



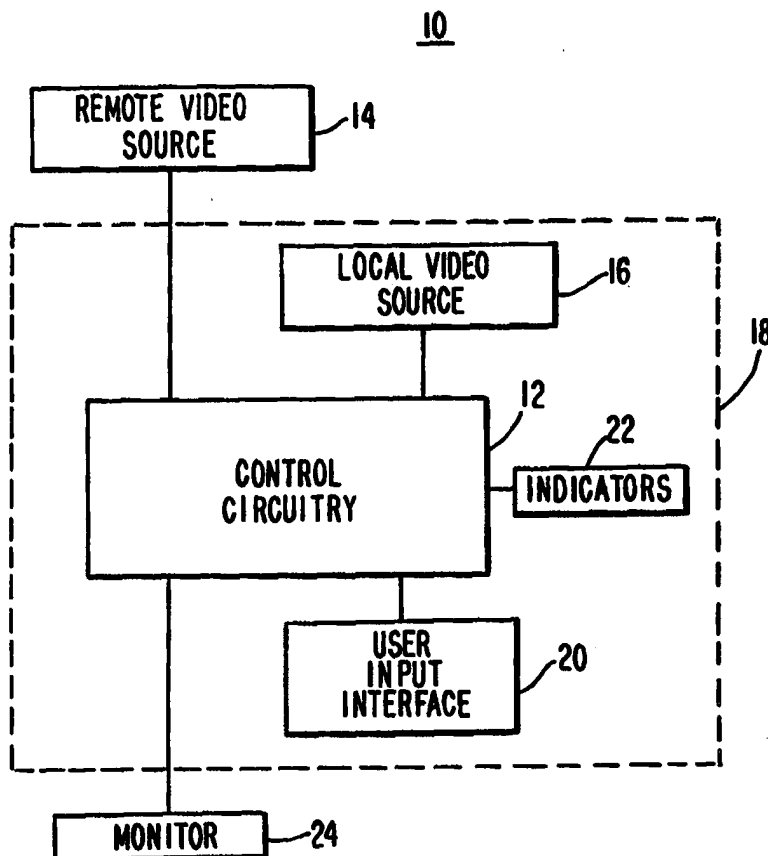
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT) -

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(54) Title: SYSTEM FOR FILTERING CONTENT FROM VIDEOS

## (57) Abstract

A system is provided for filtering out potentially objectionable content from a video. The system is preferably implemented with user equipment such as a set-top box, a dedicated stand-alone box, a video cassette recorder, or circuitry in other television equipment. Videos to be filtered have embedded information that identifies potentially objectionable substitution events. The system determines which substitution events are to be filtered out based on selectable ratings settings. If desired, filtered video images may be replaced with blank video images and filtered audio signals may be replaced with silence or a tone. Filtering may also be accomplished by disrupting the event to be filtered (e.g., by garbling the event). Filtering may involve making substitutions of audio or video information. For example, audio information in a substitution event may be replaced by appropriate audio segments. Video information in a substitution event may be replaced by a video still or by a video clip.



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## SYSTEM FOR FILTERING CONTENT FROM VIDEOS

Background of the Invention

This invention relates to video systems, and more particularly, to filtering out certain events from  
5 videos in real time.

Television viewing is a common leisure time activity. Families gather nightly to watch their favorite programs. Pay-per-view movies and videocassette rentals are also popular sources of  
10 videos for family viewing.

A concern of many parents is that their children are exposed to too much sexually related and violent material. Although many television programs and movies are rated by industry associations, such  
15 ratings are of limited usefulness. Many potentially objectionable events occur in a given program or movie and the objectionable nature of the events varies from event to event. Nevertheless, at most a single rating is provided for each program or movie. As a result,  
20 some programs and movies may be given less mature ratings than they deserve, because the sexual or violent content of a relatively small number of events may be overlooked by a ratings association. Other

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programs and movies may be given more mature ratings than they deserve.

This situation presents parents with a dilemma. If a parent limits a child's viewing to only those works with age-appropriate ratings, the child may feel that the parent is being overly restrictive. If the parent allows the child to view works with more mature ratings, the child will probably be exposed to at least some content that the parent feels is inappropriate for their child.

Adults without children who are disturbed by the amount of sexually related and violent material that they are exposed to are faced with a similar problem. They can either forego viewing certain programs and movies based on subjective and potentially inaccurate ratings information or can be forced to tolerate objectionable events in the programs and movies that they view.

One proposal that addresses concerns about sex and violence on television is to use blocking circuitry (sometimes referred to as the V-chip) to selectively block televised programs based on ratings information. Televisions with such blocking circuitry could be configured to only display television programs with certain ratings. However, this type of system would still be subject to the problems associated with ratings systems that apply a single rating to each television program or movie. Blocking all television programs with mature ratings may be overly restrictive. Allowing programs with mature ratings to be displayed will expose viewers to potentially objectionable material.

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It is therefore an object of the present invention to provide a way in which to selectively filter out potentially objectionable events from television programs and videos.

5 Summary of the Invention

This and other objects of the invention are accomplished in accordance with the principles of the present invention by providing a filtering system in which certain potentially objectionable events in a  
10 video may be filtered out prior to displaying the video on the user's home video equipment. Such potentially objection events (called substitution events) may be scenes in a television program or movie with profane or vulgar language or of a sexual or violent nature. The  
15 filtering system is preferably implemented with user equipment such as a set-top box, a stand-alone setup, a personal computer television (PC/TV), circuitry in a video-cassette recorder or television, etc. Substitution events may therefore be filtered out  
20 locally, under the direction of the user.

The user can select which types of potentially objectionable events are to be filtered out by interactively selecting from among predefined ratings settings in real time. If desired, the user  
25 can customize an existing ratings setting or create a list of objectionable events. Customized ratings settings and user-created lists of objectionable events are preferably stored as user-defined ratings settings, which are preferably among the predefined ratings  
30 settings that the user can interactively select.

