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(54) **COMPUTER READABLE STORAGE MEDIA PROVIDING A PROGRAM GUIDE VIEWED WITH A PERCEIVED TRANSPARENCY OVER A TELEVISION PROGRAM**

1996, now Pat. No. 5,828,420, which is a continuation of application No. 08/234,060, filed on Apr. 28, 1994, now Pat. No. 5,502,504.

Publication Classification

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(57) **ABSTRACT**

A system interactively controlled by a TV viewer remote superimposes portions of a scroll program guide over a basic programming signal for display on the viewer's display screen. A tuner has an input for receiving TV signals in a plurality of cable channels and an output for passing a signal of any selected one of said channels. A computer has an input for receiving any of a plurality of control signals from the TV viewer remote and an output for controlling the tuner to pass the signal of the selected one of the channels in response to one of the plurality of control signals from the TV viewer remote. The computer receives and stores a scroll input picture image signal containing local program guide data and generates a scroll output picture image signal consisting of at least a portion of the scroll input picture image signal. A combiner superimposes output picture image signal over the passed signal to provide a display signal for input to the viewer's display screen. The computer is responsive to control signals from the remote to cause the combiner to change the weight of the output picture image signal in relation to the passed signal.

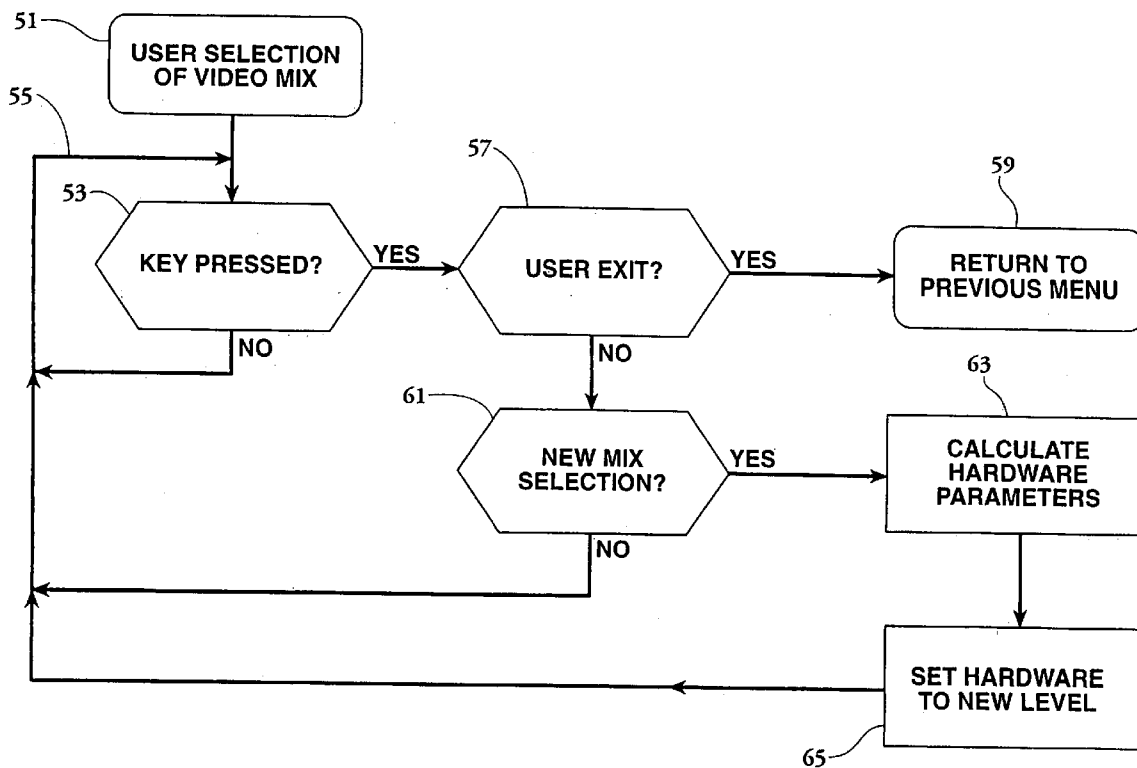
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Related U.S. Application Data

(63) Continuation of application No. 09/887,897, filed on Jun. 22, 2001, now abandoned, which is a continuation of application No. 09/421,953, filed on Oct. 20, 1999, now Pat. No. 6,305,016, which is a continuation of application No. 08/974,944, filed on Nov. 20, 1997, now Pat. No. 6,020,929, which is a continuation of application No. 08/599,143, filed on Feb. 9,



