility 16 via communications link 18. There are preferably numerous television distribution facilities 16, although only one such facility is shown in FIG. 1 to avoid over-
15 complicating the drawing. Link 18 may be a satellite link, a telephone network link, a cable or fiber optic link, a microwave link, a combination of such links, or any other suitable communications path. If it is desired to transmit video signals over link 18 in
20 addition to data signals, a relatively high bandwidth link such as a satellite link may generally be preferred to a relatively low bandwidth link such as a telephone line. Television distribution facility 16 may be any suitable distribution facility (e.g., a
25 cable system headend, a broadcast distribution facility, a satellite television distribution facility, or any other suitable distribution facility.

The data transmitted by main facility 12 to television distribution facility 16 includes television
30 program listings data (e.g., program times, channels, titles, and descriptions) and other program data for

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additional services other than television program listings (e.g., weather information, associated Internet web links, computer software, etc.).

Television distribution facility 16
5 distributes the television program listings and additional data to multiple users via communications paths 20. Each user has user television equipment 22 for displaying the television program listings
10 information using an interactive television program guide. Communication paths 20 preferably have sufficient bandwidth to allow television distribution facility 16 to distribute television programming to user television equipment 22. If desired, television
15 programming may be provided over separate communications paths (not shown).

An illustrative arrangement for user television equipment 22 is shown in FIG. 2. Television equipment 22 of FIG. 2 receives video and data from television distribution facility 16 (FIG. 1) at input
20 26. During normal television viewing, the user tunes set-top box 28 to a desired television channel. The signal for that television channel is then provided at video output 30. The outputted signal is typically either a radio-frequency (RF) signal on a predefined
25 channel (e.g., channel 3 or 4), or a demodulated video signal, but may also be a digital signal provided to television 36 on an appropriate digital bus (e.g., a bus using the IEEE 1394 standard, (not shown)). The video signal at output 30 is received by optional
30 secondary storage device 32. Secondary storage device 32 can be any suitable type of analog or digital program storage device (e.g., a videocassette recorder,

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a digital video disc (DVD) player with the ability to record DVD discs, etc.). Program recording and other features may be controlled by set-top box 28 using control path 34. If secondary storage device 32 is a-
5 videocassette recorder, for example, a typical control path 34 involves the use of an infrared transmitter coupled to the infrared receiver in the videocassette recorder that normally accepts commands from a remote control such as remote control 40. Remote control 40
10 may be used to control set-top box 28, secondary storage device 32, and television 36.

The user may also record programs and program data in digital form on digital storage device 31. Digital storage device 31 may be a writable optical
15 storage device (such as a DVD player capable of handling recordable DVD discs), a magnetic storage device (such as a disk drive or digital tape), or any other digital storage device. Digital storage device 31 preferably supports a directory structure containing
20 information associated with stored entries. This directory information can be stored in one location, for example at the beginning or the end of the storage device. The directory information can also be distributed (e.g., by storing a portion of such
25 information at the same location as each entry). For removable storage media like DVDs, each storage unit may have its own directory information, and the program guide may keep a global media library (discussed below).

30 Digital storage device 31 can be contained in set-top box 28 or it can be an external device connected to set-top box 28 via an output port and

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appropriate interface. If necessary, processing circuitry in set-top box 28 formats the received video, audio and data signals into a digital file format. Preferably, the file format is an open file format such
5 as the Motion Pictures Expert Group (MPEG) MPEG-2 standard. The resulting data is streamed to digital storage device 31 via an appropriate bus (e.g., a bus using the IEEE 1394 standard), and is stored on digital storage device 31.

10 Television 36 receives video signals from secondary storage device 32 via communications path 38. The video signals on communications path 38 may either be generated by secondary storage device 32 when
15 playing back a prerecorded storage medium (e.g., a videocassette or a recordable digital video disc), by digital storage device 31 when playing back a pre-recorded digital medium, may be passed through from set-top box 28, may be provided directly to television
20 36 from set-top box 28 if secondary storage device 32 is not included in user television equipment 22, or may be received directly by television 36. During normal television viewing, the video signals provided to television 36 correspond to the desired channel to which the user has tuned with set-top box 28. The
25 video signals provided to television 36 may also be by set-top box 28 when set-top box 28 is used to play back information stored on digital storage device 31.

When the user wishes to access the features of the program guide, the user may use a "menu" key on
30 remote control 40 or an appropriate key corresponding to the desired feature. For example, if the user wishes to view programming information, a "guide" key

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on remote control 40 can be used. When set-top box 28 receives commands from remote control 40 that inform set-top box 28 that the menu or other feature button has been pressed, processing circuitry within set-top
5 box 28 supplies information that is displayed on television 36 as described further below.

A more generalized embodiment of user television equipment 22 (FIG. 2) is shown in FIG. 3. As shown in FIG. 3, program listings, programming and
10 program data associated with the programming (hereinafter "associated program data") from television distribution facility 16 (FIG. 1) are received by control circuitry 42 of user television equipment 22. Video signals are typically provided on multiple
15 television channels. Associated program data and program listings may be provided on a television channel sideband, in the vertical blanking interval of a television channel, using an in-band digital channel, using an out-of-band digital signal, or by any other
20 suitable data transmission technique.

The user controls the operation of user television equipment 22 with user input interface 46. User input interface 46 may be a pointing device, wireless remote control, keyboard, touch-pad, voice
25 recognition system, or any other suitable user input device. To watch television, the user instructs control circuitry 42 to display a desired television channel on monitor 45. To access the features of the program guide, the user instructs the program guide
30 implemented on user television equipment 22 to generate a main menu or a desired program guide display screen for display on monitor 45.

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The functions of control circuitry 42 may be provided using the set-top box arrangement of FIG. 2. Alternatively, these functions may be integrated into an advanced television receiver, personal computer television (PC/TV), or any other suitable arrangement. If desired, a combination of such arrangements may be used.

When a user indicates a desire to access the main menu or other feature of the program guide (e.g., by entering a command with user interface 46), the program guide generates an appropriate program guide display screen for display on monitor 45. An illustrative main-menu screen 50 is shown in FIG. 4. From the main menu, the user can access any one of a number of features of the program guide. Features indicated by main-menu screen 50 may include program listings, recording schedules, the digital storage medium directory, program guide setup, transferring stored entries and super-programs to another volume or device, and global media library. These and other features will be described below.

When main-menu screen 50 is displayed on monitor 45, the user may access a feature by indicating a desire to do so. This can be done, for example, by using user interface 46 to position movable highlight region 56 over the desired feature. If user input interface 46 is a remote control such as remote control 40 of FIG. 2, the user can position highlight region 56 by, for example, using "up", "down", "left", and "right" cursor keys. The user can then access the desired feature by entering an appropriate command by, for example, using a "select" or "OK" key (hereinafter

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referred to as "selecting" the entry). The main-menu screen may also consist of "buttons" which the user "pushes" by entering appropriate commands with user interface 46 (e.g., by highlighting a button and
5 selecting it). The program guide then generates the appropriate program guide display screen for display on monitor 45.

When a user indicates a desire to view television programming information (e.g, by selecting
10 program listings option 48 from main-menu screen 50, or by using a "guide" key on remote control 40), the program guide generates an appropriate program listings screen for display on monitor 45. A program listings screen may contain one or more lists of programs
15 organized according to multiple organization criteria (e.g., by program type, theme, or any other pre-defined or user defined and selectable criteria) and sorted in various ways (e.g., alphabetically). The program listings screen may be overlaid over a program being
20 viewed by the user or overlaid over a portion of the program in a "browse" mode.

One approach is to organize program listings into a program listings grid. An illustrative program listings grid 60 is shown in FIG. 5a. Program listings
25 grid 60 has program listings rows 62, 64, 66, and 68. Program listings row 62 contains selectable program listings for programs 1 and 2 on channel 2 (Public Television). Program listings row 64 contains
30 selectable program listings for programs 1 and 2 on channel 3 (HBO). Program listings row 66 contains selectable program listings for programs 1, 2, and 3 on channel 4 (NBC). Program listings row 68 contains a

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selectable program listing for program 1 on channel 5 (FOX). The programs on each channel are typically different.

Program listings grid 60 preferably has
5 movable cell highlight region 61, which highlights the current grid cell. The range of movement of highlight region 61 is typically bounded by column 63 on the left, by program listings time cells 65 on the top, by screen boundary 67 on the right, and by lower screen
10 boundary 69 on the bottom.

The user may position highlight region 61 by entering appropriate commands with user interface 46. For example, if user input interface 46 is a remote control such as remote control 40 of FIG. 2, the user
15 can position highlight region 61 using "up", "down", "left", and "right" cursor keys. If the user repeatedly moves highlight region 61 until it reaches lower screen boundary 69, further attempts at downward movement cause the program listings to scroll in the
20 vertical direction.

Similarly, the listings in grid 60 are moved when highlight region 61 is panned (i.e., moved to the right or left). Panning highlight region 61 to the right causes the program listings in all of the program
25 listings rows 62, 64, 66, and 68 to pan to the left by an equal amount. This allows new program listings to be displayed. Time cells 65 are adjusted accordingly (i.e., by incrementing each cell by 30 minutes). If highlight region 61 is panned to the left, the program
30 listings in rows 62, 64, 66, and 58 pan to the right.

After a user positions highlight region 61 on a desired selectable program listing, the user may

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access a number of program guide features. For example, the user may access additional information (typically text or graphics, but possible video) about the listing by selecting that listing. The user may -
5 obtain this information without exiting grid 60. The user makes selections by entering appropriate selection commands with user interface 46 (FIG. 3). If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use a "select", "OK", or
10 "info" key to make a selection.

Making a selection directs the program guide to generate a program listing information screen for display on monitor 45. An illustrative program listing information screen 70 is shown in FIG. 6. Information
15 displayed in information screen 70 may include any information associated with the listing supplied by main facility 12. The information may include, for example, the title of the selection, a description, episode information, the channel, cast members,
20 parental control ratings, categories, available language(s), available video formats, or other information like associated Internet web sites or computer software.

The user can exit program listing information screen 70 by indicating a desire to exit the screen by, for example, entering appropriate commands with user interface 46 (FIG. 3). If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may for example, use an "exit" or "last" key to
25 exit the screen. The program guide may respond to a "last" command by generating the previous program guide display screen for display on monitor 45. The program
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guide may respond to an "exit" command by returning the user to normal television viewing.

In an alternative embodiment, the program guide may also provide selectable listings of programs currently stored on digital storage device 49 in any form of list, table, or grid. The listings may be organized according to selectable organization criteria and sorted. One approach is to use a program listings grid, as shown in FIG. 5b. This may be done, for example, by using row 145 of program listings grid 141 to indicate currently stored programs, thereby treating digital storage device 49 like an additional channel. Multiple rows may be used to organize listings according to organization criteria (e.g., by theme, program type, or any other pre-defined or user defined selectable organization criteria). In each row, the listings may be sorted (e.g., alphabetically).

Each entry in a different column 147 of row 145 may correspond to a different movie stored on digital storage device 49. To view additional titles, the user may, for example, pan right or left by using "right" and "left" cursor keys on remote control 40 of FIG. 2.

Just like program listings grid 60 of FIG. 5a, program listings grid 141 of FIG. 5b may contain highlight region 149 to select listings in any of the rows, including row 145, and thereby access program listings information screen 70 (FIG. 6) for a selected listing. If the user selects a program stored on digital storage device 49 (i.e., a listing in row 145), the program guide responds by obtaining the information associated with the listing for display in program

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listings information screen 70 from digital storage device 49, and by displaying program listings information screen 70. The information for program listings information screen 70 may be stored as a
5 directory entry on digital storage device 49.

The user may also select a program stored on digital storage device 49 from grid 141 for playback. If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use a digital "play"
10 key to select the program whose listing in row 145 is surrounded by highlight region 61. The program guide responds by issuing appropriate commands to digital storage device 49 to read the selected program and to display the program. Any non-time-sensitive data
15 associated with the program stored on digital storage device 49 may be presented to the viewer by the program guide just as it was presented when the program was originally aired. This will be described more fully below. The program guide may also provide features
20 during playback which are similar to those provided for by current analog storage technologies (e.g., "fast-forward", "rewind", "pause", and "stop").

The program guide may also display an options screen in response to the user selection of any program
25 listing. Such an option screen may include options like "playback", "delete", and "record" that the user may select on-screen by issuing appropriate commands with user interface 46 (e.g, by positioning a highlight region over the desired feature and selecting the
30 feature, or by pushing an on-screen "button" that represents the option).

The user may select a program and associated

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program data for recording on digital storage device 49 without leaving grid 60 or grid 141. The user makes selections for digital recording by entering appropriate selection commands with user interface 46_5 (FIG. 3). If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use a digital "record" key to select the program whose listing is surrounded by highlight region 61 for digital recording. If desired, the default recording 10 techniques used by the program guide may be digital recording.

Making a selection for digital recording causes the program guide to gather information from the currently loaded digital storage medium. Such 15 information may include the estimated amount of time remaining on the storage medium (if, for example, the digital storage medium is a partially full disk). The program guide may also check directory information on the digital storage medium and compare it to the 20 selected program listing to determine if the selected program has already been recorded. If the program guide determines that the selection has already been recorded, re-recording is not necessary. The program guide may retain the information associated with the 25 selected program listing (supplied by main facility 12 of FIG. 1) for access by the user (e.g., using the recording schedule screen described below).

In response to an indication by the user to digitally record a selection, the programming guide may 30 generate a recording schedule screen for display on monitor 45. The recording schedule screen lists the programs currently scheduled for recording on digital

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storage device 49. An illustrative recording schedule screen 80 is shown in FIG. 7a. Recording schedule screen 80 contains a number of pieces of information which may include, for example, the volume name of the currently loaded medium, an estimate of the amount of time remaining on the medium, and a grid 81 or other suitable list or table listing the programs currently scheduled for recording and relevant recording information. Grid 81 may include the title of the selections, the channel for recording, the recording date and time, and the duration of the selection.

The user can access the associated program data supplied by main facility 12 of FIG. 1 of the programs scheduled to be recorded by indicating a desire to do so (e.g., by positioning highlight region 82 on a desired program listing and pressing an "OK" key). In response to such an indication, the program guide generates a selected program listing information screen for display on monitor 45. An illustrative selected program listing information screen 84 is shown in FIG. 7b. A selected program listing information screen is similar to a program listing information screen (see FIG. 6), but may also contain user fields that the user may edit to add information that the user desires to associate with the program. FIG. 7b shows illustrative user description field 85, user category field 86, and user other field 88. The user may edit the contents of these user fields by, for example, using user interface 46 to position highlight region 89 over the desired field and indicating the information that the user desires to associate with the program. If user interface 46 is a remote control such as remote

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control 40 of FIG. 2, alphanumeric keys on remote control 40 may be used, or the user may scroll through the alphabet using "up" and "down" keys to select individual letters and thereby form words in the user-
5 fields.

If all of the information does not fit on a single screen, the user can scroll downward (and upward) to view the non-displayed information by indicating a desire to do so by, for example, using "up"
10 and "down" keys on remote control 40. The program guide responds to such an indication by scrolling the screen accordingly and showing the non-displayed information.