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Videos suitable for filtering are provided with substitution event information that identifies potentially objectionable events in the video. For example, substitution event codes may be embedded in a video (e.g., in the vertical blanking interval portion of a video signal or in a side band) to identify each portion of the video that contains profane, vulgar, sexually related, violent, or otherwise objectionable content. During operation, the system extracts the embedded substitution event codes and compares the extracted codes to a predefined list of prohibited substitution event codes contained in a substitution event table. If a given substitution event code is contained in the substitution event table, the substitution event corresponding to that code is filtered out by the system.

Filtering may be accomplished by blocking an audio or video signal for the duration of the undesired substitution event or may involve disrupting the event (e.g., by distorting, attenuating, overlaying, garbling or otherwise disrupting the audio and video signals for the event). Filtering may also be accomplished by substituting audio or video material for the substitution event. The type of substitution that is to be performed for a given substitution event can be defined as a function of substitution attributes contained in the substitution event table and locally selectable configuration parameters. When the system extracts a substitution event code from the unfiltered video and that substitution event code corresponds to a substitution event code in the substitution event table, the corresponding substitution attribute entry

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in the table can be used to define what type of substitution is made.

Audio substitutions may be stored in a library of audio clips. Audio substitutions may also  
5 be made by synthesizing audio signals in real time. Video image substitutions may be stored in a video library of video stills or video clips. The actors who performed an original work may prerecord material to be used during a substitution. For example, an actor may  
10 record an alternate version of a potentially objectionable passage. The alternate version of the passage can be stored in a library for use during substitutions.

Further features of the invention, its nature  
15 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  
20 system in accordance with the present invention.

FIG. 2 is an illustrative substitution event table in accordance with the present invention.

FIG. 3 is a perspective view of an illustrative stand-alone component for filtering  
25 content in accordance with the present invention.

FIG. 4 is a flow chart of steps involved in the process of building a substitution event table in accordance with the present invention.

FIG. 5 is a flow chart showing steps involved  
30 in using the system of the present invention.

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FIG. 6 is a schematic block diagram of an illustrative embodiment of the system of FIG. 1.

Detailed Description of the Preferred Embodiments

An illustrative system 10 in accordance with the present invention is shown in FIG. 1. System 10 filters videos so that objectionable content is not displayed to the viewer. In system 10 unfiltered video signals are provided to control circuitry 12 by remote video source 14 and by local video source 16. Remote video source 14 may be any suitable source of video programming that is remote from user equipment 18. For example, remote video source 14 may be a cable television source connected to control circuitry 12 by coaxial or fiber optic cable. Remote video source 14 may also be a satellite or broadcast television source that transmits television programs to control circuitry 12 through free space. If desired, a file server or other suitable video source may be used to distribute video to control circuitry 12 over a network. Local video source 16, which is preferably part of user equipment 18, may be a videocassette recorder, a laser disk player, a digital video disk (DVD) player, or any other suitable device for playing video media.

The video content from remote video source 14 is typically in the form of television programs or movies. The video content from local video source 16 is typically in the form of movies (e.g., from rented videocassettes). As defined herein, video works in any form (television programs, movies, music videos, instructional videos, etc.) from remote video source 14



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or local video source 16 are referred to as videos.  
Such videos include associated audio information.

User equipment 18 may be based on a set-top box and may contain software to implement certain  
5 features of the invention. User equipment 18 may also be implemented using stand-alone equipment or using a personal computer television (PC/TV). If desired, user equipment 18 may be integrated into a videocassette recorder or television.

10 Regardless of the particular hardware implementation of user equipment 18, a user can input information for controlling user equipment 18 via user input interface 20. Suitable user input interfaces include wireless remote controls, pointing devices such  
15 as mice or trackballs, voice recognition systems, touch screens, buttons, etc. Indicators 22 are used to provide visible indications of the state of user equipment 18 to the user. Suitable indicators 22 include light emitting diodes, lamps, liquid crystal  
20 displays, etc. If desired, the indicator functions of indicators 22 may be provided by using control circuitry 12 to generate on-screen indicator images.

User equipment 18 filters the incoming videos from remote video source 14 and local video source 16  
25 and generates corresponding filtered videos that are provided to monitor 24. Monitor 24 may be a standard television or a dedicated display device with audio capabilities. Audio functions may also be performed by a separate audio setup (not shown).

30 Videos from remote video source 14 and local video source 16 contain embedded codes (called substitution event codes) that identify the location

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and nature of potentially objectionable events (called substitution events). For example, substitution events containing profane or vulgar language or language relating to sex or violence or other objectionable  
5 content can be identified and classified according to the words or type of words that are used. Similarly, sexually explicit, violent, or other objectionable visual substitution events can be identified and classified. A substitution code for a substitution  
10 event may be embedded in a video for the duration of the substitution event. Alternatively, the substitution code may be embedded in the video at the start of the substitution event with an embedded duration code specifying the length of the substitution  
15 event.

Control circuitry 12 preferably contains memory in which a substitution event table is stored. The substitution event table contains a list of substitution event codes corresponding to selected  
20 substitution events (i.e., events a user has decided are to be filtered out from the videos provided to control circuitry 12). Videos may be filtered by substituting default video and audio signals in place of substitution events. For example, audio  
25 substitution events may be replaced by silence or by a tone. Video substitution events may be replaced by a blank video image or a graphic overlay.

In some (e.g., low-end) embodiments of the invention, there are relatively few alternative actions  
30 that may be taken when a substitution event is detected. For example, the only available option when a substitution event is detected may be to blank and

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mute the screen. In such systems, the substitution event table is essentially just a list of events to be filtered. The default action (to blank and mute) is stored as a configuration parameter in control  
5 circuitry 12.