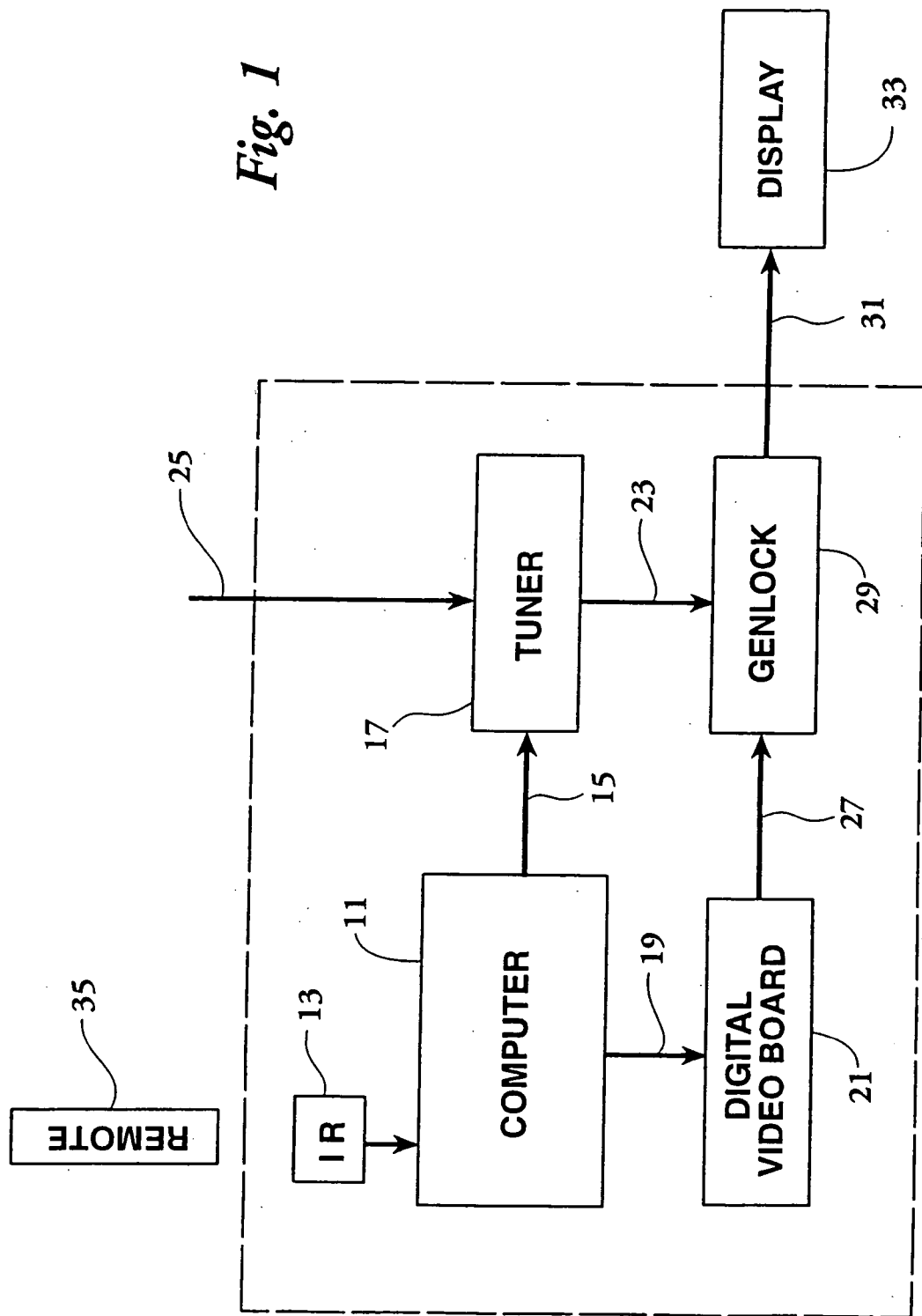