Recording schedule screen 80 of FIG. 7a may
15 also indicate which of the selections currently scheduled for recording will fit on the currently loaded storage medium (e.g., when a DVD is loaded in a DVD player). This may be done, for example, by using bold text or text of a different color (see, e.g.,
20 M*A*S*H and TERMINATOR listings 89). Selections that cannot fit may be indicated as such by a different indicator, like dotted line 83. Either or both indicators can be used and the types shown in FIG. 7a are for illustration purposes only.

25 The user can exit recording schedule screen 80 by indicating a desire to do so (e.g., by entering appropriate commands with user interface 46 of FIG. 3). If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use, for example, an
30 "exit" key to exit the screen. When the command is given, the program guide may respond by generating the previous screen for display on monitor 45.

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The user may also view recording schedule screen 80 when not in a program listings screen. For example, if user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may access -
5 recording schedule screen 80 when in main-menu screen 50 of FIG. 4 by positioning highlight region 56 (FIG. 4) over recording schedule option 52 and selecting recording schedule option 52. The user may also access recording schedule screen 80 by selecting a program
10 from the program listings screen and selecting an on-screen "recording schedule" option from a list of on-screen options.

The user may also select programs and associated program data for digital recording when not
15 in program listings grid 60 by indicating a desire to do so during normal television operation (e.g., by entering appropriate commands with user interface 46 of FIG. 3). If user interface 46 is a remote control such as remote control 40, this can be done by using a
20 "record" key during television viewing. The program guide responds by generating a recording screen for display on monitor 45. An illustrative recording screen 87 is shown in FIG. 8. Recording schedule screen 87 may display information of the program
25 currently being viewed by the user, such as the current channel, begin time, and end time for recording. The program guide may provide the user with the opportunity to edit the displayed information (e.g., the start and end time) by issuing appropriate commands with user
30 interface 46. When finished, the program guide may return the user to normal television viewing and begin recording the selection, the program guide may generate

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a recording schedule screen for display on monitor 45 so that the viewer may see the recording schedule.

Before recording a new program and associated program data, the program guide may automatically cause
5 digital storage device 49 to search for available space, and may store the program and associated program data anywhere on digital storage device 49 (e.g., between two other programs). The program and associated program data may even be stored in non-
10 contiguous space on the storage medium. A best-fit algorithm may be used to determine where to store the program based on available free space and the length and format of the program.

The program guide may also store associated
15 program data in a directory entry of digital storage device 49. This data can include, for example, the date and time the program was recorded, the channel the program was recorded on, the time duration of the program, the program title and description, cast
20 members, parental control ratings, program categories, episode information, recorded languages and video formats, Internet links, graphics, or any other information supplied by main facility 12 of FIG. 1, the user, or the programmer.

25 Along with the program and associated program data, the program guide may also store additional components of a program on digital storage device 49. This can include additional video formats, additional languages, additional subtitles, or other data that
30 cannot be stored in a directory entry. The program guide will either store all of the supplied video formats and languages, or store only the variant that

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matches the current viewer profile preferences
(described below).

Unless associated program data is time sensitive, the user may interact with the data stream-
5 during playback just as when the program was originally aired. If, for example, associated program data is computer software that the user could have accessed when the program was originally aired, the software may be stored on digital storage device 49, so that the
10 user can access the software during playback. Such software may be, for example, shopping software that allows the user to place orders for purchasing goods offered in the program. Or, a program may have associated with it an Internet link that the user can
15 select and access an Internet site.

The program guide may also allow a user to view the directory information of the currently loaded storage medium. The user can access this feature by indicating a desire to do so by, for example, issuing
20 the appropriate commands with user interface 46. If user interface 46 is a remote control like remote control 40 of FIG. 2, this may be done by using a "directory" or "list" key. This can also be done by accessing the main menu 50 (FIG. 4) and positioning
25 highlight region 56 over medium directory option 53 and selecting medium directory option 53.

When the user indicates a desire to view the directory information for the currently loaded storage medium, the program guide obtains directory information
30 from digital storage device 49 and generates a directory listing screen for display on monitor 45. An illustrative directory listing screen 90 is shown in

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FIG. 9. Directory listing screen 90 may indicate, for example, the volume name and available time left on the currently loaded storage medium. Directory listing screen 90 may also include directory listing grid 91.-

5 Directory listing grid 91 contains information about entries stored on digital storage device 49. This information may include any of the directory information stored on the medium and may be presented according to the current viewer preferences
10 (described below). It may include, for example, the title, channel, record date, record time and duration of the entries. It may also include an indication of whether the entries have been viewed. Because the directory information for directory listing screen 90
15 is stored digitally, it may generally be accessed rapidly (e.g., in a fraction of a second). This fast access capability makes the directory feature easy to use to quickly check the status of stored entries. This would not be possible if an analog storage device
20 such as a standard videocassette recorded were used.

The program guide may allow the user to access a full view of all of the directory information stored for an entry. The user may access this feature while in directory listing screen 90 by indicating a
25 desire to do so by, for example, entering appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, this can be done by positioning highlight region 95 over the desired entry using "up" and "down" keys, and
30 then selecting the entry, or by selecting an on-screen "info" option.

Once the user indicates a desire to view the

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full directory entry information of an entry, the program guide generates a full entry information screen for display on monitor 45. An illustrative full entry information screen 100 is shown in FIG. 10. If the -
5 full directory information does not fit on one screen, the user can scroll downward (and upward) by indicating a desire to do so by, for example, using "up" and "down" keys on remote control 40. In addition, user-defined fields may be edited by positioning highlight
10 region 101 over any user-defined field and entering information into the highlighted field (e.g., with alphanumeric keys on remote control 40).

To exit full entry information screen 100, the user indicates a desire to do so by, for example,
15 using an "exit" key on remote control 40. The program guide responds by saving the directory information to digital storage device 49 if the information has changed and generating the previous screen for display on monitor 45.

20 The program guide allows a user to play back a stored entry when the user indicates a desire to do so by entering appropriate commands with user interface 46. This can be done, for example, by selecting an entry from directory listing grid 91 and using a "play"
25 button on remote control 40, or by selecting an on-screen "play" option from a list of on-screen options generated by the program guide in response to the selection of an entry by the user. Any non-time sensitive data associated with the program may be
30 presented to the viewer by the program guide just as it was presented when the program was originally aired.

The program guide may also edit a program and

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its associated data when the user indicates a desire to do so. This can be done, for example, by entering appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 5 40 of FIG. 2, then this can be done by using "delete" keys in a particular way (such as by using the "delete" key twice), or by using a "partial" key, when the user is in directory listing screen 90. This may also be accomplished by selecting an on-screen "edit" option 10 provided by the program guide in response to the selection of a program listing or directory entry.

Once the user indicates a desire to edit a program, the program guide generates an edit screen for display on monitor 45. An illustrative edit screen 110 15 is shown in FIGS. 11a, 11b, and 11c. Screen 110 indicates the entry to be edited and other relevant information. This information may include, for example, the title, channel, record date, record time, and duration of the entry. Screen 110 may also contain 20 edit indicator 115 for indicating the portion of the entry for deletion. Indicator 115 may have start time 116, end time 117, markers 118 and 140, and highlight region 119. Screen 110 may also have video feedback area 113 for showing the user the portion of the 25 program corresponding to the position of markers 118 and 140.

Highlight region 119 is initially positioned by the program guide so as to surround one of the markers, for example marker 118. The user may indicate 30 a desired starting time for deleting by positioning marker 118 (FIG. 11b). This may be done, for example, by entering appropriate commands with user interface

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46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, this can be done by using "left" and "right" buttons of remote control 40 to slide marker 118 left and right. As the position of -
5 marker 118 is changed, its current time position ("marker time") 120 is displayed as shown in FIGS. 11b and 11c. The beginning portion of a program is edited by leaving marker 118 in its initial position.

When the desired start time position is
10 indicated by marker 118, the user can select marker 140 to define the end of the program segment by, for example, using the "OK" key of remote control 40. The program guide responds by positioning highlight region 119 around marker 140. The user may indicate the end
15 time of the portion of the program to be deleted by, for example, positioning marker 140 in the same way that marker 118 was positioned, as shown in FIG. 11c.

Video feedback area 113 may display the portion of the program corresponding to markers 118 and
20 140 as the markers are positioned by the user. The program guide may also provide the user with the opportunity to view the portion of the program selected for deletion in a "fast-forward" playback mode, once the program portion is selected.

25 After the user is finished, the program guide may allow the user to continue to edit additional segments. The program guide may also return the user to a previous screen (e.g., directory listing screen 90) or to normal television viewing, when the user
30 indicates a desire to do so (e.g., using a "last" or "exit" key on remote control 40). The program guide may also provide the user with the opportunity to

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confirm that the portion selected for deletion is properly defined.

Once the program portion or portions are defined, the program guide issues appropriate commands-
5 to digital storage device 49 to delete the selected program segment, additional components, and associated data as appropriate. For example, the program guide may immediately display directory listing screen 90 and issue appropriate commands to digital storage device 49
10 to delete the selected portion and update the directory information associated with that portion, if appropriate.

The program guide may also allow the user to define "super-programs". Super-programs are sequences
15 of programs or program segments that the guide will play back sequentially in a specified order. The user may indicate the desire to access the super-program feature by, for example, entering appropriate commands with user interface 46. If user interface 46 is a
20 remote control such as remote control 40 of FIG. 2, the user may use a "super-program" key on remote control 40 after positioning a highlight region such as highlight region 95 of directory listing screen 90 (FIG. 9) over a desired program listing (e.g., M*A*S*H*), or by
25 selecting an on-screen "super-program" option from a list of on-screen options which are provided by the program guide when a program is selected.

The program guide may also provide the user with the ability to name super-programs and to store
30 them on digital storage device 49. Entries for the named super-programs may be kept in the directory maintained on digital storage device 49, and may be

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displayed in screens which list directory entries (e.g., directory listing screen 90), along with the directory entries for program listings. For example, when directory listing screen 90 is displayed by the program
5 guide, the program guide may provide the user with the opportunity to select a named super-program.

In response to the user selection of a named super-program, the program guide may generate a super-program screen for display on monitor 45. The program
10 guide may also provide the user with an on-screen list of options for performing super-program functions (e.g., playing, transferring or editing the super-program).

When the user indicates a desire to define a
15 super-program, the program guide generates a super-program screen for display on monitor 45. An illustrative super-program screen 130 is shown in FIGS. 12a and 12b.

Super-program screen 130 is organized into
20 three areas. Area 131 indicates the selections stored on digital storage device 49 (or the currently loaded digital storage medium of digital storage device 49). Area 132 indicates the super-program sequence. Video feedback area 137 displays the portion of the program
25 included in the super-program. Super-program screen 130 may also indicate the volume name of and time remaining on the currently loaded storage medium.

The three areas of super-program screen 130 may also be presented only when needed. For example,
30 area 131 may be displayed only when the program guide is providing the user with the opportunity to select a program stored on digital storage device 49. Once the

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user has selected a program, area 131 may be removed and area 132 may replace it while the program guide is providing the user with the opportunity to define a program segment for inclusion in the super-program.

5 Video feedback area 137 may be displayed only in response to an indication by the user to the program guide to display the program segment. Thus, it may not be necessary for all three areas to be displayed at once.

10 To define a super-program, the user indicates which program is to be included in the super-program sequence. The program guide may also give the user the ability to include in the current super-program other previously defined super-programs. Area 131 includes a
15 directory listing grid 133 for listing the programs and super-programs stored on digital storage device 49. If the user interface is a remote control such as remote control 40 of FIG. 2, the user may use "up" and "down" keys to position highlight region 134 on top of the
20 desired program or super-program. The user may then select a program or super-program by using a "select" or "OK" key on remote control 40. The user may also access other information associated with the entry by using an "info" key on remote control 40, or by
25 selecting a suitable option from an on-screen options list provided by the super-program. The program guide generates a full entry information screen containing information associated with the selected program when the "info" key is pressed.

30 Whenever the user selects a program, the program guide places the selected entry in the super-program sequence at a defined point in the sequence

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(e.g., at the end of the sequence). As shown in FIG. 12a, for example, a first segment entry has been selected by the user and the user is currently selecting the second segment entry. The segment -
5 entries are listed in second area 132. The user then has the option of defining the play segment of the program to be played. Indicators 135 indicate the currently defined play segment.

If the user wishes to define a play segment,
10 the user may do so, for example, by using markers 136 to define the segment in the same manner described for editing programs. As shown in FIG. 12b, the user uses highlight region 134 (positioned by the program guide over one of the markers) to move the markers 136 to
15 define the play segment. Video feedback area 137 displays the portion of the program corresponding to markers 136 as markers 136 are individually positioned. The user may indicate he or she is finished defining the play segment by, for example, using an "OK" key on
20 remote control 40. The program guide then responds to this indication by positioning highlight region 134 (FIG. 12a) in first area 131 to allow the user to define another entry in the super-program sequence.

The user may indicate that he or she is
25 finished defining the super-program by issuing appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use a "play" key to finish editing the super-program and play the super-program.
30 The user may also select an on-screen "play" option from a list of on-screen options provided by the program guide.

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The program guide responds by issuing the appropriate instructions to digital storage device 49 to read the programs and associated program data of the defined super-program sequence. The program guide then
5 instructs television equipment 22 to provide the program and any associated data (e.g., software) in the appropriate format for display on monitor 45 and use by the user as if the user were viewing the program when it was originally aired. If monitor 45 is a
10 television, for example, user television equipment 22 may convert the program from its digital format to the appropriate RF or demodulated video signal for display on monitor 45.

The user may also store the super-program for
15 playback or editing at a later time. The user may indicate a desire to postpone playback by, for example, issuing appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use an "exit" key on
20 remote control 40 or select an on-screen "exit" option. Control circuitry 42 responds to an indication to postpone playback by storing the playback sequence (either in memory or on the digital storage device). The user may later access the super-program by, for
25 example, selecting the super-program while in directory listing screen 90. The program guide may respond by providing an on-screen list of options (e.g., edit, play back, transfer) that the user may select from. The program guide may also respond by generating a
30 super-program screen with the previously entered selections and defined play-segments, providing the user with the opportunity to add, edit or re-order the

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programs and program segments.

The program guide may also allow the user to transfer programs and super-programs stored on digital storage device 49 to other volumes of digital storage device 49 or to secondary storage device 47 (FIG. 3.).
5 Secondary storage device 47 may be another storage device available in the home network system like a videocassette recorder, a recordable digital video disc device, a computer (with an appropriate storage
10 device), or other digital storage device. This feature may be accessed by, for example, issuing appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user may use a "record" or "transfer" key when
15 in the super-program screen, or, for example, the user may select a "transfer" option from an on-screen list of options provided by the program guide in response to the user selecting a super-program from directory listing screen 90.

20 The program guide responds to this indication by issuing appropriate instructions to digital storage device 49 to read the selected programs and associated data or the programs and associated data of the selected super-program sequence. The program guide
25 then transfers the programs and associated data (if possible) in an appropriate format to secondary program data storage device 47. If, for example, secondary storage device 47 is a videocassette recorder, the program guide directs user television equipment 22 to
30 convert the digitally stored program or super-program into an appropriate analog format.

Transferring the data (e.g., software)

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associated with a program or super-program may not be possible with some analog secondary storage devices, so the program guide may accordingly ignore the associated data during transfer. The program guide may, however, provide
5 for the labeling of analog storage media with associated data. Program guides that provide for labeling videocassettes with program information are described for example, in Blackwell PCT Publication No. WO 99/13471.

