

Invalidity of U.S. Patent No. 10,084,991
by
U.S. Patent No. 7,565,680 to Asmussen ("Asmussen")

The excerpts cited herein are exemplary. For any claim limitation, Defendant may rely on excerpts cited for any other limitation and/or additional excerpts not set forth fully herein to the extent necessary to provide a more comprehensive explanation for a reference's disclosure of a limitation. Where an excerpt refers to or discusses a figure or figure items, that figure and any additional descriptions of that figure should be understood to be incorporated by reference as if set forth fully therein.

Except where specifically noted otherwise, this chart applies the apparent constructions of claim terms as used by Plaintiff in its infringement contentions; such use, however, does not imply that Defendant adopts or agrees with Plaintiff's constructions in any way.

U.S. Patent No. 10,084,991 ("the '991 Patent") claims priority to Japanese Application No. 2008-246232, filed September 25, 2008. For purposes of these invalidity contentions, Defendant applies the Sep. 25, 2008, priority date for the '991 Patent. However, Defendant reserves the right to contest Plaintiff's reliance on the Sep. 25, 2008, priority date, should the priority date become an issue in this proceeding.

U.S. Patent No. 7,565,680 to Asmussen ("*Asmussen*") was filed on June 30, 2000. *Asmussen* therefore qualifies as prior art with regard to the '991 Patent at least under 35 U.S.C. § 102(e) (pre-AIA).

U.S. Patent No. 7,548,255 to Bear, et al. ("*Bear*") was filed on September 30, 2003. *Bear* therefore qualifies as prior art with regard to the '991 Patent at least under 35 U.S.C. § 102(e) (pre-AIA).

U.S. Patent Application Publication No. 2007/0139514 to Marley ("*Marley*") published on June 21, 2007. *Marley* qualifies as prior art with regard to the '991 Patent at least under 35 U.S.C. §§ 102(a) and (b) (pre-AIA).

U.S. Patent Application Publication No. 2003/0041333 to Allen, et al. ("*Allen*") was published on February 27, 2003. *Allen* therefore qualifies as prior art with regard to the '991 Patent at least under 35 U.S.C. §§ 102(a) and (b) (pre-AIA).

U.S. Patent No. 7,046,268 to Saburi ("*Saburi*") was published on May 16, 2006. *Saburi* therefore qualifies as prior art with regard to the '991 Patent at least under 35 U.S.C. §§ 102(a) and (b) (pre-AIA).

Asmussen anticipates or otherwise renders obvious claims 1-5 and 8-12 under 35 U.S.C. §§ 102 and 103(a).

Defendant's Invalidity Contentions
Exhibit E2

Alternatively, Asmussen in view of Marley renders claims 1 and 8 obvious under 35 U.S.C. § 103(a).

Alternatively, Asmussen in view of Saburi renders claims 1 and 8 obvious under 35 U.S.C. § 103(a).

Alternatively, Asmussen in view of Bear renders claims 1 and 8 obvious under 35 U.S.C. § 103(a).

Alternatively, Asmussen in view of any of Marley, Saburi, and/or Bear renders claims 1 and 8 obvious under 35 U.S.C. § 103(a).

Alternatively, Asmussen in view of Allen renders claims 2-5 and 9-12 obvious under 35 U.S.C. § 103(a).

Alternatively, Asmussen in view of Marley and further in view of Allen renders claims 2-5 and 9-12 obvious under 35 U.S.C. § 103(a).

Alternatively, Asmussen in view of Saburi and further in view of Allen renders claims 2-5 and 9-12 obvious under 35 U.S.C. § 103(a).

Alternatively, Asmussen in view of Bear and further in view of Allen renders claims 2-5 and 9-12 obvious under 35 U.S.C. § 103(a).

Alternatively, Asmussen in view of any of Marley, Saburi, and/or Bear and further in view of Allen renders claims 2-5 and 9-12 obvious under 35 U.S.C. § 103(a).