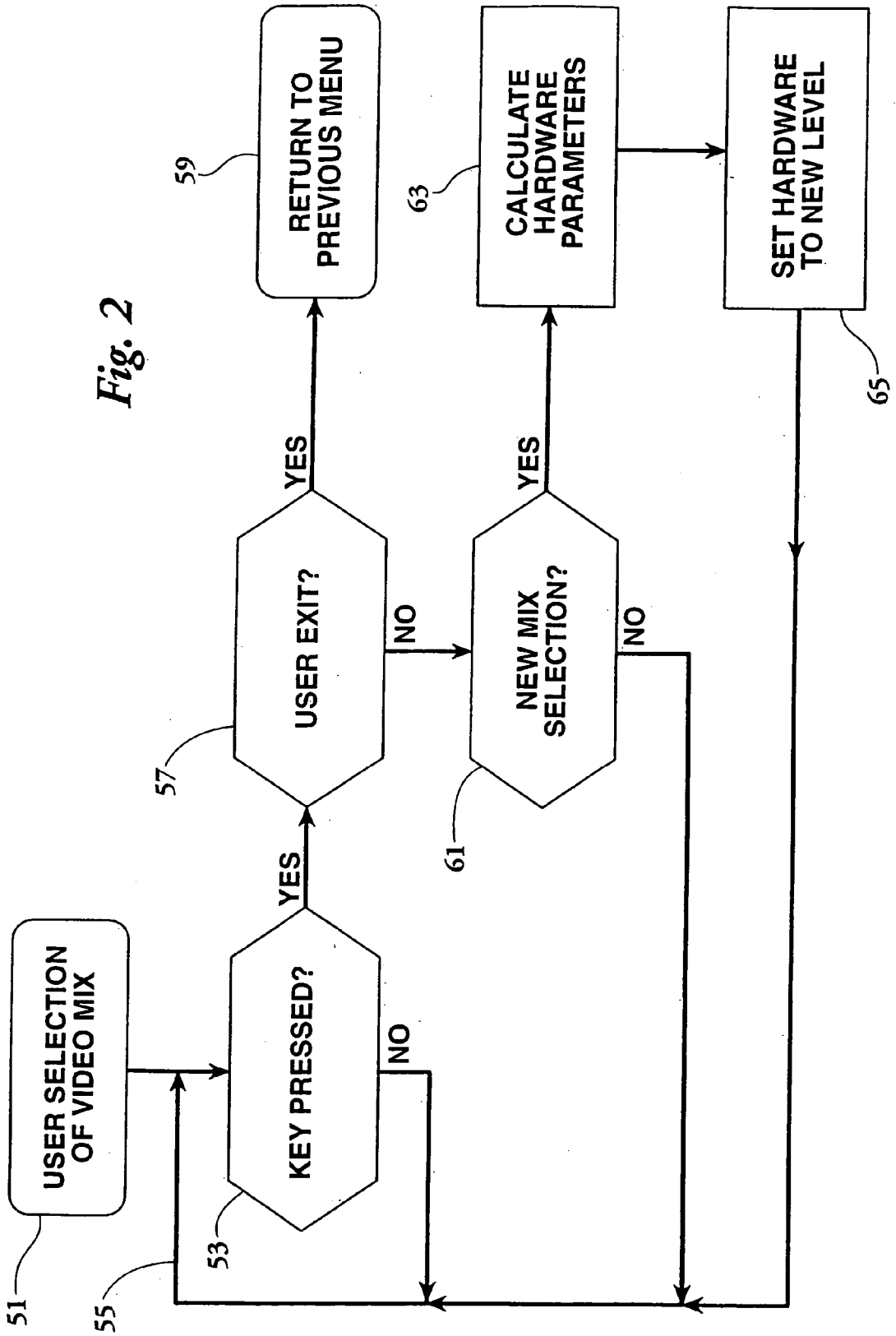