The programs and data may also be transferred
10 directly from digital storage device 49 to secondary storage device 47 via channel 43 if desired. The program guide may also transfer the programs and data to another volume of digital storage device 49.

If digital storage device 49 is a device that uses
15 removable recording media (e.g., floppy disks or recordable optical discs) the program guide may also allow a user to view a global media library screen which indicates directory information of removable storage media used with the program guide. The user may access this feature by indicating a
20 desire to do so by, for example entering appropriate commands with user interface 46. If user interface 46 is a remote control such as remote control 40 of FIG. 2, this may be done by, for example, using a "library" key. This may also be done by accessing main menu 50 (FIG. 4) and
25 positioning highlight region 56 over global media library option 57 and selecting media library option 57.

The global media library may be maintained automatically by the program guide. For example, the

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program guide may store or update directory entry information according to the current viewer preferences (described below) in a central storage area (e.g., random access memory (RAM) or a central hard disk drive) each time directory information is stored or updated on a removable storage medium. The program guide may also store unique identifiers identifying the removable storage medium on which programs are stored (e.g., volume names or media numbers).

10 An illustrative global media library screen 250 is shown in FIG. 13. Global media library screen 250 may display program listings in any list, table, grid or other suitable form that contains information about stored entries on removable storage media used in digital storage device 49. Listings may be grouped into subsets of listings according to multiple organization criteria and sorted in various ways. Another approach is to display the listings in a library listing grid, such as library listing grid 251. 20 Library listing grid 251 may include a row for each removable storage medium used with digital storage device 49 (e.g., rows 261, 262, 263, 264, and 265), and columns for each program stored on each removable storage medium (e.g., columns 271, 272, and 273). A user may access additional storage media and additional programs not displayed by, for example, scrolling up and down or panning left and right.

Just like directory listing screen 90 of FIG. 9, global media library screen 250 of FIG. 13 allows the user to access features of the program guide already described (e.g., by positioning nighlight region 257 around a listing and selecting the listing),

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which may include accessing a full entry information screen, playing back, deleting and partially deleting programs, and defining super-programs containing programs from different storage media. These features
5 may also be accessed by the user by selecting the desired feature from a list of on-screen options provided by the program guide in response to the selection of a listing by the user.

If the user indicates a desire to access a
10 feature of the program guide which operates on a medium that is not currently loaded in digital storage device 49, the program guide may automatically change the loaded storage medium if digital storage device 49 has the ability to do so. Digital storage device 49 may
15 be, for example, an optical jukebox with multiple recordable optical discs. If the user selects a program on a disc not currently positioned before a read/write head of the jukebox, the jukebox re-arranges the discs until the disc with the selected program is
20 positioned for reading or writing. If the disc with the selected program is not in the jukebox, the program guide may display indication 255 to the user that the disc must be loaded. The program guide may also display such an indication if, for example, digital
25 storage device 49 is a floppy disk drive and the disk with the selected program is not in the drive. Indication 255 may include a unique identifier identifying the unloaded storage medium. Preferably, the unique identifier is not displayed for the user
30 unless the required removable storage medium is not loaded.

If digital storage device 49 uses removable

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storage media (e.g., floppy disks or recordable optical disks), the program guide may provide the user with the opportunity to enter an identifier that identifies the removable storage medium on which the program is -
5 stored. The identifier may be a volume name, a medium number, or other suitable unique indicator.

The program guide may also allow the user to choose various selectable options and select the types of information for display in various screens. The
10 user can access this feature by indicating a desire to do so by, for example, using user interface 46 to enter appropriate commands. If user interface 46 is a remote control such as remote control 40 of FIG. 2, the user can indicate a desire to access this feature by
15 selecting set-up option 54 from the main menu screen of FIG. 4, or by using a "set-up" key on remote control 40.

When the user indicates a desire to access the set-up feature of the program guide, control
20 circuitry 42 generates a set-up screen for display on monitor 45. The set-up feature allows a user to select options and set user preferences. An illustrative set-up screen 120 is shown in FIG. 14. Set-up screen 120 can be organized into parts. For example, one part may
25 be used to handle entry information display options, another may be used to handle storage options, and another may be used to handle playback options.

Entry information area 121 is an example of how set-up screen 120 may be used to display selectable
30 components that the user may select for display in screens that display program information (e.g., program listings grid 50, recording schedule screen 80, and

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directory listing screen 90). Unselected directory components cannot be viewed from such screens, and can only be viewed in full information view (e.g., program listing entry information screen 70 and full entry information screen 100).

Storage option area 122 allows the user to select options relating to storage. For example, the user can select the language tracks or video formats for storing with a program. The user can also set whether a parental control feature applies to the recording of programs which do not meet certain parental control criteria. The user may also choose whether the program guide automatically erases entries from digital storage device 49 once the entries are viewed. When erased, an entry's directory information and additional components are also removed from digital storage device 49.

Playback option area 133 allows the user to select options related to playback. One selectable feature, for example, is a skip commercial feature. If active, the program guide attempts to distinguish program material from advertisements based on data recorded with the programming or other suitable cues. Any material identified as advertising is automatically skipped during playback. The user may also set default languages and video formats for playback.

Steps involved in operating the program guide of the present invention are set forth in FIGS. 15-20. FIG. 15 illustrates an overview of steps involved in accessing a number of features of the program guide. The steps illustrated by FIGS. 15-20 are illustrative and may be performed in any order.

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At step 400 of FIG. 15, the programs and associated program data are stored on digital storage device 49 using the program guide. At step 402, additional components are digitally stored. At step -
5 404, the programs and associated program data are displayed on monitor 45 (FIG. 3) using the program guide. The programs and associated program data may be displayed on monitor 45 so as to provide the user with access to the programs and associated program data as
10 if the programs and associated program data were being originally aired, as set forth in step 406.

At steps 408, 410, 412, and 414 the program guide displays on monitor 45 a set-up screen (such as set-up screen 120 of FIG. 14), a recording schedule
15 screen (such as recording schedule screen 80 of FIG. 7a), a program listings screen (such as a screen containing program listings grid 60 of FIGS. 5a and 5b), and an edit screen (such as edit screen 110 of FIGS. 11a, 11b, and 11c). At step 416, the program
20 guide transfers the programs and associated program data (if possible) to another volume of digital storage device 49 or to secondary storage device 47 (FIG. 3).

FIG. 16 illustrates steps involved providing the user with the ability to define selectable options.
25 At step 424, the program guide provides the user with the opportunity to define storage options. If language, video format, enforcement of parental control, and auto-erase storage options are provided (FIG. 15), the program guide stores the programs and
30 associated program data on digital storage device 49 according to how the storage options are defined as set forth in steps 426, 428, 430, and 432 respectively.

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The program guide may also provide the user with the opportunity to define playback options, as set forth in step 434. If default language, default video format, and skip advertising playback options are -
5 provided, the program guide displays the programs and associated program data on monitor 45 according to how the options are defined as set forth in steps 436, 438, 440, respectively.

FIG. 17 illustrates steps involved in
10 providing a user with the opportunity to record programs and associated program data on digital storage device 49. At step 410, the program guide displays a recording schedule screen, such as recording schedule screen 80 of FIG. 7a, on monitor 45. At step 450, the
15 program guide indicates on monitor 45 the programs currently scheduled for storage on digital storage device 49. At step 452, the program guide provides the user with the opportunity to select one of the indicated programs.

20 The program guide may also display a selected program listing information screen, such as selected program listing information screen 84 of FIG. 7b, for a selected program on monitor 45 as set forth in step 454. The program guide displays one or more fields of
25 associated program data in step 456, and may also display one or more user fields in step 458. At step 460, the program guide provides a user with the opportunity to enter information into user fields 460. At step 462, the program, associated data and
30 additional components are stored on digital storage device 49.

The program guide may also provide the user

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with the opportunity to record programs during television viewing at step 464. At step 466, the program guide generates a recording screen for display on monitor 45. At step 468, the program guide provides
5 the user with the opportunity to edit recording information, such as begin and end time. At step 470, the program guide provides the user with the opportunity to access the recording schedule screen. The program guide displays the recording schedule
10 screen (step 410) or begins recording programs, associated data, and components (step 462) depending on the indication from the user.

FIG. 18 illustrates steps involved in displaying program listings and program listing
15 information on monitor 45. The program guide may display a program listings screen on monitor 45 at step 412. The program guide may include in the program listings screen a program listings grid (sub-step 470). At step 472, the program guide provides the user with
20 the opportunity to define and select organization criteria (e.g., theme, program type, etc.) and chose a sorting method (e.g., alphabetically) for organizing and sorting the listings. At step 474, the program guide provides the user with the opportunity to select
25 a program listing. The program guide may also display on monitor 45 a program listings information screen, such as program listings information screen 70 of FIG. 6, indicating associated program listing information.

At step 478, the program guide may provide a
30 list of on-screen options that the user can select to access program guide features. For example, there may be on-screen "record" and "super-program" options. If

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super-programs and stored entries are included in the program listings screen, the program guide may also provide on-screen "transfer" and "playback" options. The program guide displays programs, associated data, and additional components at step 480. This may be program, data, and components of the selected listing. At step 480 the program guide may also return the user to the program being viewed before the program listings screen was accessed. Step 480 may also correspond to where the user watches television programming before having accessed the program listings screen.

Other steps involved in accessing programs and associated data stored on digital storage device 49 are set forth in FIG. 19. The program guide stores programs and associated program data on digital storage device 49 at step 406. At step 488, the program guide maintains a directory of the stored associated program data. At step 490, the program guide displays a directory listing screen, such as directory listing screen 90 of FIG. 9, on monitor 45. The program guide indicates directory entry information at step 492 (by, for example, displaying directory listing grid 92 of FIG. 9 on monitor 45), and provides a user with the opportunity to select directory entry information at step 494. At step 495, the program guide provides the user with an on-screen list of options (e.g., "playback", "transfer", "super-program", etc.).

Steps involved in displaying additional information for a selected entry are set forth in steps 496, 498, 500, and 502. At step 496 the program guide displays a full entry information screen, such as full entry information screen 100 of FIG. 10, on monitor 45.

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At step 498, the program guide displays fields of directory entry information on monitor 45, and at step 500 the program guide displays user-defined fields on monitor 45. At step 502, the program guide provides -
5 the user with the opportunity to enter user information in the user-defined fields.

Steps involved in editing programs and associated program data associated with directory entry information are set forth in steps 504, 506, 508, and
10 510 of FIG. 20. The program guide displays an edit screen, such as edit screen 110 of FIGS. 11a, 11b, and 11c, on monitor 45. At step 506, the program guide provides a user with the opportunity to define the portions of stored programs and associated program data
15 to be edited by the program guide. At step 508 the program guide displays a video feedback area on monitor 45. The program guide edits the portions of stored programs and associated data from digital storage device 45 at step 510.

20 Steps involved in providing the global media library feature of the present invention are set forth in FIG. 21. At step 522, the program guide stores programs and associated program data on removable digital storage media in digital storage device 49. At
25 step 524, the program guide maintains a global media library of the stored associated program data. The program guide displays a global media library screen, such as global media library screen 250 of FIG. 13, on monitor 45 at step 526. At step 528 the program guide
30 provides a user with the opportunity to select a program indicated by the global media library screen. If the digital storage medium containing the selected

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program is not loaded in digital storage device 49, the program guide displays on monitor 45 an indication that the storage medium is not loaded at step 530.

Steps involved in providing the super-program feature of the present invention are set forth in FIG. 22. The program guide stores programs and associated program data on digital storage device 45 at step 532. At step 534, the super-program sequence is defined. This may be done by displaying a super-program screen, such as super-program screen 130 of FIGS. 12a and 12b, on monitor 45 as set forth in step 536. Stored programs are indicated by the program guide on monitor 45 at step 538, and the program guide provides a user with the opportunity to select the indicated programs at step 540. The program guide displays the programs and associated program data which are part of the super-program sequence on monitor 45 according to the super-program sequence at step 550.

Further steps involved in providing the super-program feature are set forth in steps 524, 544, 546, and 548. At step 542, the program guide provides the user with the opportunity to define play segments. The program guide may display a play segment indicator and marker for defining the play segment, as indicated by step 544. At step 546, the program guide displays a video feedback area on monitor 45. The program guide displays the play segments of programs and associated program data on monitor 45 according to the super-program sequence at step 548.

The foregoing is merely illustrative of the principles of this invention and various modifications

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can be made by those skilled in the art without departing from the scope of the invention.

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CLAIMS:

1. A method for transferring programs to a secondary storage device, the method comprising:

using an interactive television program guide

5 implemented on user television equipment to cause a first display in a display screen of at least one program listing related to at least one program;

using the interactive television program guide to enable a user to select a program listing from the at least one
10 displayed program listing;

using the interactive television program guide to cause the program related to the selected program listing to be recorded on a digital storage device;

using the interactive television program guide to
15 cause a second display in the display screen that includes at least one recorded program listing for at least one program recorded on the digital storage device, wherein the at least one recorded program listing includes a recorded program listing for the program recorded on the digital storage device;

20 using the interactive television program guide to enable the user to select the recorded program listing and to transfer the recorded program from the digital storage device to a secondary storage device; and

using the interactive television program guide to
25 transfer the recorded program from the digital storage device to a secondary storage device.

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2. The method of claim 1 wherein the transferring of the recorded program is performed immediately in response to the user selection.

3. The method of claim 1 wherein the secondary storage
5 device is digital media.

4. The method of claim 3 wherein the digital media is random access memory.

5. The method of claim 3 wherein the digital media is an optical disc.

10 6. The method of claim 1 wherein the secondary storage device comprises a removable recording media.

7. The method of claim 1 further comprising:

allowing the user to select a sequence of programs recorded on the digital storage device; and

15 transferring the sequence of programs to the secondary storage device.

8. The method of claim 1 wherein the transferring of the recorded program is performed in response to the user selection of a key on a remote control.

20 9. The method of claim 1 further comprising recording program information on the digital storage device when the program is recorded on the digital storage device.

10. The method of claim 9 further comprising transferring the recorded program information from the digital storage

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device to the secondary storage device when the recorded program is transferred to the secondary storage device.

11. The method of claim 1 wherein the program is a broadcast program.

5 12. A system for transferring recorded programs, the system comprising:

a display screen;

a digital storage device;

a secondary storage device; and

10 an interactive television program guide implemented at least partially on circuitry, wherein the interactive television program guide is programmed to:

display in the display screen at least one program listing related to at least one program;

15 allow a user to select a program listing related to the at least one displayed program listing;

record the program related to the selected program listing on the digital storage device;

20 display in the display screen at least one recorded program listing for at least one program recorded on the digital storage device, wherein the at least one recorded program listing includes a recorded program listing for the program recorded on the digital storage device;

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allow the user to select the recorded program listing to transfer the recorded program from the digital storage device to the secondary storage device; and

5 transfer the recorded program from the digital storage device to the secondary storage device.

13. The system of claim 12 wherein the interactive television program guide is further programmed to transfer the recorded program immediately in response to the user selection.

10 14. The system of claim 12 wherein the secondary storage device is digital media.