In other (e.g., high-end) embodiments of the invention, each substitution event code in the substitution event table has a corresponding entry called a substitution attribute, which specifies a more  
10 complex type of action to be taken when a substitution event is detected. In this type of configuration, the substitution event table performs a mapping function by specifying what type of substitution should be performed for each particular detected substitution  
15 event. The information used to build substitution event tables may be prestored in circuitry 12, may be obtained from a file or an embedded signal in the video, or may use a combination of these techniques.

An illustrative substitution event table 26  
20 is shown in FIG. 2. Using the entries in table 26, for example, whenever a substitution event code of 2730 is detected in a video, control circuitry 12 of FIG. 1 substitutes a tone for the substitution event. Whenever a substitution event code of 1021 is detected,  
25 control circuitry 12 substitutes word number 272 for the substitution event. Substitute words such as word number 272 may be retrieved from a library or may be synthesized in real time. Whenever a substitution event code of 0212 is detected in a video, silence is  
30 substituted for the substitution event. Whenever substitution event code 6462 is detected, a blank video image is substituted for the substitution event.

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Whenever substitution event code 1392 is detected, substitution image number 10 is substituted for the substitution event. Substitution images such as image number 10 may be still video images or video clips.

5           The substitution attributes shown in substitution event table 26 are illustrative only. Other suitable substitution event attributes that may be used include substitution event attributes that specify the vocal characteristics of word substitutions  
10       and the geometry of video substitutions (e.g., screen coordinates, full screen, half screen, etc.). The audio and video information to be substituted during a substitution event may be stored in memory in control circuitry 12 (FIG. 1). For example, audio samples or  
15       other suitable representations of words may be stored. These stored words can be used when it is necessary to replace words in an audio substitution event. Video samples or other suitable representations of video images (still or moving) may be stored. When it is  
20       necessary to replace visual images during a substitution event, the stored video image may be used.

A user typically interactively selects a desired substitution event table from several available predefined substitution event tables. Predefined  
25       substitution event tables can be assigned ratings settings similar to the those used in standard ratings schemes. For example, a substitution event table that filters out all identifiable sexually related, violent, profane, vulgar, and otherwise objectionable content  
30       may be equated with a "G+" ratings setting. A substitution event table that filters out slightly less objectionable content may be equated with a "G" ratings

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setting. The ratings setting "PG+" may be used to refer to a substitution event table that filters out less objectionable content than the "G" substitution event table and the ratings setting "PG" may be used to  
5 refer to a substitution event table that filters out less than the "PG+" table. A rating setting of "NO RATING" is also possible. The substitution event table for the "NO RATING" setting is empty.

An advantage of the present invention is that  
10 the user may interactively select different ratings settings in real time when, for example, a child enters or leaves the room where the video is being viewed.

A stand-alone system 28 for filtering out substitution events based on a selected ratings setting  
15 is shown in FIG. 3. A user may toggle between various ratings settings by depressing select button 30. When the G+ ratings setting is selected, indicator 32 is illuminated. Similarly, when the G, PG+, or PG ratings settings are selected, respective indicators 34, 36,  
20 and 38 are illuminated. Indicator 40 is illuminated when the ratings setting "NO RATING" is selected. When the ratings setting "NO RATING" is used, the video through system 28 is not filtered. "NO FILTERING AVAILABLE" indicator 42 is illuminated when system 28  
25 fails to detect embedded substitution codes in incoming video.

Steps involved in setting up a substitution event table are shown in FIG. 4. At step 44, the user may select between various ratings settings using user  
30 input interface 20 (FIG. 1). Ratings settings selection step 44 may be performed interactively by the user in real time. Control circuitry 12 (FIG. 1)

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generates a corresponding substitution event table at step 46 (e.g., by locating a predefined substitution event table in memory within control circuitry 12 or other suitable technique). At test 48, it is  
5 determined whether or not the user is to customize the substitution event table. If the user indicates that customization is desired, the user adds and/or deletes substitution event codes and substitution event attributes from the substitution event table. The user  
10 can save the customized substitution event table for future use.

In order for videos to be filtered, videos must include substitution event codes to identify substitution events. Various coding schemes can be  
15 used, ranging from highly specific coding schemes to very general coding schemes. With specific (or explicit) coding, an attempt is made to code as many identifiable profane, vulgar, sexually related, violent or otherwise objectionable words and visual situations.  
20 Such specific coding enhances the objectivity of the filtering process. However, implementing a highly specific coding scheme requires handling large amounts of data. Accordingly, it may be desirable to use a more general coding scheme. Although general coding  
25 schemes result in more subjectivity, general coding schemes uses less information and are therefore less burdensome to implement than highly-specific coding schemes. If desired, various combinations of specific codes and general codes may be used.

30 A first illustrative coding scheme uses general video codes and specific audio coding. Approximately five general video substitution event

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codes may be used to characterize video substitution events. Although such a general video coding scheme is somewhat subjective, the user may change the ratings setting for the filter process interactively in real time as desired. Approximately 500 specific audio substitution events codes may be used to characterize audio substitution events.

A second illustrative coding scheme may use approximately 100 video codes and approximately 500 specific audio codes. This coding scheme uses a hierarchical set of codes for different categories and levels of content. Coding is similar to the Platform for Internet Content Selection (PICS) system that is used for classifying Web pages in the Internet context.

A third illustrative coding scheme uses both specific video coding and specific audio coding. This coding scheme may use approximately 1000 specific video codes and approximately 500 specific audio codes. Specific video codes may be based, for example, on which part of the human body is unclothed or the degree of trauma involved in a violent event.

To code the objectionable language in a video, an encoding technician can refer to the script of the video. If desired, scripts can be electronically processed to facilitate the encoding process. Visual content can be coded by watching the video and identifying which events involve sexually related, violent, or otherwise objectionable events.