Fig. 2



PREVUE		Thu Feb. 24 4:30
Prgm. Guide	Grid	4:00 PM THU
Feb. 24	4:00 PM	4:30 PM
2 KJRH	CURRENT AFFAIR	EMPTY NEST
3	UNCLE ZEB (CC)	FEATURES (CC)
4 DIS	KIDS INCORPORATE	MICKEY MOUSE CLUB
5 KOKI	ANIMANIACS	BATMAN: THE ANIMATED SER

Fig. 3

PREVUE		Thu Feb. 24 4:30
Video Mbx	Sold	4:00 PM THU
Feb. 24	4:00 PM	4:30 PM
2 KJRH	CURRENT AFFAIR	EMPTY NEST
3	UNCLE ZEB (CC)	FEATURES (CC)
4 DIS	KIDS INCORPORATE	MICKEY MOUSE CLUB
5 KOKI	ANIMANIACS	BATMAN: THE ANIMATED SER

Fig. 4

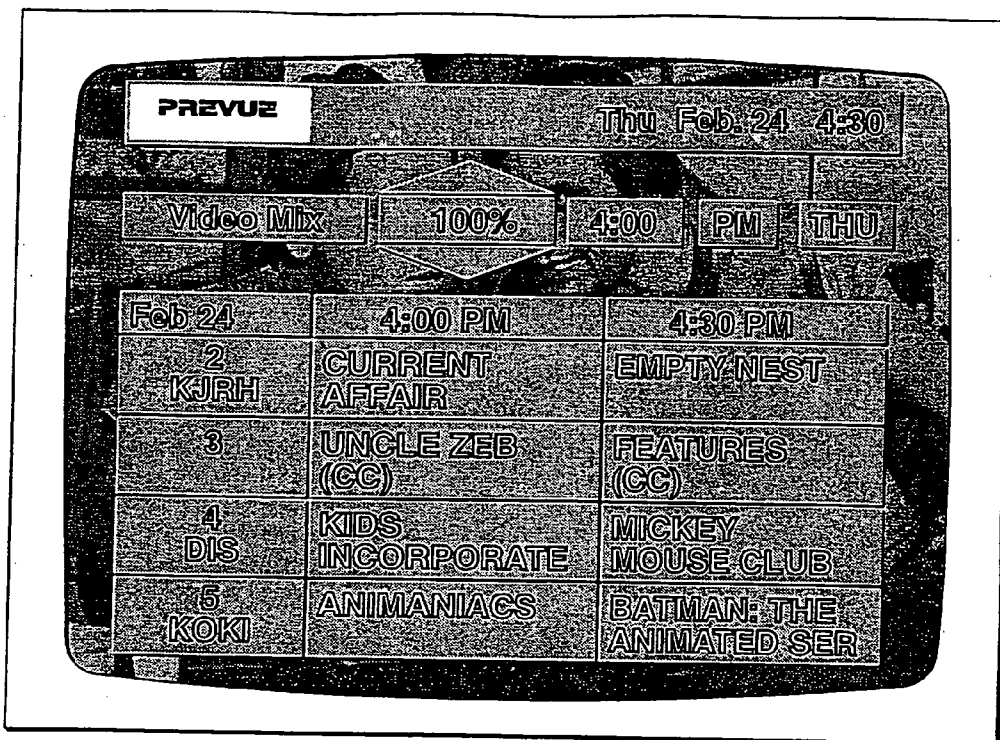


Fig. 5

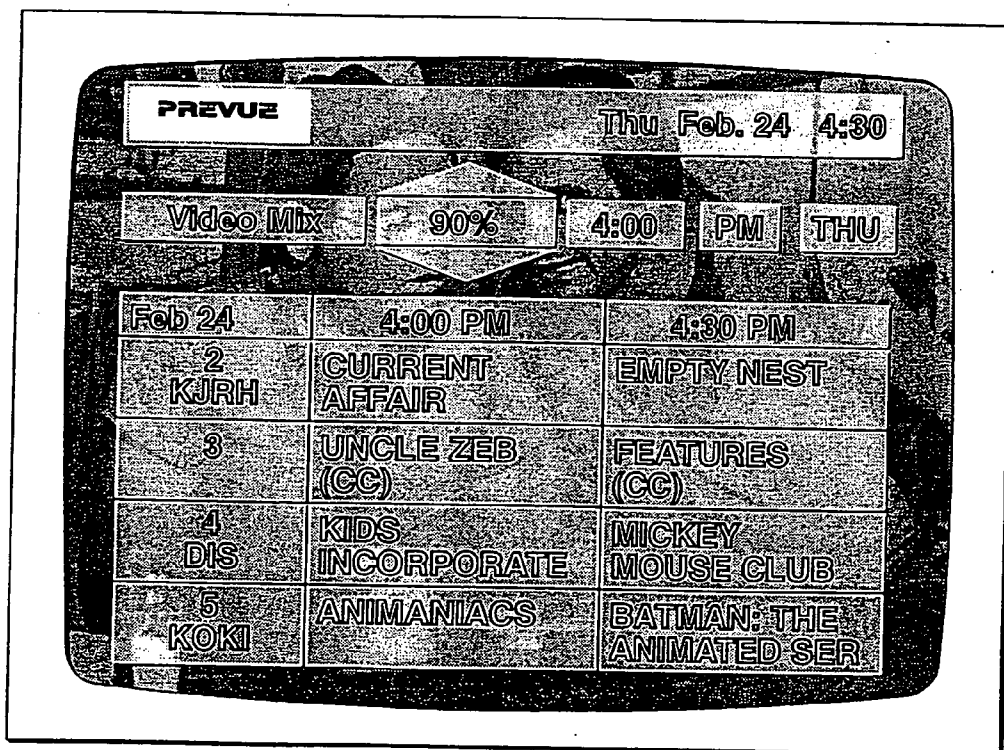


Fig. 6

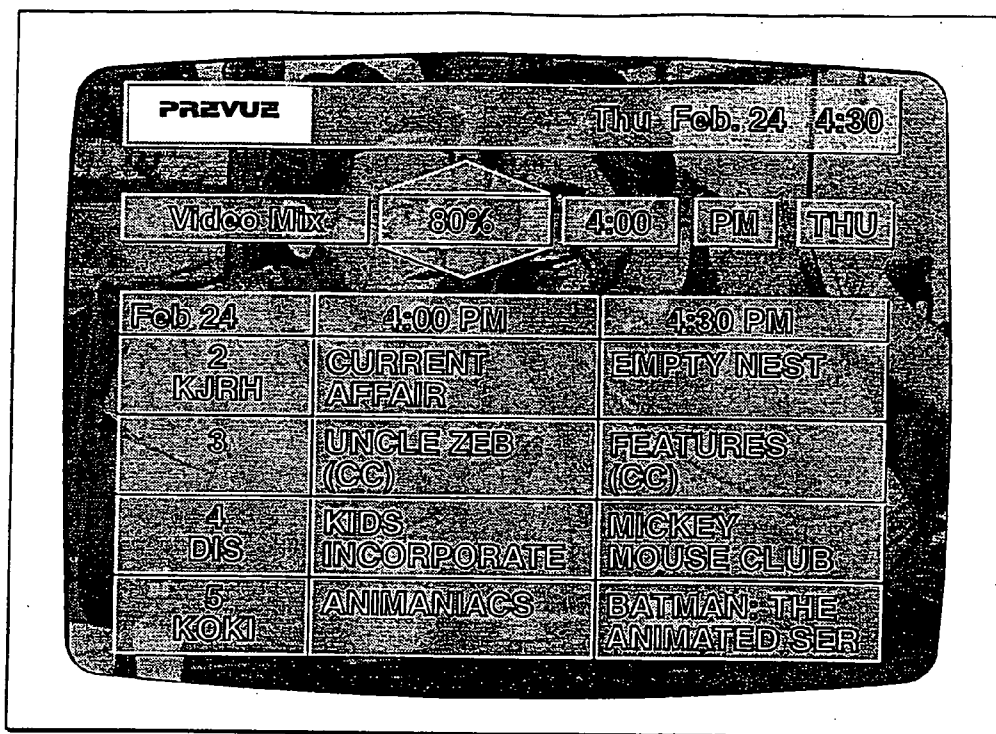