15. The system of claim 14 wherein the digital media is random access memory.

16. The system of claim 14 wherein the digital media is an optical disc.

15 17. The system of claim 12 wherein the secondary storage device comprises a removable recording media.

18. The system of claim 12 wherein the interactive television program guide is further programmed to:

20 receive from the user interface device selections of programs to be recorded in a sequence on the digital storage device; and

transfer the sequence of programs to the secondary storage device.

25 19. The system of claim 12 wherein the interactive television program guide is further programmed to transfer the

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recorded program in response to the user selection of a key on a remote control.

20. The system of claim 12 wherein the interactive television program guide is further programmed to record
5 program information on the digital storage device when the program is recorded on the digital storage device.

21. The system of claim 20 wherein the interactive television program guide is further programmed to transfer the recorded program information from the digital storage device to
10 the secondary storage device when the recorded program is transferred to the secondary storage device.

22. The system of claim 12 wherein the program is a broadcast program.

23. A method comprising:

15 causing a program recorded on a first storage device to be transferred from the first storage device to a second storage device;

receiving, with the second storage device, the program from the first storage device; and

20 storing the program on the second storage device.

24. The method of claim 13 further comprising:

generating a display of a plurality of program listings corresponding to programs recorded on the first storage device, wherein the program corresponds to one of the
25 plurality of program listings.

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25. The method of claim 13 further comprising receiving user input that selects the one of the plurality of displayed program listings, wherein the program is caused to be transferred in response to receiving the user input.

5 26. The method of claim 15, wherein the user input is received with a touch sensitive device.

27. The method of claim 13, wherein the program is transferred to the second storage device in response to a user selection of a key.

10 28. The method of claim 13, wherein the program is a broadcast program.

29. The method of claim 13 further comprising:

displaying, in a display screen, a plurality of program listings; and

15 recording the program related to one of the plurality of program listings on the first storage device in response to receiving a user input selecting the one of the plurality of displayed program listings.

20 30. The method of claim 13, wherein the first storage device is a digital storage device.

31. The method of claim 13, wherein the first storage device is included in a first user equipment device and the second storage device is included in a second user equipment device.

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32. The method of claim 13, wherein the program is transferred in a format appropriate for the second storage device.

33. A system comprising:

5 control circuitry configured to:

cause a program recorded on a first storage device to be transferred from the first storage device to a second storage device;

10 receive, with the second storage device, the program from the first storage device; and

store the program on the second storage device.

34. The system of claim 33, wherein the control circuitry is further configured to generate a display of a plurality of program listings corresponding to programs recorded on the
15 first storage device, wherein the program corresponds to one of the plurality of program listings.

35. The system of claim 33, wherein the control circuitry is further configured to receive user input that selects the one of the plurality of displayed program listings, wherein the
20 program is caused to be transferred in response to receiving the user input.

36. The system of claim 35, wherein the user input is received with a touch sensitive device.

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37. The system of claim 33, wherein the program is transferred to the second storage device in response to a user selection of a key.

38. The system of claim 33, wherein the program is a
5 broadcast program.

39. The system of claim 33, wherein the control circuitry is further configured to:

display, in a display screen, a plurality of program listings; and

10 record the program related to one of the plurality of program listings on the first storage device in response to receiving a user input selecting the one of the plurality of displayed program listings.

40. The system of claim 33, wherein the first storage
15 device is a digital storage device.

41. The system of claim 33, wherein the first storage device is included in a first user equipment device and the second storage device is included in a second user equipment device.

20 42. The system of claim 33, wherein the program is transferred in a format appropriate for the second storage device.

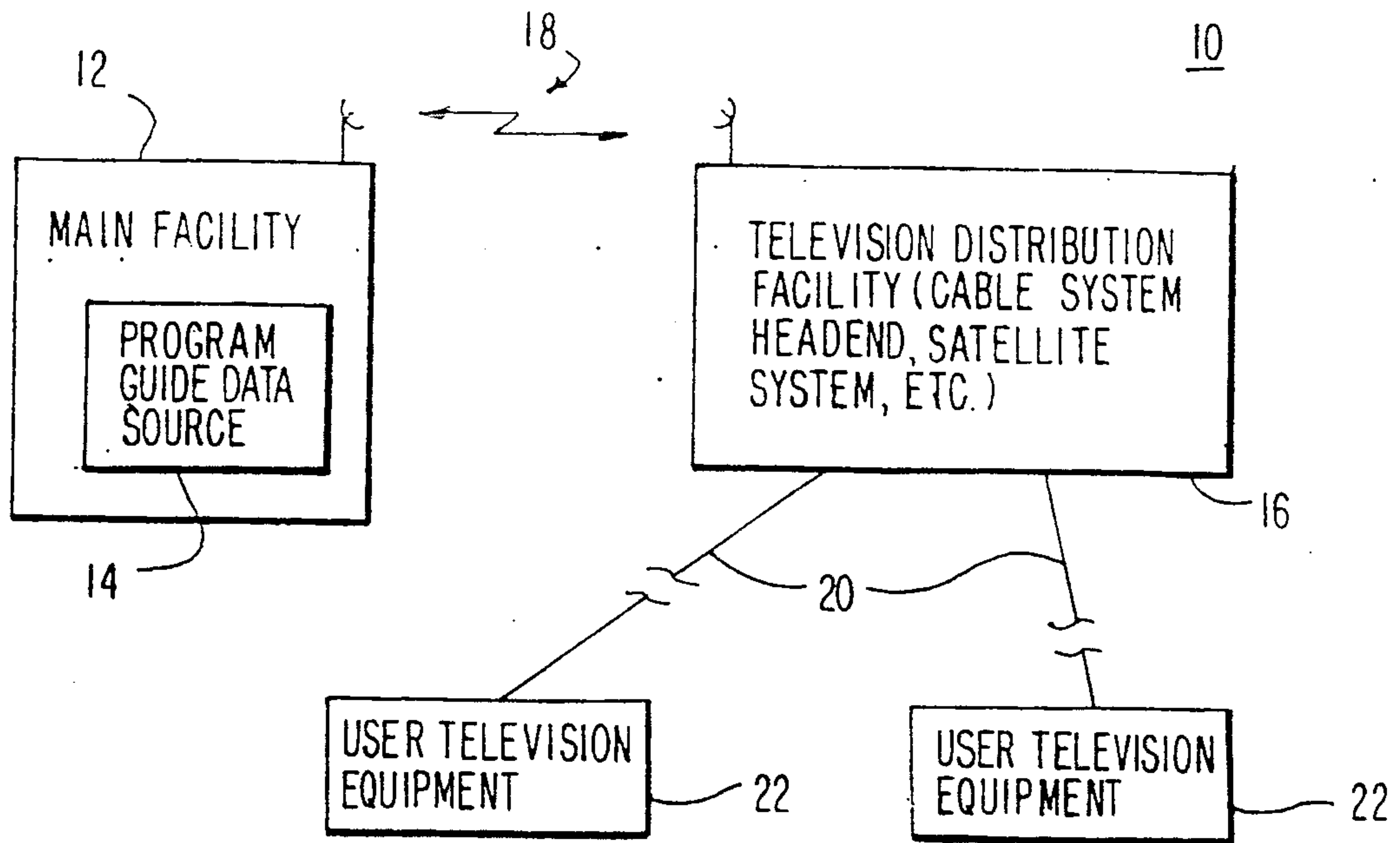


FIG. 1

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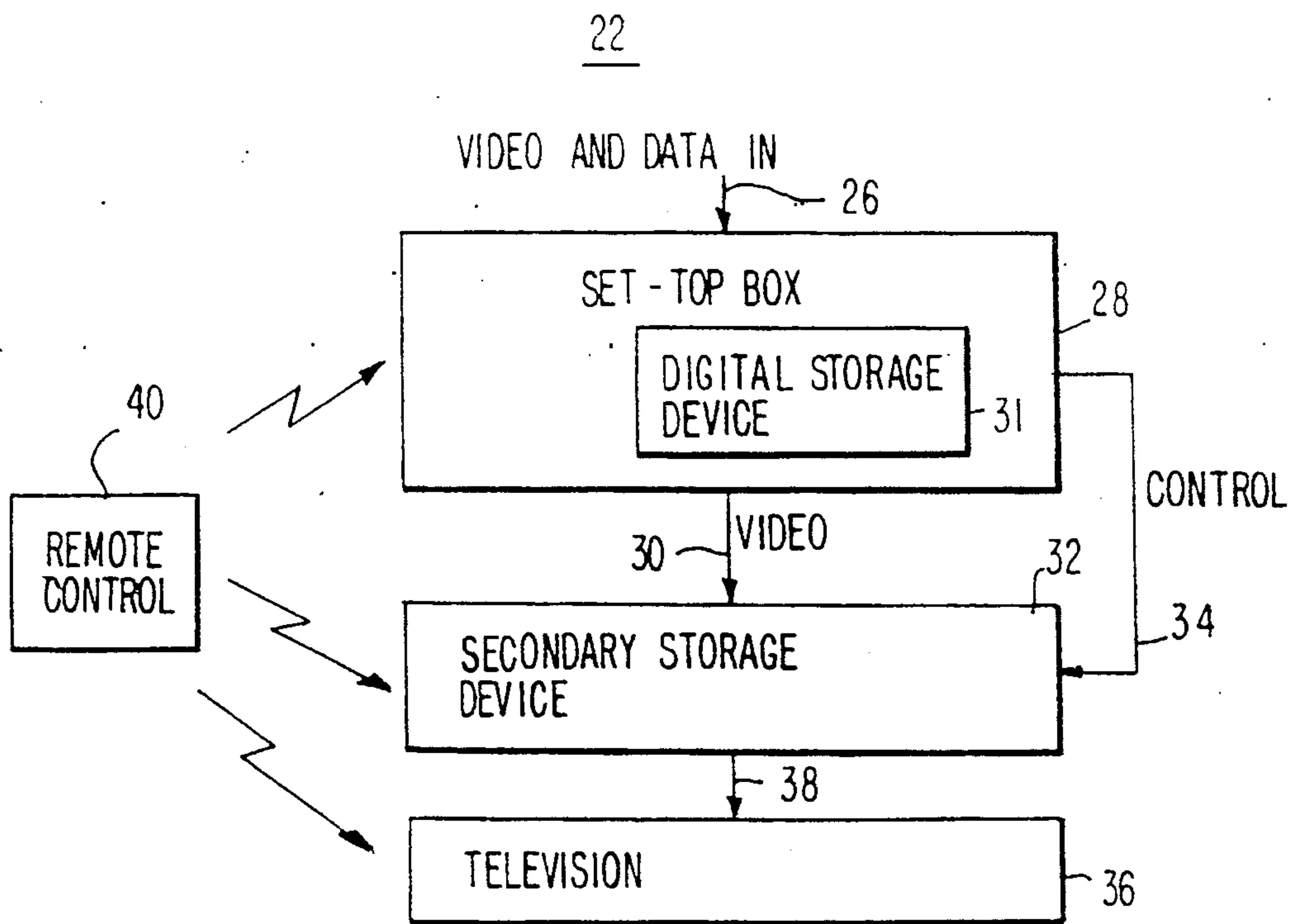
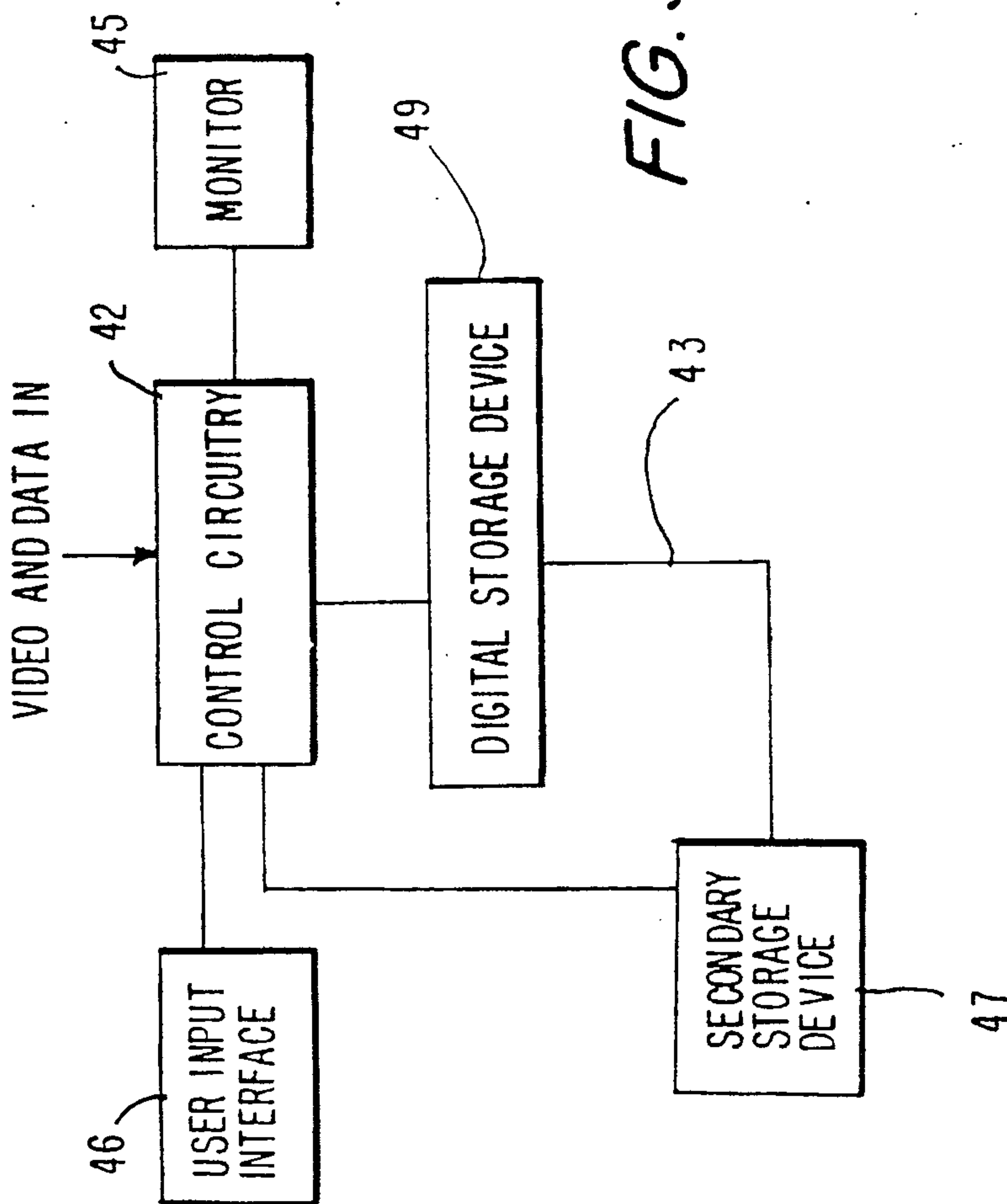