U.S. Patent No. 10,084,991	Asmussen
Claim 1	
[1(P)] A communication apparatus for transmitting and receiving digital information to and from another communication apparatus, comprising:	<p>To the extent the preamble is limiting, Asmussen discloses a communication apparatus for transmitting and receiving digital information to and from another communication apparatus.</p> <p><i>A set top terminal equipped with a camera and microphone includes the capability to send and receive video calls through a cable television delivery system or other communications networks. In response to detection of the occurrence of a video call event or triggering event, a video program is automatically paused. In response to an incoming video phone call, message, web page, or other video communications information, the system pauses the video program and displays an indication of the occurrence of the</i></p>

Defendant's Invalidity Contentions
Exhibit E2

	<p><i>communications event. The system also buffers the video program while paused, permitting a user to replay missed portions of it.</i></p> <p><i>Asmussen at Abstract.</i></p> <p><i>The present invention is a set top converter box or terminal for a television program delivery system. More specifically, the present invention is an advanced set top converter box that acts as a terminal in the viewer's home. The set top terminal is a key component of a digital cable television delivery system. The set top terminal is an upgradeable system that provides for the decompression of digital program signals. The preferred set top terminal provides both a menu generation capability as well as a number of advanced features and functional capabilities.</i></p> <p><i>Asmussen at 3:20-30.</i></p> <p><i>Such features include the capability to send and receive video calls through the set top terminal equipped with a camera and microphone. The video call can be communicated through the cable television delivery system or other communications networks.</i></p> <p><i>Asmussen at 4:5-9.</i></p> <p><i>Still other such features include caller identification of video calls and dual display of video programs and video calls, such as picture in picture. The video call functionality can be built into a set top terminal or provided as a hardware upgrade to a set top terminal.</i></p> <p><i>Asmussen at 4:26-30.</i></p> <p><i>Additionally, the set top terminal 220 includes a camera input 666 and a microphone jack 667, by which a camera and microphone, respectively, can be</i></p>
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Defendant's Invalidity Contentions
Exhibit E2

	<p><i>connected. Alternatively, a camera and microphone can be built into the set top terminal 220.</i></p> <p><i>Asmussen at 16:34-37.</i></p>
<p>[1(a)] a network interface configured to receive first digital information which is received from a contents server which is coupled to the communication apparatus via the network interface</p>	<p>Asmussen discloses a network interface configured to receive first digital information which is received from a contents server which is coupled to the communication apparatus via the network interface.</p> <p><i>In order to achieve the required throughput of video and audio information for the system, digital compression techniques for video are employed. As a result, the set top terminal 220 typically must decompress any digitally compressed program signals that it receives. Methods of decompression are a function of the compression technique used in the program delivery system.</i></p> <p><i>Asmussen at 23:64-24:3; see also id. at 6:48-7:22, Figs. 1-2.</i></p> <p><i>FIG. 11 shows RF signals, depicted at 330, being received at by a data receiver 332 and tuner 603 working in unison. Both of these devices are interfaced with the microprocessor 602, which receives inputs, depicted at 338, from the subscriber, either through the set top terminal's keypad 645 or remote control unit 900. All cable signals intended for reception on the subscriber's TV are accessed by the tuner 603 and subsequently processed by the processing circuitry 340. This processing circuitry 340 typically includes additional components for descrambling, demodulation, volume control and remodulation on a Channel 3 or 4 TV carrier.</i></p> <p><i>Asmussen at 26:1-11.</i></p> <p><i>Any received data includes information regarding channels and programs available for selection. The subscriber may enter a series of commands using the keypad 645 or remote control 900 in order to choose a channel or program. Upon receipt of such commands, the set top terminal's microprocessor 602</i></p>