Fig. 7

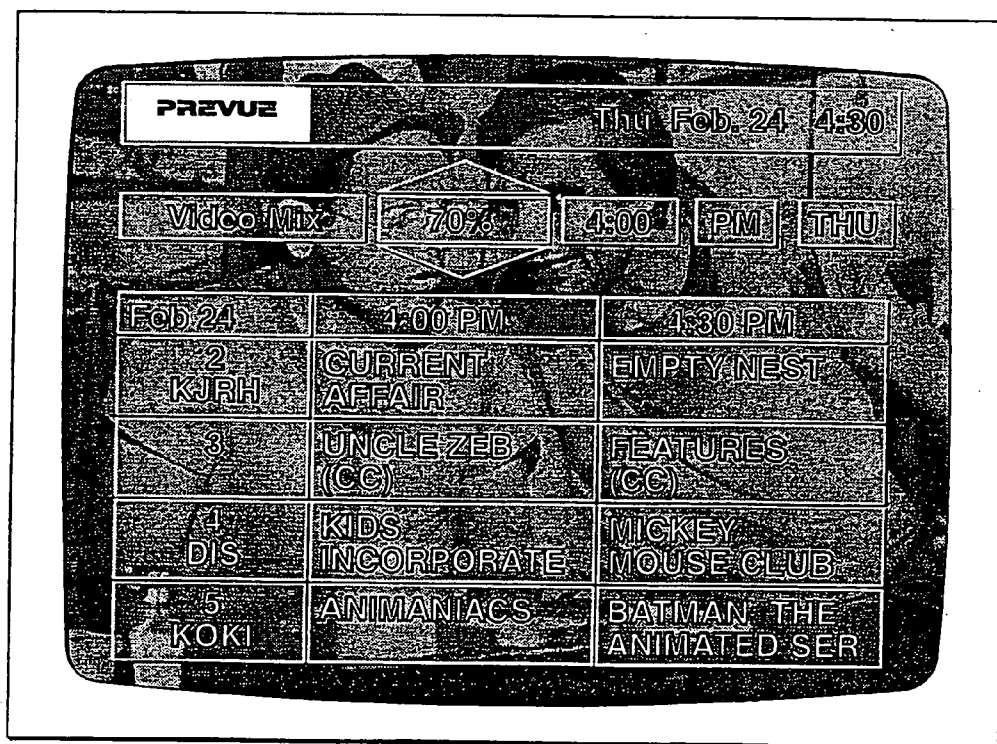


Fig. 8

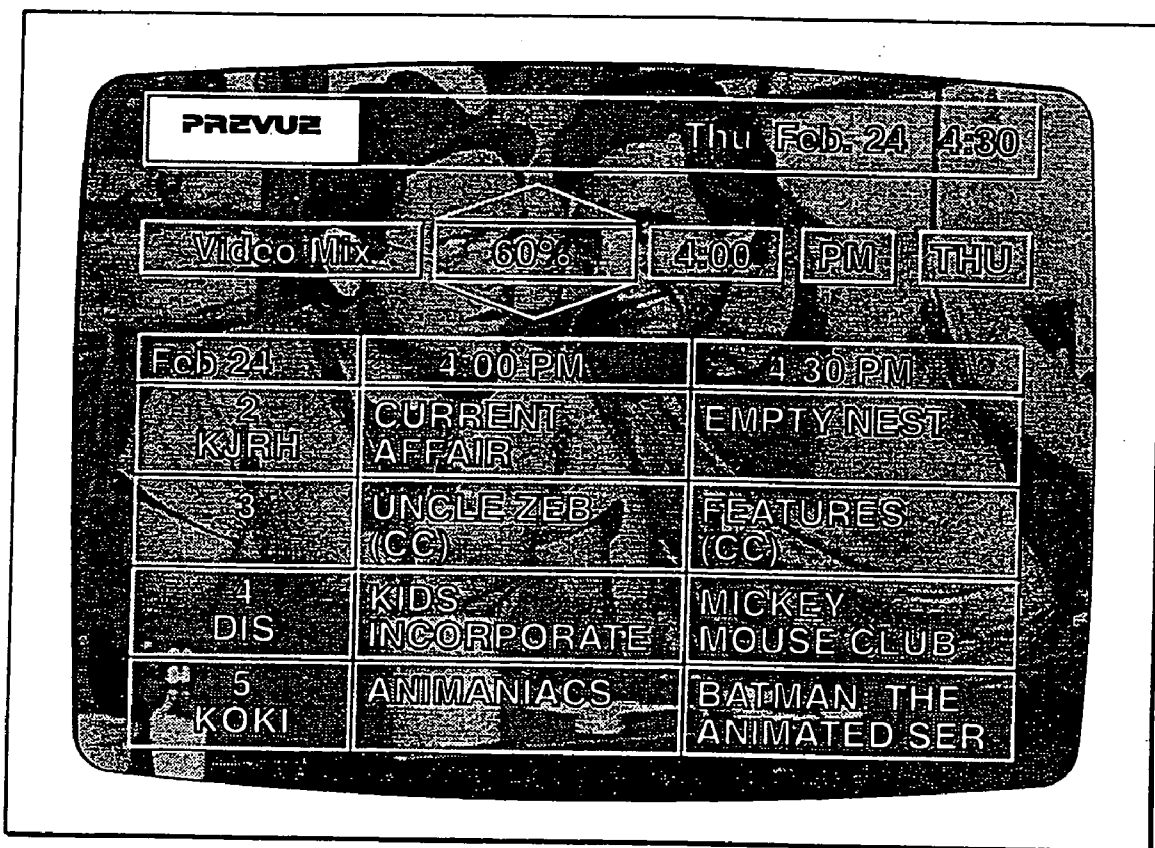


Fig. 9

COMPUTER READABLE STORAGE MEDIA PROVIDING A PROGRAM GUIDE VIEWED WITH A PERCEIVED TRANSPARENCY OVER A TELEVISION PROGRAM

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application is a continuation of U.S. patent application Ser. No. 09/887,897, filed Jun. 22, 2001, which is a continuation of U.S. patent application Ser. No. 09/421,953, filed Oct. 20, 1999, now U.S. Pat. No. 6,305,016, which is a continuation of U.S. patent application Ser. No. 08/974,944, filed Nov. 20, 1997, now U.S. Pat. No. 6,020,929, which is a continuation of U.S. patent application Ser. No. 08/599,143, filed Feb. 9, 1996, now U.S. Pat. No. 5,828,420, which is a continuation of U.S. patent application Ser. No. 08/234,060, filed Apr. 28, 1994, now U.S. Pat. No. 5,502,504.

BACKGROUND OF THE INVENTION

[0002] This invention relates generally to interactive video communications and more particularly concerns viewer controlled channel programming guide displays.

[0003] Programming guide information is presently displayed to the home TV viewer in a non-interactive scroll on a single channel dedicated to programming guide information.