Steps involved in the operation of system 10 (FIG. 1) are shown in FIG. 5. At step 52, a video is encoded with substitution event codes using a suitable substitution event encoding scheme. Encoding is

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typically performed by a content provider during a suitable portion of the video production process. Encoding information can be provided as a separate data stream in parallel with the video information on the recording media on which the video is stored. The type of encoding technique that is used depends upon the type of recording media involved (e.g., video tape, videocassette, laser disk, digital video disk, digital file server, etc.) At step 54, the video is transmitted from remote video source 14 (FIG. 1) or is played back using local video source 16 (FIG. 1). At step 56, control circuitry 12 (FIG. 1) receives unfiltered videos and associated substitution event code information (e.g., substitution events codes and possibly substitution event durations) and displays a corresponding filtered video output on monitor 24 (FIG. 1). The filtering that is performed by control circuitry 12 (FIG. 1) at step 56 is based on a comparison between the substitution event codes provided with the video and the substitution event codes listed in the substitution event table. When a substitution event code from the transmitted or played back video matches a substitution event code in the substitution event table, control circuitry 12 (FIG. 1) performs a substitution based on default substitution information or based on substitution attribute information contained in the substitution event table.

An illustrative embodiment of system 10 of FIG. 1 is shown in FIG. 6. In system 58, cable video source 60, satellite video source 62, and broadcast television source 64 are remote video sources. Video player 66, which may be a videocassette recorder, a



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laser disk player, a DVD player, or other suitable video media player, is a local video source. The content of the various video sources is filtered by user equipment 67.

5               Demodulator and switching circuitry 68 of user equipment 67 receives unfiltered videos from sources 60, 62 and 64, and from video player 66 that contain embedded substitution event information. Demodulator circuitry within demodulator and switching  
10   circuitry may be used to demodulate the output signals from sources 60, 62, and 64. Switching circuitry within demodulator and switching circuitry 68 is used to direct signals from video player 66 to signal paths 72 and 74. Demodulator and switching circuitry 68  
15   passes audio signals from the videos to control circuitry 70 via signal path 72. Demodulator and switching circuitry 68 passes video signals and substitution event code information from the videos to control circuitry 70 via signal path 74. If desired,  
20   demodulator and switching circuitry 68 may be provided with suitable digital communications capabilities to handle digital information from sources such as sources 60, 62, 64, and 66.

              A user controls the settings of control  
25   circuitry 70 by entering commands via user input interface 76. Indicators 78 may be used to indicate the state of the control circuitry 70 to the user. For example, indicators 78 may indicate what ratings setting a user has selected. Indications of the  
30   selected ratings setting may also be provided as part of the video display on monitor 80. Control circuitry 70 supplies filtered audio signals to monitor 80 via

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signal path 82 and supplies filtered video signals to monitor 80 via signal path 84.

Control circuitry 70 in FIG. 6 contains a number of functional blocks (e.g., substitution event  
5 information block, filter selection/activation interface block, etc.). The features of these functional blocks can be implemented in hardware, software, or a combination of hardware and software.

The user interacts with control circuitry 70  
10 via user input interface 76. For example, the user may select a predetermined ratings setting, may create a new ratings setting, or may customize an existing ratings setting. Filter selection/activation interface block 86 receives inputs regarding the user's selection  
15 of ratings setting and provides a corresponding substitution event table to substitution event table compare block 88.

Video signals on signal path 74 from demodulator and switching circuitry 68 have associated  
20 substitution event information (e.g., substitution event codes and possibly substitution event duration data). Such substitution event information may be supplied, for example, in the vertical blanking interval of the video signal or in a side band.  
25 Substitution event information extraction block 90 extracts substitution event information from the video signal on signal path 74 and passes this information to substitution event table compare block 88.

In substitution event table compare block 88,  
30 incoming substitution event codes from the unfiltered video that have been extracted by substitution event information extraction block 90 are compared to the

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entries in the substitution event table selected by the user. If it is determined that a given substitution event code is not contained in the substitution event table, no action is taken and the corresponding  
5 substitution event is not filtered out of the video. If it is determined that a given substitution event code is contained in the substitution event table, then substitution event table compare block 88 passes data to substitution control block 92 that informs  
10 substitution control block 92 that the substitution event is to be filtered out of the video. If the substitution event table contains substitution attributes, the substitution attribute corresponding to the given substitution event code is provided to  
15 substitution control block 92.

In addition, substitution event table compare block 88 may pass substitution event information such as substitution duration information to substitution control block if such information was extracted from  
20 the video by substitution event information extraction block 90.

Substitution control block 92 controls the process of filtering out substitution events from the unfiltered video based on the control signals and  
25 substitution attributes received from substitution event table compare block 88. Because the components in control circuitry 70 may require some lead time before a given substitution can be made, a delay time of several video frames may be provided between the  
30 time at which a substitution event code is detected and the time at which control circuitry 70 begins to make the substitution. If delay times are used,

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substitution event information for each substitution event is embedded in the video slightly ahead (i.e., one delay time ahead) of the substitution event.

Substitution control block 92 may use a fixed delay  
5 time or may use delay time information provided to control circuitry 70 as part of the substitution event information extracted by substitution event information extraction block 90.

If a substitution is to be made for an audio  
10 event, substitution control block 92 directs audio substitution generation block 94 to provide an appropriate audio output for the substitution and directs switch block 96 to switch from normal switch terminal 98 to substitution switch terminal 100. If a  
15 tone is desired, substitution control block 92 directs audio substitution generation block 94 to generate a tone. If silence is desired, substitution control block 92 directs audio substitution generation block 94 to generate a null signal. For more complex  
20 substitutions, such as a word substitutions, audio substitution generation block 94 may access a library of prestored audio samples. Audio substitution generation block 94 may also synthesize a word to be substituted using audio synthesizing circuitry. Some  
25 audio substitutions require that the incoming signal be modified. For example, it may be desired to disrupt, attenuate, or slightly garble the input audio. Audio signals to be modified are routed through audio substitution generation block 94 for modification via  
30 signal path 102.