FIG. 2

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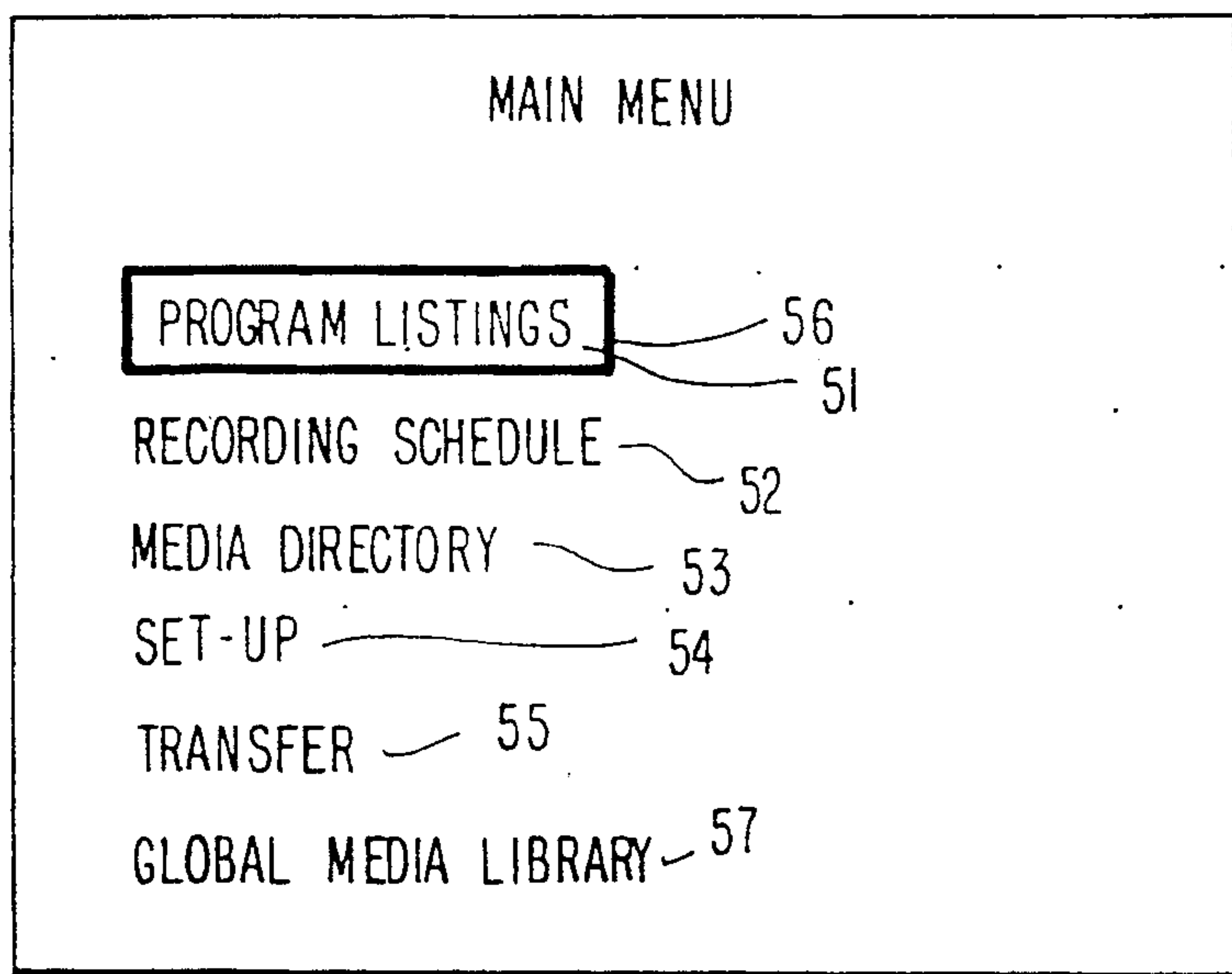


FIG. 4

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FIG. 5a

CHANNEL	7:00PM	7:30PM	8:00PM
2 PUBLIC TELEVISION	PROGRAM 1	PROGRAM 1	PROGRAM 2
3 HBO	PROGRAM 1	PROGRAM 2	PROGRAM 2
4 NBC	PROGRAM 1	PROGRAM 2	PROGRAM 3
5 FOX	PROGRAM 1	PROGRAM 1	PROGRAM 1

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FIG. 5b

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CHANNEL	7:00PM	7:30PM	8:00PM
2 PUBLIC TELEVISION	PROGRAM 1	PROGRAM 2	PROGRAM 3
3 HBO	PROGRAM 1		
4 NBC	PROGRAM 1	PROGRAM 2	PROGRAM 3
5 FOX	PROGRAM 1		

147

147

145

149

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PROGRAM LISTING INFORMATION

TITLE: M*A*S*H*

DESCRIPTION: SITUATION COMEDY ABOUT LIFE IN A MASH UNIT DURING THE KOREAN WAR
EPISODE: 1975 EPISODE 5

CHANNEL: 11

DURATION: 30 MIN.

VIEWED: NO

CAST MEMBERS: ALAN ALDA, LORETTA SWITT

CATEGORY(IES): COMEDY, WAR

LANGUAGE(S): ENGLISH

VIDEO FORMAT: NORMAL TV

OTHER INFORMATION: MASH WEB SITE

FIG. 6

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FIG. 7a

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VOLUME NAME : DISC ONE

EST. TIME REMAINING : 50 MIN

TITLE	CHANNEL	RECORD DATE	RECORD TIME	DURATION
M*A*S*H*	11	5/1/98	8:00PM	30 MIN
TERMINATOR	4	5/2/98	8:00PM	120 MIN
WILD-AFRICA	--18--	--5/3/98--	--7:00PM--	--60 MIN--

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PROGRAM LISTING INFORMATION

TITLE: M*A*S*H*

DESCRIPTION: SITUATION COMEDY ABOUT LIFE IN A MASH UNIT DURING THE KOREAN WAR

USER DESCRIPTION: PARTY EPISODE ~85

EPISODE: 1975 EPISODE 5

CHANNEL: 11

DURATION: 30 MIN.

VIEWED: NO

CAST MEMBERS: ALAN ALDA, LORETTA SWITT

CATEGORY(IES): COMEDY, WAR ⁸⁹

USER CATEGORY(IES): DAD'S FAVORITES ⁸⁶

LANGUAGE(S): ENGLISH

VIDEO FORMAT: NORMAL TV

OTHER INFORMATION: MASH WEB SITE

USER OTHER: ~88

FIG. 7b

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CHANNEL	TIME BEGIN	TIME END
5	8:00 PM	10:00 PM

FIG. 8

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EST. TIME REMAINING: 500 MIN

TITLE	CHANNEL	RECORD DATE	RECORD TIME	DURATION	VIEWED
M*A*S*H*	11	5/11/98	8:00PM	30 MIN	NO
TERMINATOR	4	5/2/98	8:00PM	120 MIN	YES
WILD AFRICA	18	5/3/98	7:00PM	60 MIN	YES

SUPER PROGRAM

91)

95)

FIG. 9

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FIG. 10

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FULL ENTRY INFORMATION

TITLE: M*A*S*H*

DESCRIPTION: SITUATION COMEDY ABOUT LIFE IN A MASH UNIT DURING THE KOREAN WAR

USER DESCRIPTION: PARTY EPISODE

EPISODE: 1975 EPISODE 5

CHANNEL: 11

DURATION: 30 MIN.

VIEWED: NO

CAST MEMBERS: ALAN ALDA, LORETTA SWITT

CATEGORY(IES): COMEDY, WAR

USER CATEGORY(IES): DAD'S FAVORITES 101

LANGUAGE(S): ENGLISH

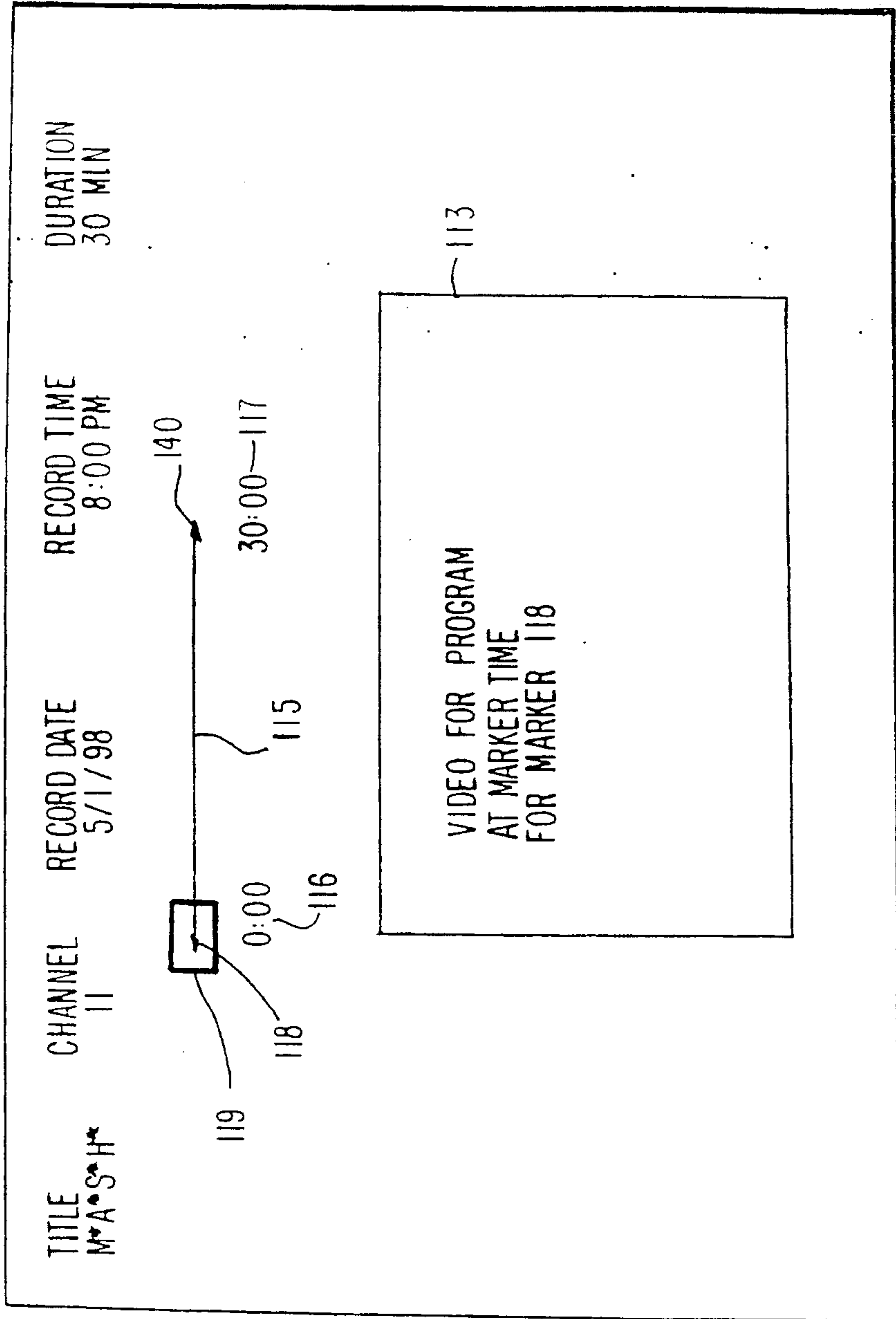
VIDEO FORMAT: NORMAL TV

OTHER INFORMATION: MASH WEB SITE

USER OTHER:

FIG. 11a

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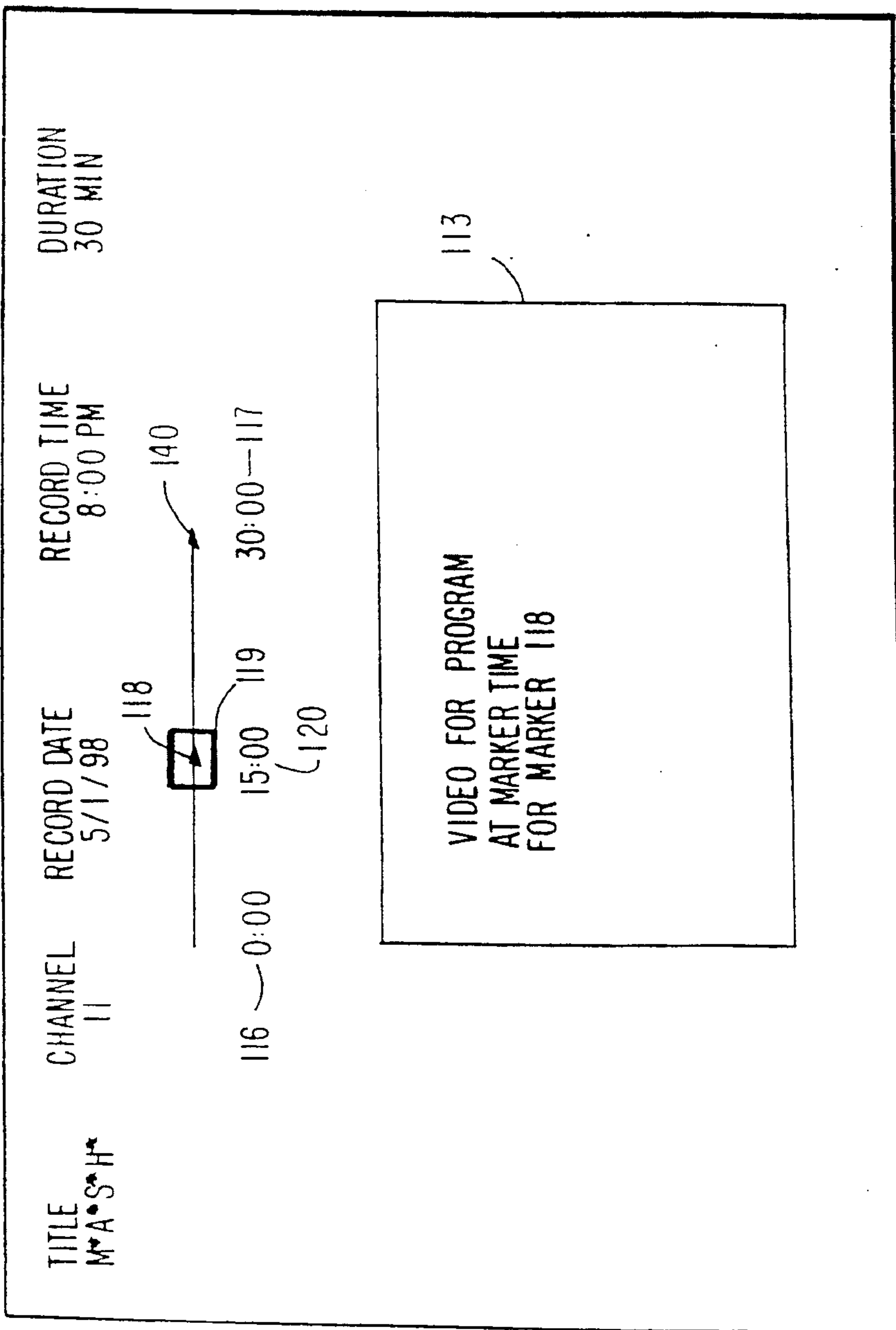