[0004] When the home viewer selects the programming guide channel, viewing of the channel previously selected is interrupted. While the viewer executes best judgment to when to make the change, key portions of the program on the previously selected channel may be missed. This is especially probable in cases of live programming. It is also especially irritating to the viewers not in possession of the controller.

[0005] It is, therefore, an object of this invention to provide a process and in-home scrolling hardware by which a home viewer may interactively control a channel programming guide. Another object of this invention is to provide a process and in-home scrolling hardware in which the scroll can be simultaneously superimposed on and displayed with the programming of any channel accessible to the home viewer. Another object of this invention is to provide a process and in-home scrolling hardware by which a home viewer may control the comparative weight of the programming guide or superimposed signal in relation to the basic programming signal over which it is superimposed.

SUMMARY OF THE INVENTION

[0006] In accordance with the invention, a system interactively controlled by a TV viewer remote control transmitter displays a scroll program guide superimposed on the normal programming displayed on any channel accessible to the viewer's display screen. A tuner receives TV radio frequency or optical transmission signals in a plurality of cable channels and passes a viewer usable signal of any selected one of the channels to a signal combiner. A computer receives any of a plurality of control signals from the TV viewer remote control transmitter. It also controls the tuner to pass the viewer usable signal of any selected channel in response to one of the control signals from the TV

viewer remote control transmitter. It also receives and stores a scroll input picture image signal containing local program guide data and generates a scroll output picture image signal consisting of at least a portion of the scroll input picture image signal. The signal combiner combines the viewer usable signal of any selected channel from the tuner with the output picture image signal from the computer to provide a display signal with the program guide display superimposed over the channel programming display for input to the viewer's display screen. The computer is responsive to a control signal from the remote to change the weight of the superimposed signal in relation to the base or normal programming signal.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Other objects and advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings in which:

[0008] **FIG. 1** is a block diagram illustrating a preferred embodiment of the hardware of the interactive scrolling program guide;

[0009] **FIG. 2** is a flow chart illustrating the basic process and options of the video mix capability of the interactive scrolling program guide;

[0010] **FIG. 3** is a representation of an interactive scrolling program guide menu display;

[0011] **FIG. 4** is a representation of an interactive scrolling program guide display in a video mix mode;

[0012] **FIG. 5** is a representation of the interactive scrolling program guide display in a solid or one hundred percent programming guide condition relative to the base signal;

[0013] **FIG. 6** is a representation of the interactive scrolling program guide display in a ninety percent programming guide condition relative to the base signal;

[0014] **FIG. 7** is a representation of the interactive scrolling program guide display in an eighty percent programming guide condition relative to the base signal;

[0015] **FIG. 8** is a representation of the interactive scrolling program guide display in a seventy percent programming guide condition relative to the base signal; and

[0016] **FIG. 9** is a representation of the interactive scrolling program guide display in a sixty percent programming guide condition relative to the base signal.

[0017] While the invention will be described in connection with a preferred embodiment and process, it will be understood that it is not intended to limit the invention to that embodiment or process. On the contrary, it is intended to cover all alternatives, modifications and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

DETAILED DESCRIPTION OF THE INVENTION

[0018] Turning first to **FIG. 1**, the components of the interactive scroll program guide are illustrated. A computer **11** having a command information receiver, preferably an infrared or radio frequency receiver **13**, provides a control signal **15** to a tuner **17** and a picture image signal **19** to a

digital video board **21**. The tuner **17** converts or demodulates radio frequencies or optical transmissions to a signal usable by the viewer to output a signal **23** selected from a plurality of signals **25** input to the tuner **17** from the cable source (not shown), typically frequency division multiplexed video, audio and data signals transmitted via a coaxial cable, over-the-air radio frequencies or fiber optics. The digital video board **21** converts digital data into a video signal. The tuner output or base programming signal **23** has superimposed thereon a scroll information picture image signal **27** from the digital video board **21** in a genlock signal combiner or overlayer **29**. The combined scroll and TV picture signal **31** is then displayed on a video signal display device such as the display screen **33** of the viewer's television. The combiner **29** permits the viewer to select the weight of the scroll information picture signal **27** in relation to the base programming signal **23**. The viewer sends commands to the receiver **13** to control the operation of the computer **11** by the use of a remote control transmitter, preferably an infrared or radio frequency transmitter **35**. The computer **11** is based on microprocessor and may utilize random access (RAM) and/or read only (ROM) memory. The software necessary to operate the microprocessor may be embedded in the device or downloaded via the cable system to the device.