If a substitution is to be made for the video portion of a substitution event, substitution control

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block 92 directs video substitution generation block 104 to provide an appropriate video output for the substitution and directs switch block 106 to switch from normal switch terminal 108 to substitution switch terminal 110. If a particular bit map image is desired, substitution control block 92 directs video substitution generation block 104 to generate that bit map. If a blank screen is desired, substitution control block 92 directs video substitution generation block 104 to generate a null video signal. For more complex substitutions such as a video image substitutions, video substitution generation block 104 may access a library of prestored video clips or video stills. Some video substitutions require that the incoming signal be modified. For example, it may be desired to overlay an image over the existing video image, disrupt the image by inverting the horizontal sync, diminish the video signal level, or garble the input video signal. Video signals to be modified are routed through video substitution generation block 104 for modification via signal path 112.

If it is desired to update the ratings settings, updated data can be provided to filter selection/activation interface 86 via input port 114.

If desired, the system of the present invention can handle digital video sources. Any suitable digital communications scheme may be used to transfer videos from a remote or local digital video source. A digital video stream is provided that may contain embedded substitution event information such as substitution event codes, substitution attributes,

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substitution duration data, and substitution delay information.

In addition, digital capabilities enhance the ability of system 58 to handle customized library files  
5 containing substitutions and synchronization information that allows events in a video to be associated with the substitutions. Such library files may contain, for example, digital audio samples of substitute words or phrases performed by the same  
10 actors that were in the original video. For example, if an actor uses profane language in a passage of a movie, the actor can record an alternate passage using language that is not profane. If the ratings setting selected by the user filters out this type of profane  
15 language, the system may automatically substitute the alternate passage in place of the profane passage. If the actor lip syncs adequately, such substitutions can be almost unnoticeable to the viewer. Library files of alternate video passages may also be provided.

20 The foregoing is merely illustrative of the principles of this invention and various modifications can be made by those skilled in the art without departing from the scope and spirit of the invention.

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What is Claimed is:

1. A system for filtering out potentially objectionable events from a video in real time, comprising:

means for obtaining substitution event information associated with the video that identifies substitution events within the video; and

means for filtering out the substitution events from the video based on the substitution event information.

2. The system defined in claim 1 further comprising means for extracting substitution event codes from the video.

3. The system defined in claim 2 further comprising means for comparing the extracted substitution event codes to substitution event codes in a substitution event table.

4. The system defined in claim 3 further comprising means for filtering out those substitution events from the video whose corresponding substitution event codes are determined to be in the substitution event table.

5. The system defined in claim 3 further comprising means for providing substitution attributes in the substitution event table.

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6. The system defined in claim 1 further comprising means for providing ratings settings that are interactively selected in real time.

7. The system defined in claim 6 further comprising means for customizing the ratings settings.

8. The system defined in claim 6 further comprising means for indicating which ratings setting is selected.

9. The system defined in claim 1 wherein the means for filtering out the substitution events comprises means for making a substitution for a substitution event.

10. The system defined in claim 1 wherein the means for filtering out the substitution events comprises means for generating an audio tone to substitute for a substitution event.

11. The system defined in claim 1 wherein the means for filtering out the substitution events comprises means for attenuating the signal of a substitution event.

12. The system defined in claim 1 wherein the means for filtering out the substitution events comprises means for disrupting the signal of a substitution event.



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13. The system defined in claim 1 wherein the means for filtering out the substitution events comprises means for garbling the signal of a substitution event.

14. The system defined in claim 1 wherein the means for filtering out the substitution events comprises means for overlaying the video signal of a substitution event.

15. The system defined in claim 1 wherein the means for filtering out the substitution events comprises means for substituting audio signals from an audio library for the audio signal of a substitution event.

16. The system defined in claim 1 wherein the means for filtering out the substitution events comprises means for substituting video signals from a video library for the video signal of a substitution event.

17. The system defined in claim 1 further comprising a video source for providing the video.

18. The system defined in claim 1 wherein the means for obtaining the substitution event information further comprises means for extracting substitution event duration information from the video.

19. The system defined in claim 1 wherein the means for obtaining the substitution event

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information further comprises means for extracting substitution event delay information from the video.

20. A method for filtering out potentially objectionable events from a video in real time, comprising the steps of:

obtaining substitution event information associated with the video that identifies substitution events within the video; and

filtering out the substitution events from the video based on the substitution event information.

21. The method defined in claim 20 further comprising the step of extracting substitution event codes from the video.

22. The method defined in claim 21 further comprising the step of comparing the extracted substitution event codes to substitution event codes in a substitution event table.

23. The method defined in claim 22 further comprising the step of filtering out those substitution events from the video whose corresponding substitution event codes are determined to be in the substitution event table.

24. The method defined in claim 22 further comprising the step of providing substitution attributes in the substitution event table.

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25. The method defined in claim 20 further comprising the step of providing ratings settings that are interactively selected in real time.

26. The method defined in claim 25 further comprising the step of customizing the ratings settings.

27. The method defined in claim 25 further comprising the step of indicating which ratings setting is selected.

28. The method defined in claim 20 wherein the step of filtering out the substitution events comprises the step of making a substitution for a substitution event.

29. The method defined in claim 20 wherein the step of filtering out the substitution events comprises the step of generating an audio tone to substitute for a substitution event.

30. The method defined in claim 20 wherein the step of filtering out the substitution events comprises the step of attenuating the signal of a substitution event.

31. The method defined in claim 20 wherein the step of filtering out the substitution events comprises the step of disrupting the signal of a substitution event.

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32. The method defined in claim 20 wherein the step of filtering out the substitution events comprises the step of garbling the signal of a substitution event.

33. The method defined in claim 20 wherein the step of filtering out the substitution events comprises the step of overlaying the video signal of a substitution event.