FIG. 11b

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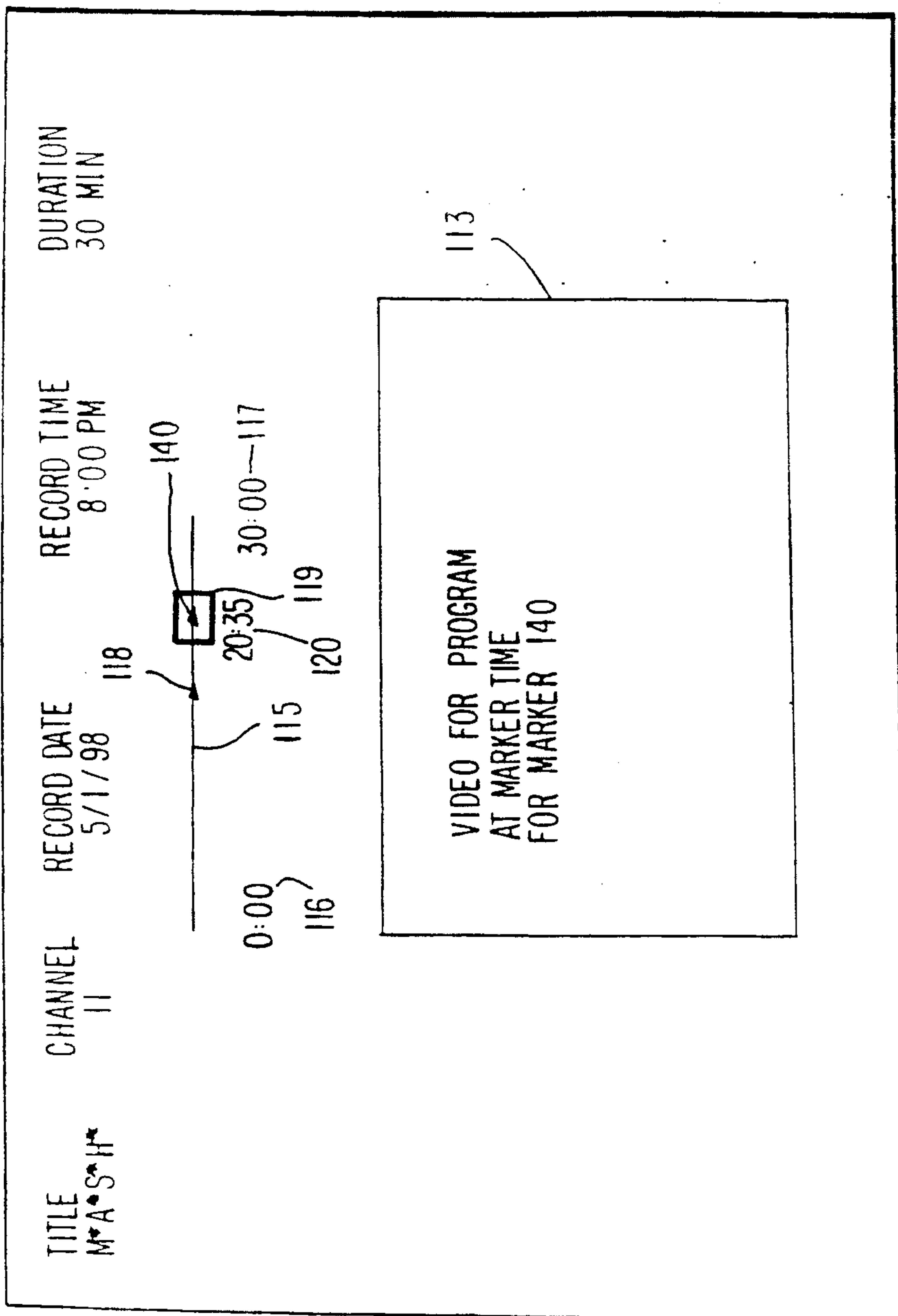
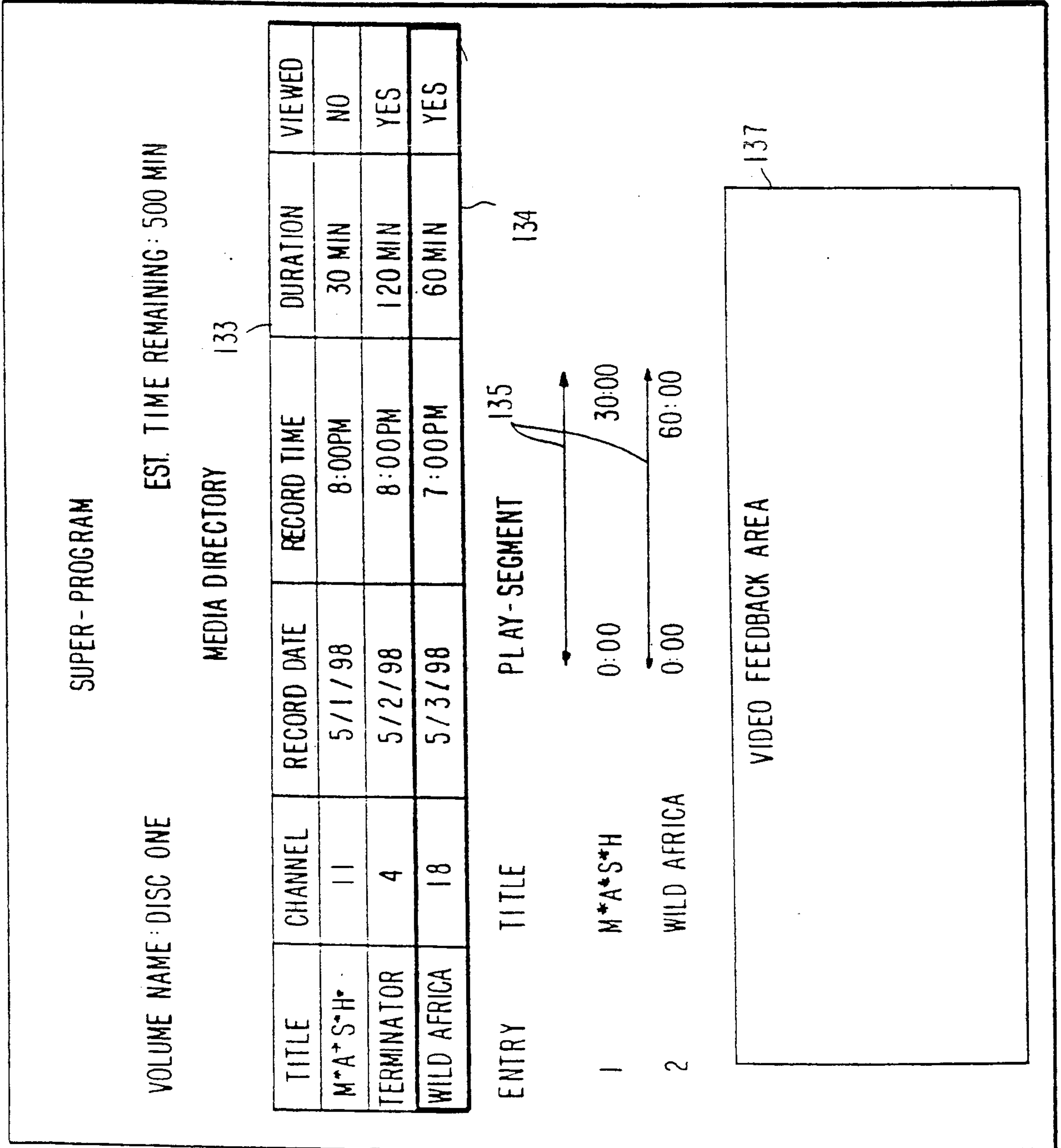


FIG. 11C

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FIG. 12a

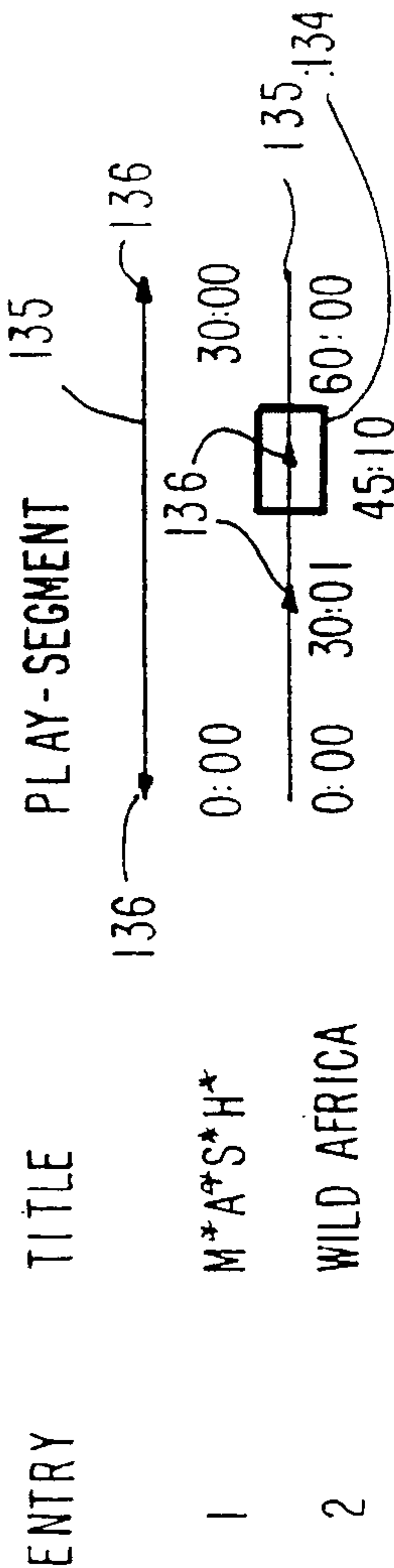
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SUPER-PROGRAM

VOLUME NAME: DISC ONE EST. TIME REMAINING: 500 MIN

MEDIA DIRECTORY

TITLE	CHANNEL	RECORD DATE	RECORD TIME	DURATION	VIEWED
M*A*S*H*	11	5/1/98	8:00PM	30 MIN	NO
TERMINATOR	4	5/2/98	8:00PM	120 MIN	YES
WILD AFRICA	18	5/3/98	7:00PM	60 MIN	YES



VIDEO FEEDBACK AREA

FIG. 12b

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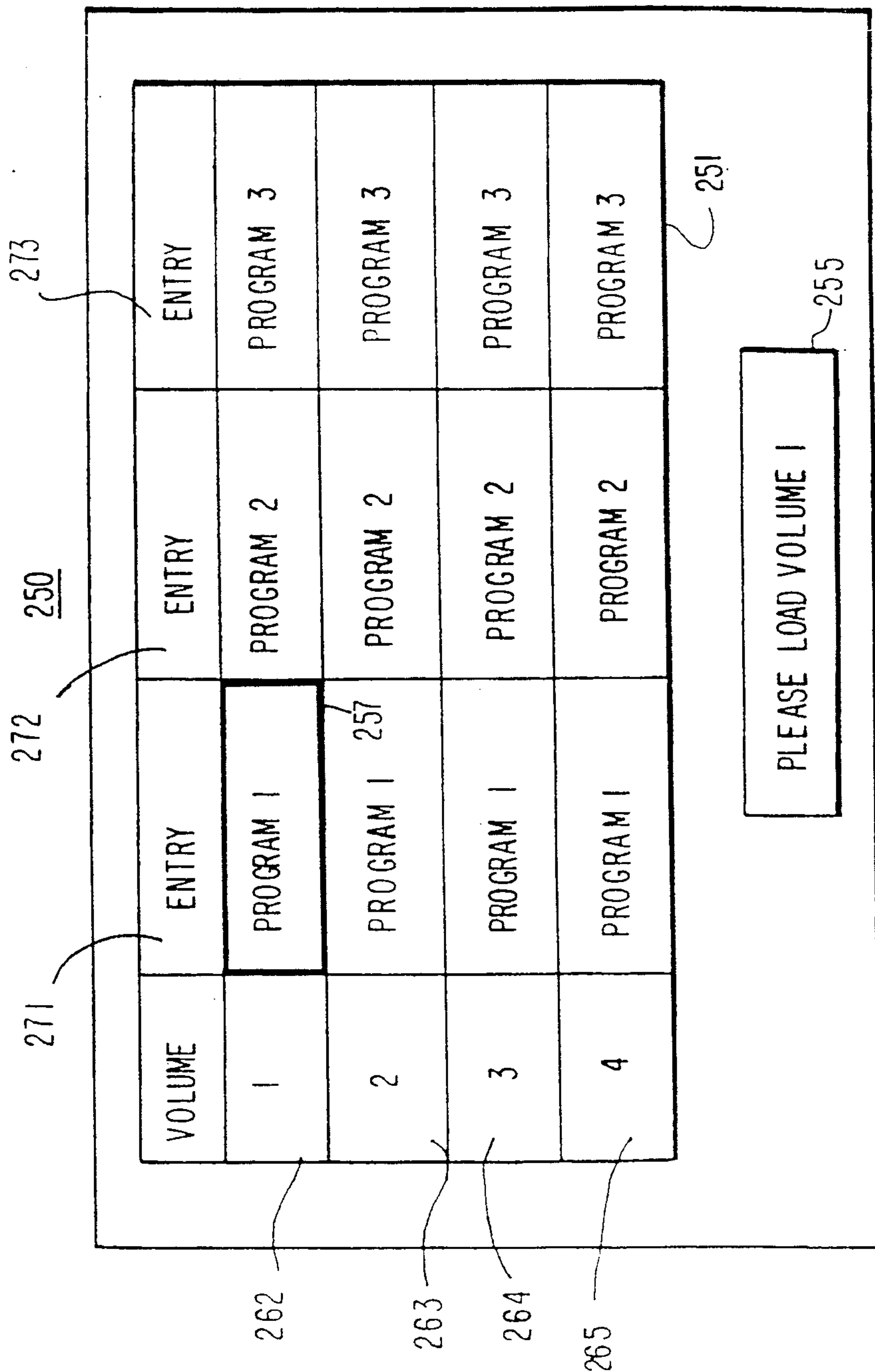


FIG. 13

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SET - UP

ENTRY INFORMATION DISPLAY OPTIONS

TITLE	DESCRIPTION	EPISODE	CHANNEL
RECORD DATE	RECORD TIME	DURATION	CAST MEMBERS
PARENTAL CTRL	CATEGORY(IES)	LANGUAGE(S)	VIDEO FORMAT
OTHER INFO	VIEWED		

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STORAGE OPTIONS

LANGUAGES	ENGLISH	<p style="text-align: center;">AVAILABLE LANGUAGES</p> <p>ENGLISH GERMAN FRENCH ITALIAN SPANISH ALL</p>
VIDEO FORMAT	HDTV	
ENFORCE PARENTAL CONTROL ON STORAGE	YES	
AUTO-ERASE VIEWED ENTRIES	YES	