[0019] The above described interactive scroll program guide components operate in response to the control of the computer **11**. As shown in **FIG. 2**, while the home viewer is watching programming presented on his display **33** in response to the tuner **17** feeding any basic program signal **23** from the input selections **25** to the genlock combiner **29**, the viewer may opt to simultaneously view the programming guide scroll available to the combiner **29** from the computer **11** through the digital video board **21**. The viewer simply presses a predetermined key on the remote **35** to select the program guide display as is illustrated in **FIG. 3**. As shown in **FIG. 3**, the program guide nomenclature (Prgm Guide) will appear on the screen between arrows indicating upward or downward menu access to the possible choices in the program guide routine. By use of the up and down arrows on the controller **35**, the program guide menu can be manipulated to the "video mix" condition, illustrated as step **51** in the routine of **FIG. 2**. The visual appearance of the viewer's display **33** in the "video mix" condition is illustrated in **FIG. 4**. Upon "user selection of video mix" **51**, the computer **11** routine inquires as to whether or not there has been a key pressed **53** requesting that the weight of the program guide signal **27** be changed in relation to the basic programming signal **23**. If the answer to this inquiry is "NO", routing proceeds through a path **55** to continue the "key pressed" inquiry **53**. If the response to the "key pressed" inquiry **53** is "YES", the routine continues to a "user exit" inquiry **57**. If the viewer has opted to exit the video mix routine, a "YES" response to the "user exit" inquiry **57** will result in a "return to the previous menu" **59**. If, however, the response to the "user exit inquiry" **57** is "NO", the routine continues to a new mix selection inquiry **61**. If the response to the "new mix selection" inquiry **61** is "NO", the routine returns via the route **55** to the original "key pressed" inquiry **53**. If the answer to the "new mix selection" inquiry **61** is "YES", the routine proceeds through the calculate hardware parameters step **63** and the "set hardware to new level" step **65**, at which point the genlock combiner **29** automatically performs these functions to establish the weight of the program guide signal **27** superimposed by the genlock combiner **29**

over the basic programming signal **23**. When the hardware is set to its new level **65**, the routine continues through the path **55** to the "key pressed" inquiry **53** to determine whether the viewer has again selected a different percentage of signal mix.

[0020] **FIGS. 5 through 9** illustrate the solid or one hundred percent video mix, ninety percent video mix, eighty percent video mix, seventy percent video mix and sixty percent video mix, respectively, the percentage indicating the weight the programming guide signal **27** superimposed on the basic programming signal **23**.

[0021] If the video mix routine is exited and later reselected, the weight of the programming guide signal **27** will automatically be the weight last opted by the viewer.

[0022] Thus, each individual viewer will be provided with a scroll program guide in which the home viewer can interactively determine whether the program guide scroll should be displayed and, if so, its weight relative to the basic program data.

[0023] Thus, it is apparent that there has been provided, in accordance with the invention, a video mix program guide that fully satisfies the objects, aims and advantages set forth above. While the invention has been described in conjunction with specific embodiments thereof, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art and in light of the foregoing description. Accordingly, it is intended to embrace all such alternatives, modifications and variations as fall within the spirit of the appended claims.

What is claimed is:

1. Computer readable storage media comprising:

instructions for superimposing an interactive program guide with a perceived partial transparency over a television program such that the television program can be at least partially perceived by a television viewer through the interactive program guide.

2. The computer readable storage media of claim 1, wherein the instructions allow variability of a weight of the transparency relative to a display image.

3. The computer readable storage media of claim 2, wherein the instructions allow a display of the percentage of the weight of the transparency.

4. The computer readable storage media of claim 2, wherein the instructions allow a user to vary the weight of the transparency.

5. The computer readable storage media of claim 2, wherein the instructions allow automatic setting of the weight of the transparency upon program guide activation to the weight set at the time of most recent program guide deactivation.

6. The computer readable storage media of claim 2, wherein the instructions present the program guide so that portions of the program guide are opaque relative to the display image.

7. The computer readable storage media of claim 1, wherein the instructions present the program guide in a grid.

8. The computer readable storage media of claim 7, wherein the instructions present one dimension of the grid corresponding to television channels.

9. The computer readable storage media of claim 7, wherein the instructions present one dimension of the grid corresponding to broadcast times.

10. The computer readable storage media of claim 1, wherein the instructions present the program guide as a scrolling program guide.

11. Computer readable storage media comprising:

instructions for superimposing an interactive program guide with a perceived partial transparency over a television program, wherein the instructions allow:

variability of a weight of the transparency relative to a display image; and

a display of the percentage of the weight of the transparency.

12. Computer readable storage media comprising:

instructions for superimposing an interactive program guide with a perceived partial transparency over a television program such that the television program can be at least partially perceived by a television viewer through the interactive program guide while the user interacts with the interactive program guide.

* * * * *