34. The method defined in claim 20 wherein the step of filtering out the substitution events comprises the step of substituting audio signals from an audio library for the audio signal of a substitution event.

35. The method defined in claim 20 wherein the step of filtering out the substitution events comprises the step of substituting video signals from a video library for the video signal of a substitution event.

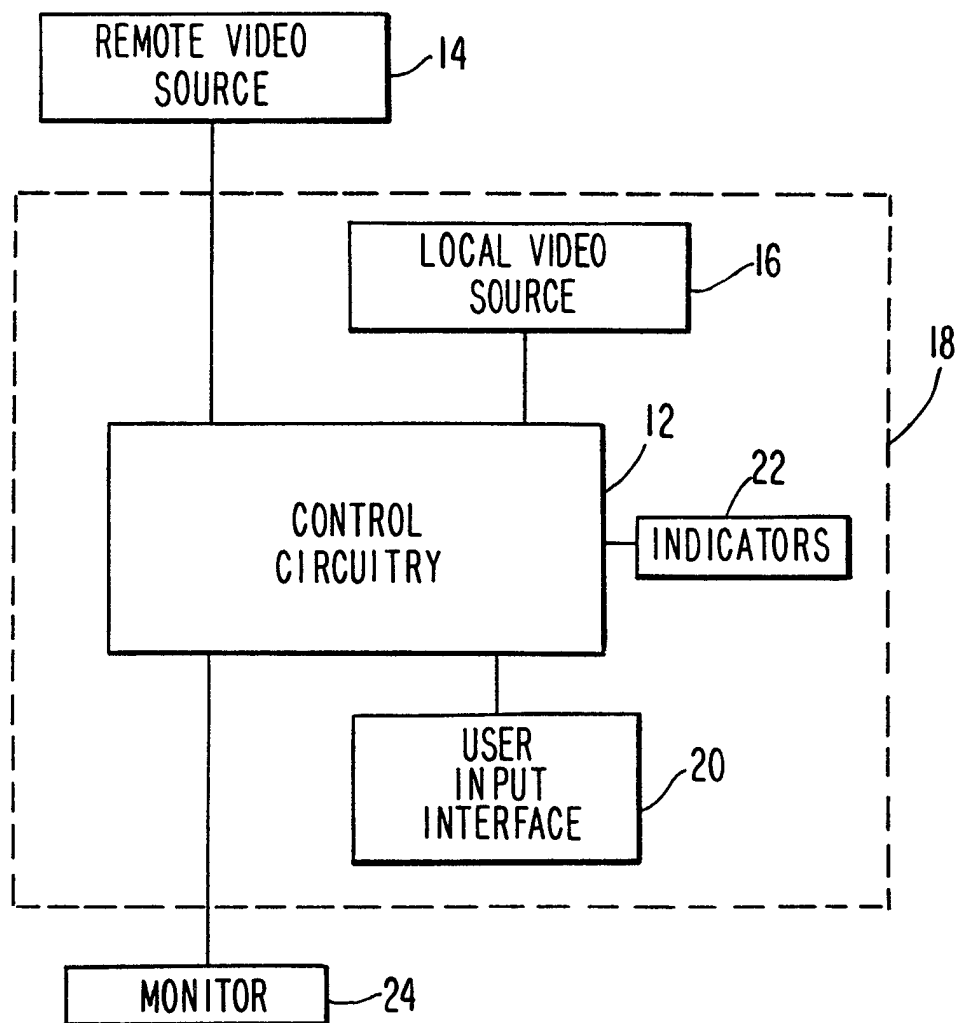
36. The method defined in claim 20 further comprising the step of providing the video with a video source.

37. The method defined in claim 20 wherein the step of obtaining the substitution event information further comprises the step of extracting substitution event duration information from the video.

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38. The method defined in claim 20 wherein the step of obtaining the substitution event information further comprises the step of extracting substitution event delay information from the video.

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10*FIG. 1*

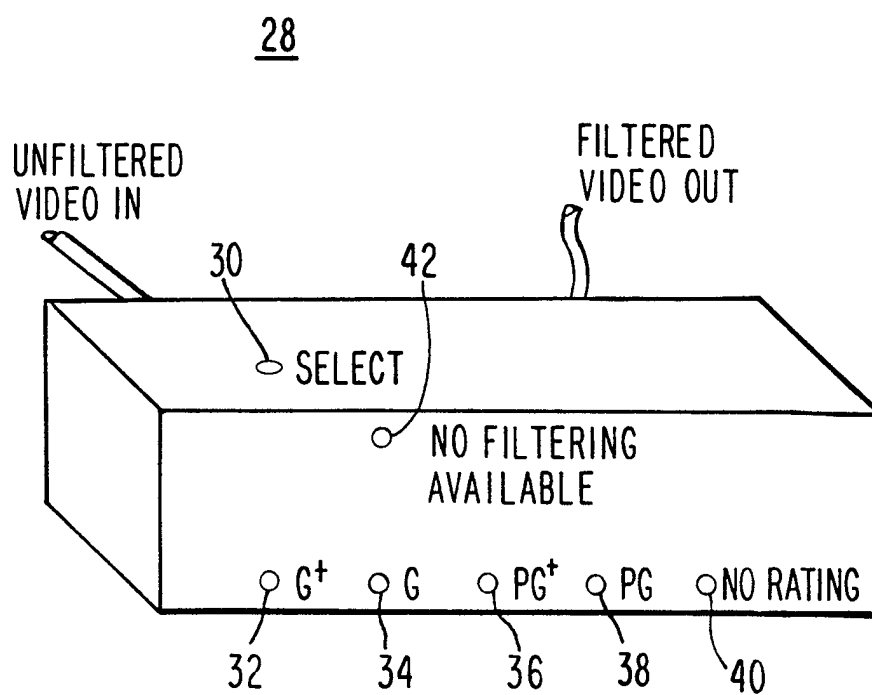
2/6

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SUBSTITUTION EVENT CODE	SUBSTITUTION ATTRIBUTE
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1021	SUBSTITUTE WORD NO. 272
0212	NO AUDIO
6462	BLANK VIDEO
1392	SUBSTITUTE IMAGE NO. 10
⋮	