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PLAYBACK OPTIONS

DEFAULT LANGUAGE	ENGLISH
DEFAULT VIDEO	HDTV
SKIP COMMERCIALS	YES

FIG. 14

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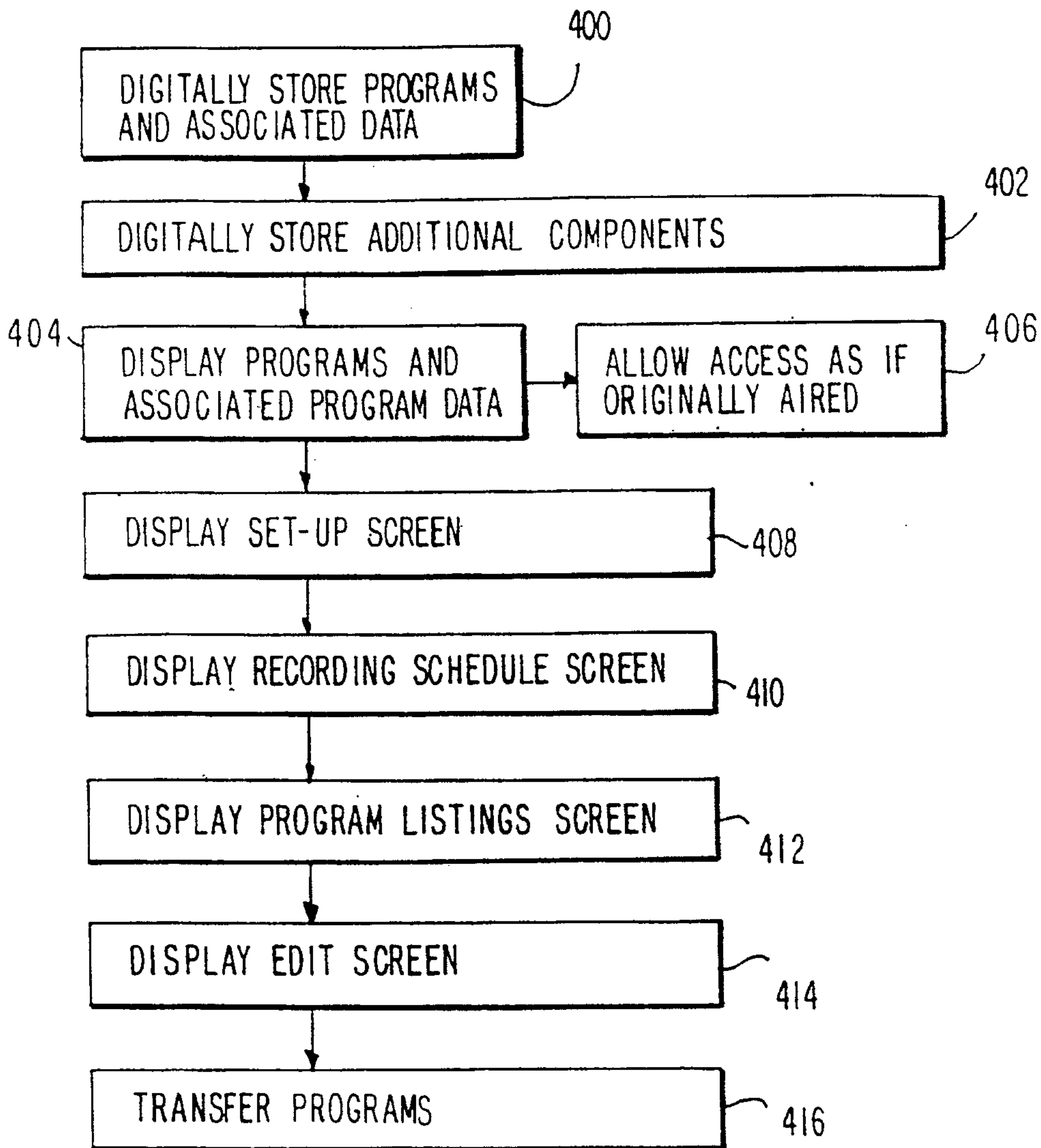


FIG. 15

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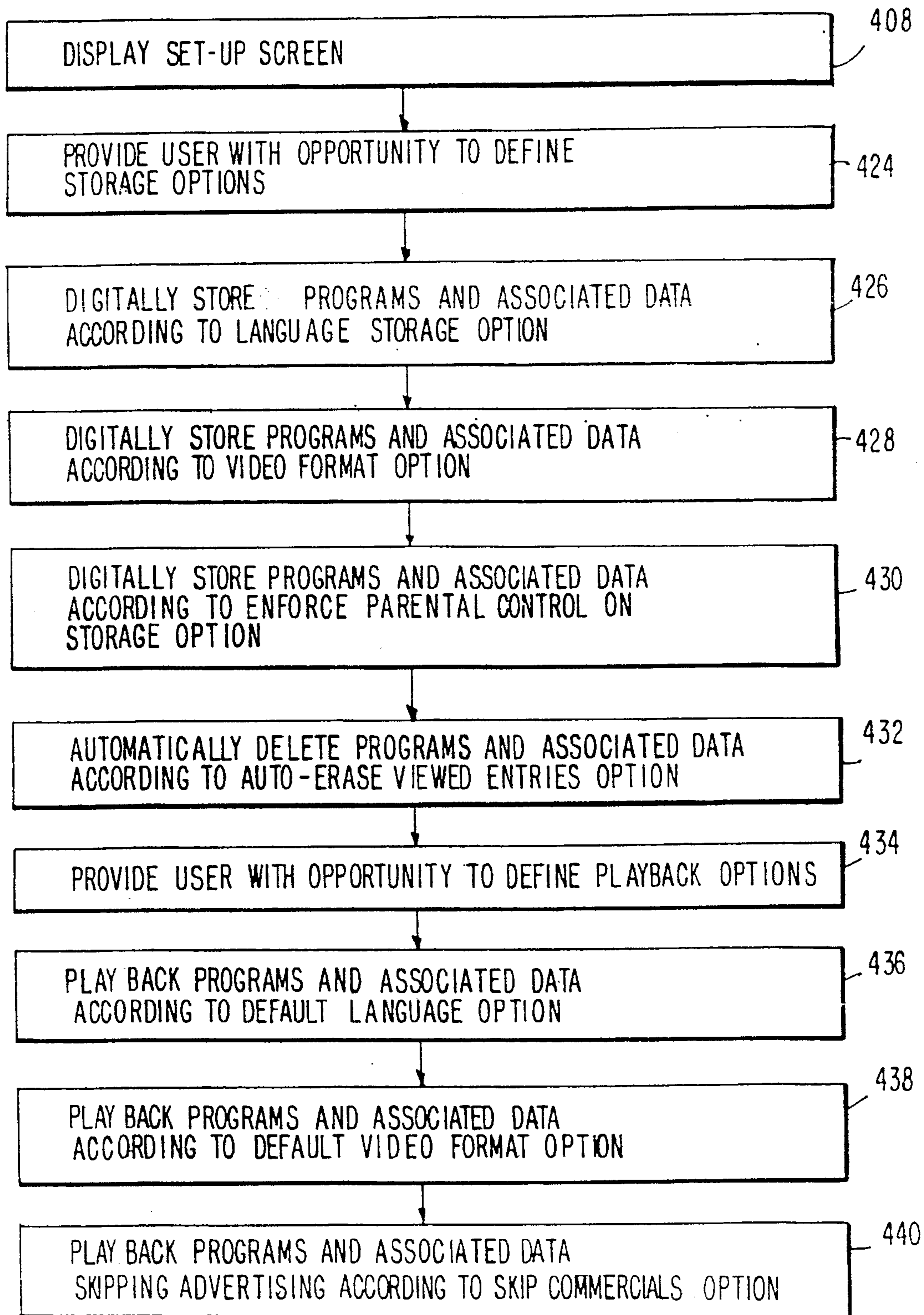


FIG. 16

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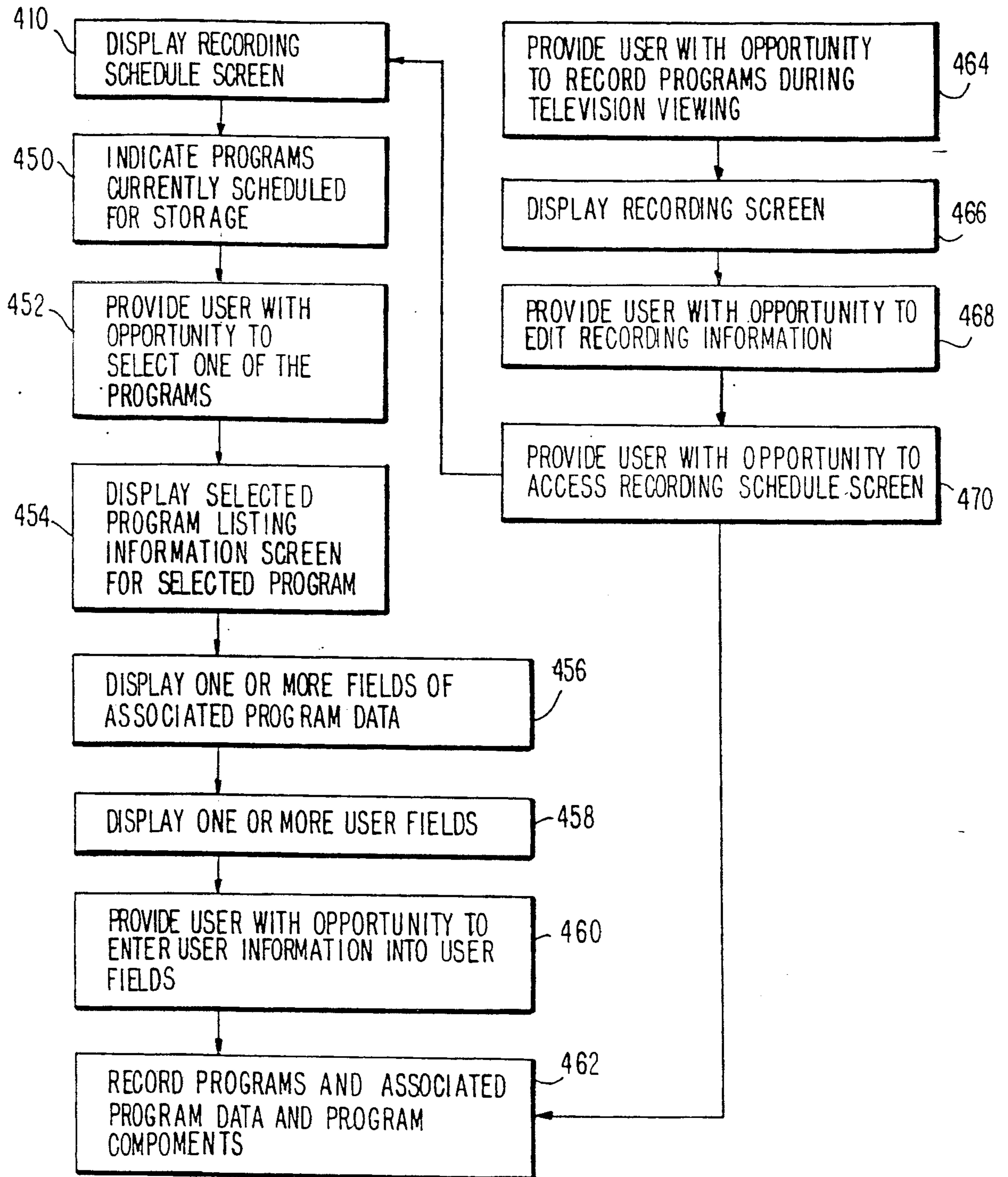


FIG. 17

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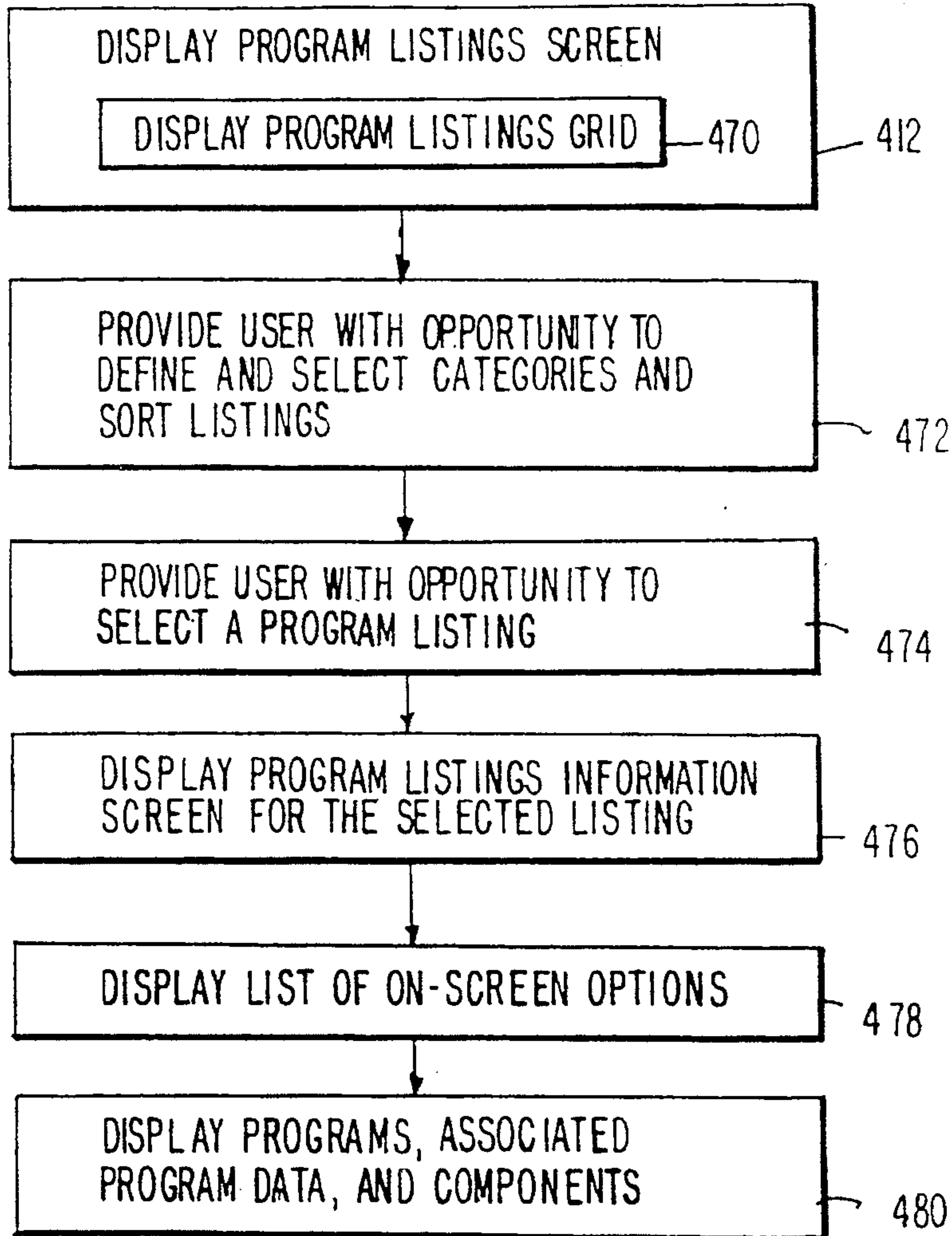


FIG. 18

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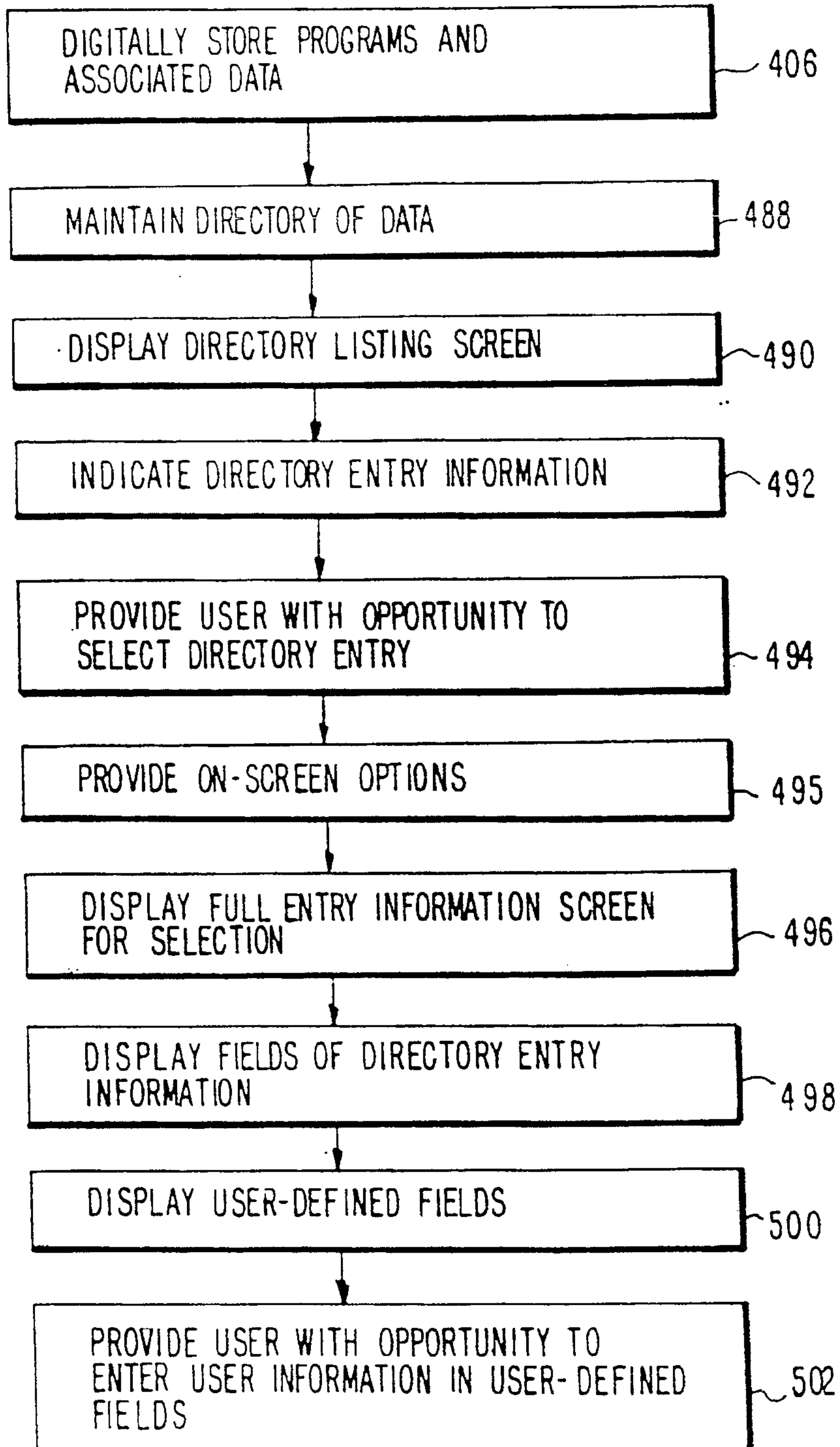


FIG. 19

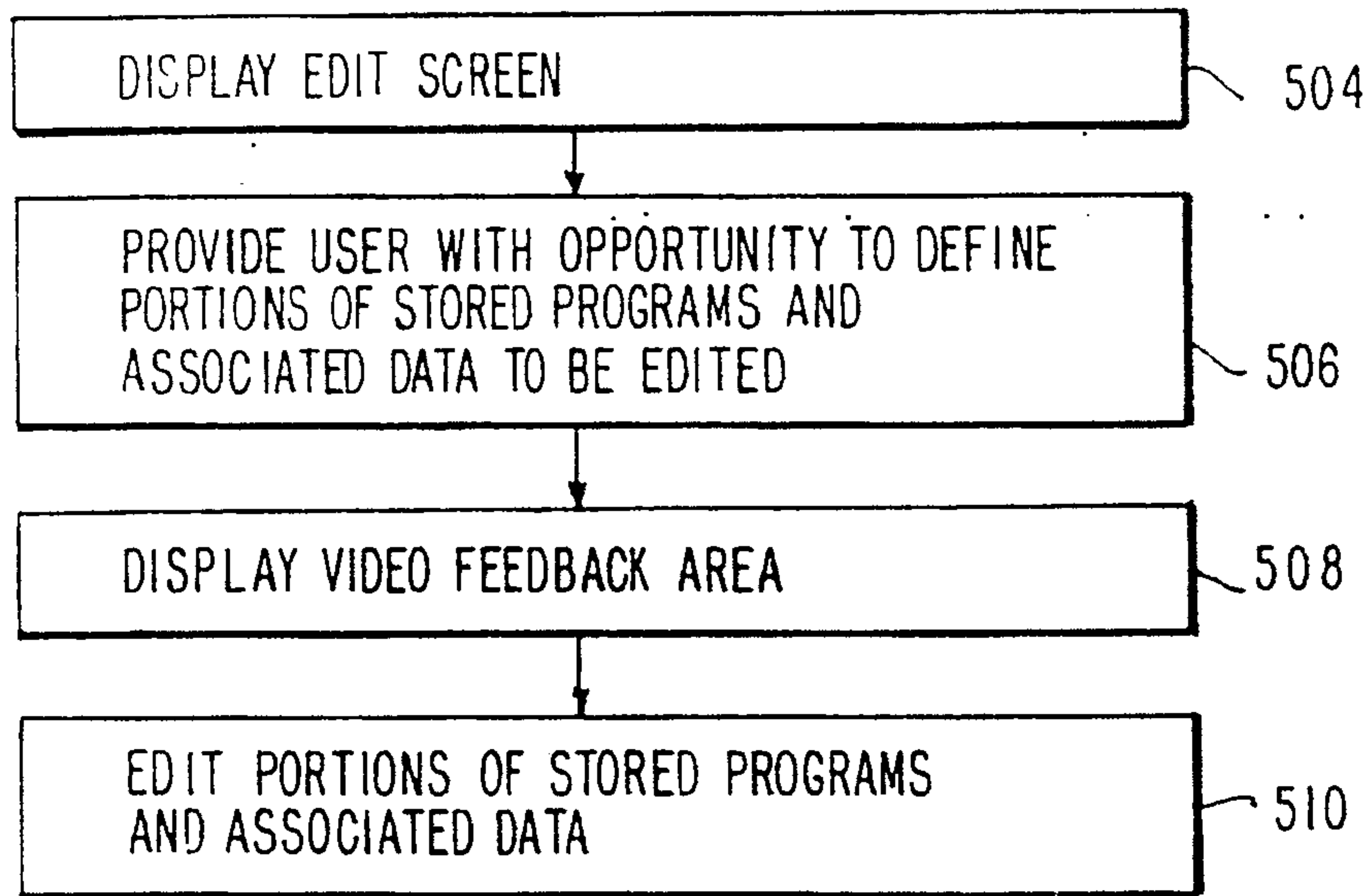
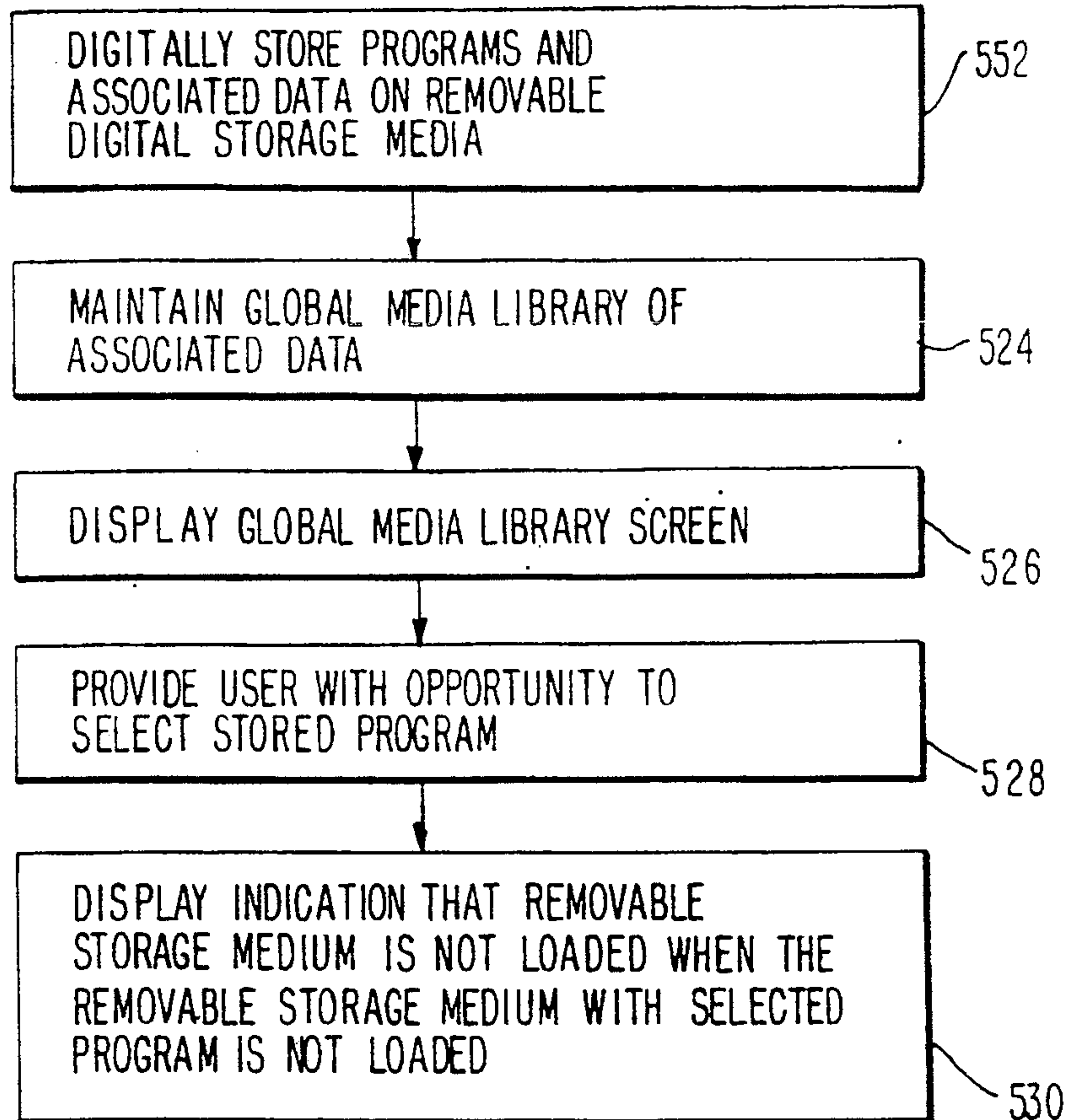


FIG. 20

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**FIG. 21**

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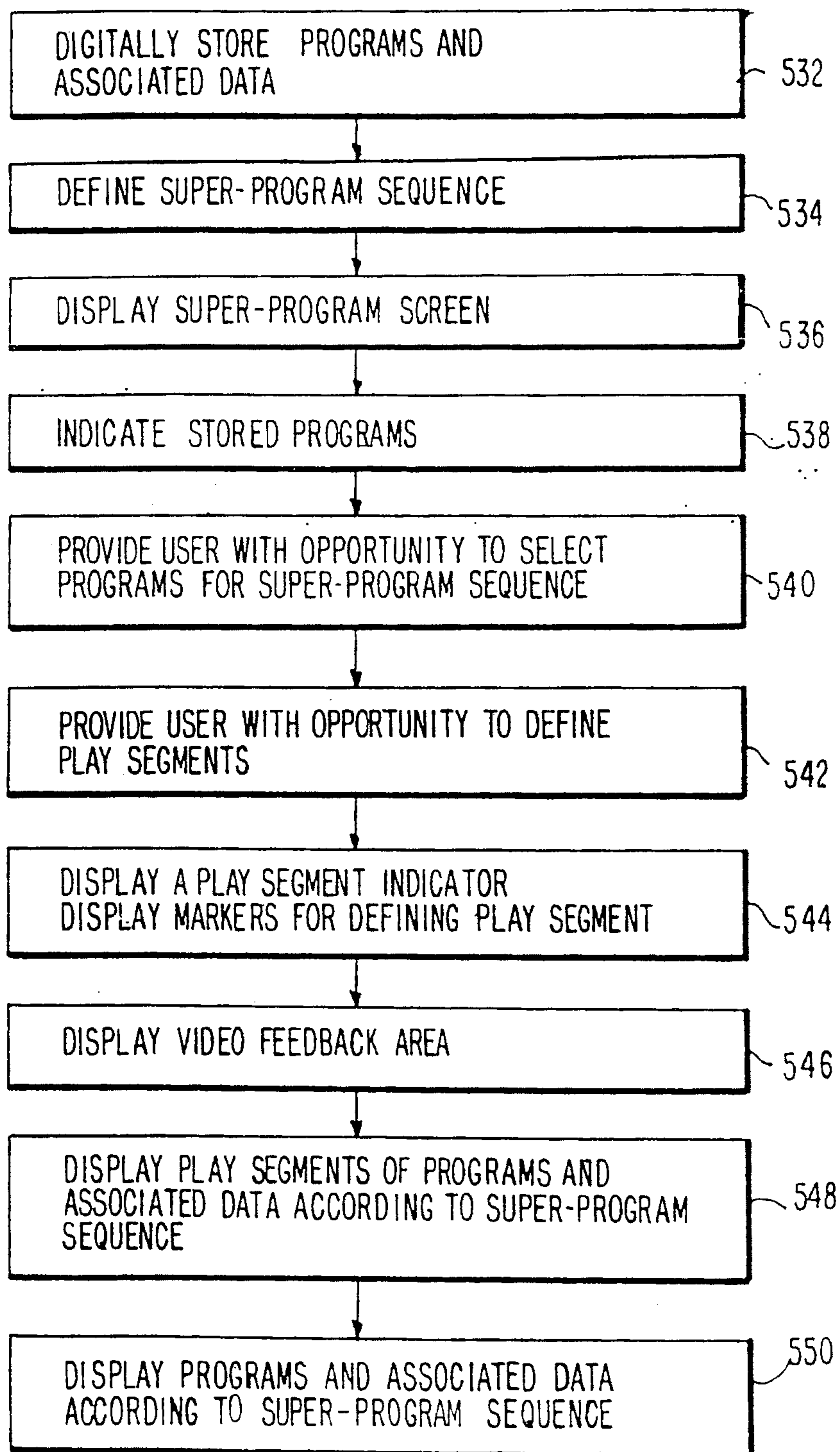


FIG. 22

VOLUME NAME: DISC ONE

EST. TIME REMAINING: 500 MIN

TITLE	CHANNEL	RECORD DATE	RECORD TIME	DURATION	VIEWED
M*A*S*H*	11	5/1/98	8:00PM	30 MIN	NO
TERMINATOR	4	5/2/98	8:00PM	120 MIN	YES
WILD AFRICA	18	5/3/98	7:00PM	60 MIN	YES

SUPER PROGRAM