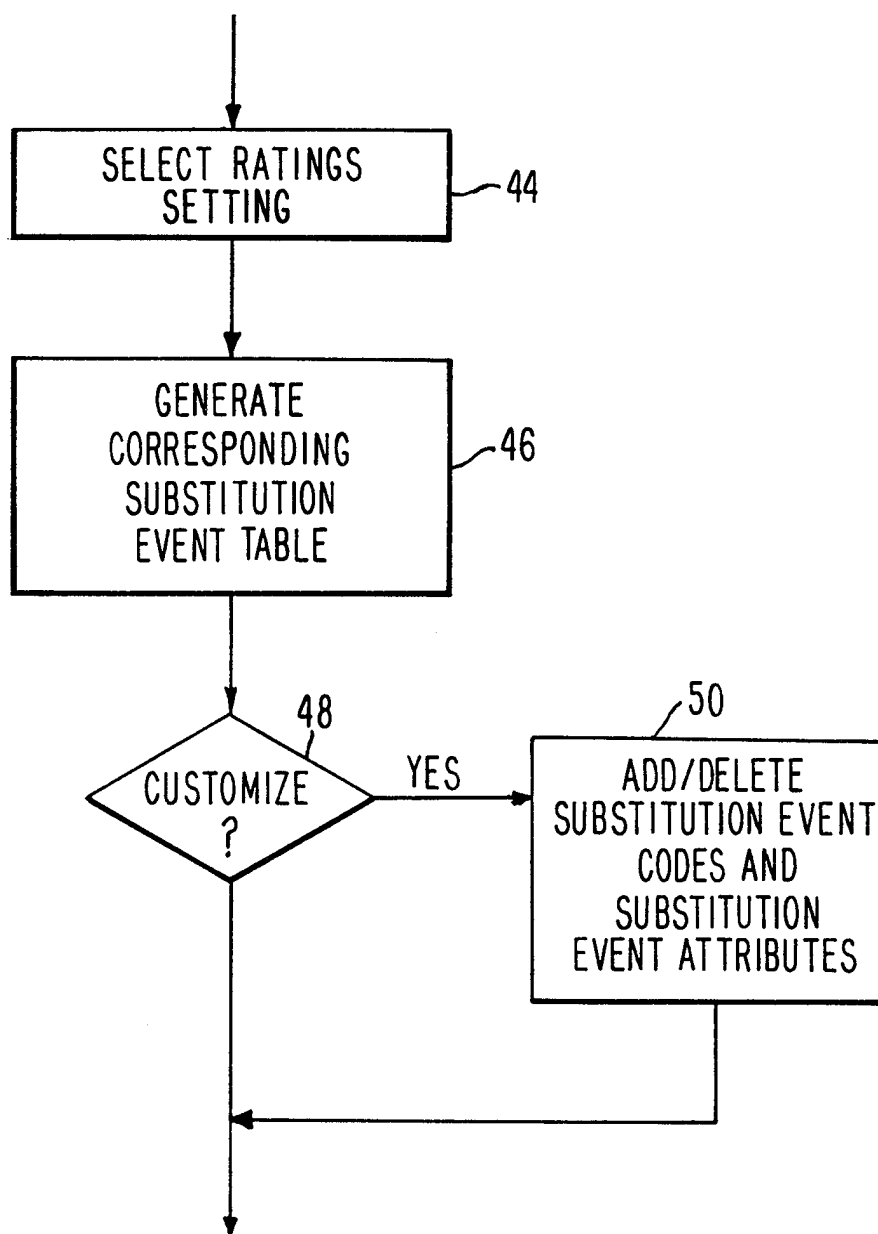
*FIG. 2*

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*FIG. 3*



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**FIG. 4**

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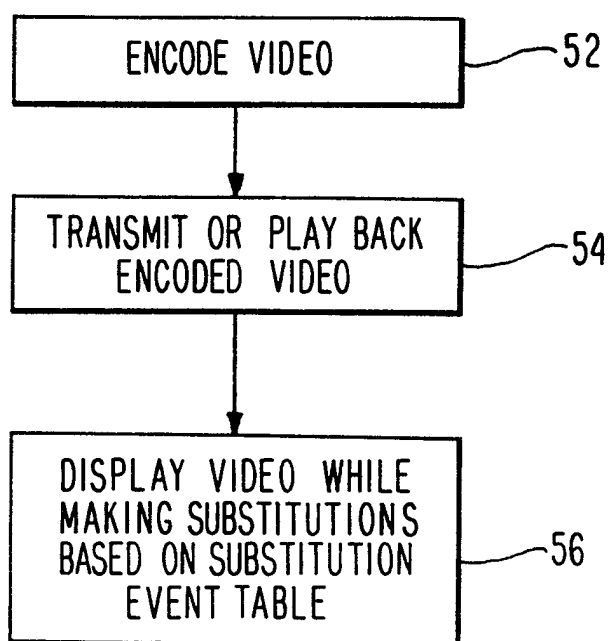
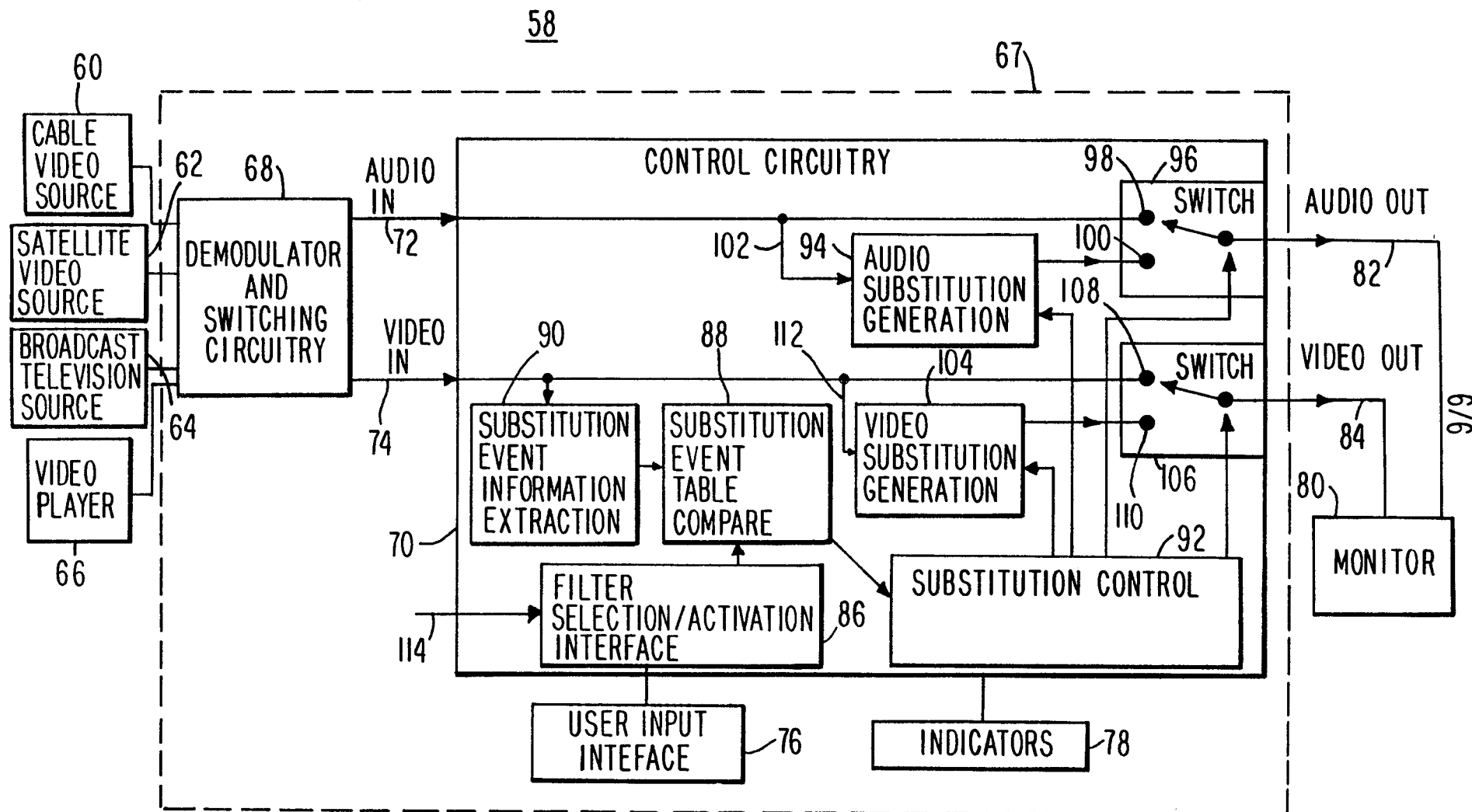
*FIG. 5*

FIG. 6



# INTERNATIONAL SEARCH REPORT

national Application No  
PCT/US 98/08934

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 6 H04N7/16 H04N7/088

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 930 160 A (VOGEL PETER S) 29 May 1990  see abstract see column 3, line 47 - column 4, line 68; figures 1,2  ---	1-4, 9, 15-18, 20-23, 34-37
X	FR 2 678 091 A (MARTIN JUAN) 24 December 1992  see abstract see page 3, line 20 - page 6, line 16 see page 7, line 1 - line 19  ---  -/--	1-4, 9, 12, 16-18, 20-23, 31, 34-37

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

28 July 1998

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/US 98/08934

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>WO 83 02208 A (CHARD FREDERICK WILLIAM) 23 June 1983</p> <p>see page 1, line 1 - page 2, line 31 see page 9, line 36 - page 13, line 30; figures 1-3</p>	<p>1-4, 9, 13, 16, 18, 20-23, 28, 32, 35, 37</p>
X	<p>US 5 550 575 A (WEST BRETT ET AL) 27 August 1996</p> <p>see column 4, line 47 - column 5, line 45 see column 6, line 63 - column 7, line 4</p>	<p>1-4, 6-9, 12, 17, 18, 20-23, 25-28, 31, 36, 37</p>
X	<p>US 5 583 576 A (PERLMAN WILLIAM ET AL) 10 December 1996</p> <p>see abstract see column 6, line 24 - line 49</p>	<p>1-4, 6-9, 12, 17, 18, 20-23, 25-28, 31, 36, 37</p>
X	<p>US 4 554 584 A (ELAM CARL M ET AL) 19 November 1985</p> <p>see column 1, line 43 - column 2, line 50</p>	<p>1-4, 6-9, 12, 17, 18, 20-23, 25-28, 31, 36, 37</p>
X	<p>US 5 056 139 A (LITTLEFIELD DAVID E) 8 October 1991</p> <p>see abstract see column 3, line 9 - line 20 see column 4, line 6 - line 39; figure 1 see column 2, line 8 - line 46</p>	<p>1-5, 9, 12, 17, 18, 20-24, 28, 31, 36, 37</p>
X	<p>PATENT ABSTRACTS OF JAPAN vol. 009, no. 075 (E-306), 4 April 1985 &amp; JP 59 210782 A (MATSUSHITA DENKI SANGYO KK), 29 November 1984 see abstract</p>	<p>1-6, 13, 17, 18, 20-25, 32, 36, 37</p>

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national Application No

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