Defendant's Invalidity Contentions
Exhibit E2

	<p><i>instructs the tuner 603 to tune to the proper frequency of the channel or program desired and subsequently instructs the processing circuitry 340 to begin descrambling of this channel or program.</i></p> <p><i>Asmussen at 26:21-29.</i></p> <p><i>The set top terminal's microprocessor coordinates all CATV signal reception and also interacts with various upstream data transmission components 604, which have been described above.</i></p> <p><i>Asmussen at 26:60-63.</i></p> <p><i>The microprocessor 602 initiates and coordinates further decompression of the video, graphics and text for each of the program signals. Once these signal parts are decompressed within the set top terminal 220, these components are passed to a video combiner 316. The video combiner correlates and combine the video, graphics and text of the two program signals. The video combiner outputs these two signals for display on the subscriber's television.</i></p> <p><i>Asmussen at 33:26-33.</i></p> <p><i>During this processing, the microprocessor 602 coordinates the demultiplexing of the programming signals.</i></p> <p><i>Asmussen at 36:13-15.</i></p> <p><i>A set top terminal equipped with a camera and microphone includes the capability to send and receive video calls through a cable television delivery system or other communications networks. In response to detection of the occurrence of a video call event or triggering event, a video program is automatically paused. In response to an incoming video phone call, message, web page, or other video communications information, the system pauses the video program and displays an indication of the occurrence of the</i></p>
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Defendant's Invalidity Contentions
Exhibit E2

	<p><i>communications event. The system also buffers the video program while paused, permitting a user to replay missed portions of it. Alternatively, the system waits for a triggering event, which includes the user's access to the communications event, in order to pause the video program. The set top terminal also includes features for caller identification of video calls and dual display of video programs and video calls, such as picture in picture. A hardware upgrade for adding video call functionality to a set top terminal is also disclosed.</i></p> <p><i>Asmussen at Abstract.</i></p> <p><i>The present invention is a set top converter box or terminal for a television program delivery system. More specifically the present invention is an advanced set top converter box that acts as a terminal in the viewer's home. The set top terminal is a key component of a digital cable television delivery system. The set top terminal is an upgradeable system that provides for the decompression of digital program signals.</i></p> <p><i>Asmussen at 3:20-27.</i></p> <p><i>As used herein, "video programs" include live or prerecorded programs from any source such as, for example, a broadcast television signal transmission, a cable television signal transmission, satellite television, video streaming over the Internet or other network, a VCR, a computer memory such as a hard disk CD-ROM, or digital versatile disk (DVD).</i></p> <p><i>Asmussen at 4:20-25.</i></p> <p><i>Although concatenated cable systems 210 are the most prevalent transmission media to the home, telephone lines, cellular networks, fiberoptics, Personal Communication Networks and similar teleology for transmitting to the home can be used interchangeably with this program delivery system 200.</i></p> <p><i>Asmussen at 6:65-7:3.</i></p>
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Exhibit E2

	<p><i>It is preferred that the signal reaches the subscriber's home in a compressed format and is decompressed prior to viewing. Included in the delivered program signal is information that enables equipment at the subscriber's home to display menus for choosing particular programs. Depending on the particular embodiment, the television program signal may arrive at the subscriber's home through one or more connections such as coaxial cables, fiber cables, twisted pairs, cellular telephone connections, or personal communications network (PCN) hookups.</i></p> <p><i>Asmussen at 14:14-23.</i></p> <p><i>The communication paths between the set top terminals 220e-220g are preferably wireless links, and in one embodiment the wireless links are RF links that utilize an RF transceiver in each of the set top terminals 220e-220g. Wireless infrared links are also possible. In alternate embodiments, the communication paths can be provided by wired networks, such as an existing data or computer network (e.g., LAN), existing television cabling, or existing home/building power wiring (as disclosed, for example, in U.S. Pat. No. 5,319,634, which is hereby incorporated by reference). In any case, the channel linking the set top terminals 220e-220g is multiplexed to accommodate six unidirectional links that connect the three set top terminals 220e-220g in a fully meshed network. Although one skilled in the art will readily appreciate that many multiplexing schemes are possible, including TDMA (time division multiple access) and FDMA (frequency division multiple access), the multiplexing scheme preferably utilizes CDMA (code division multiple access), also termed SSMA (spread spectrum multiple access), techniques. Advantages of CDMA in this instance include security of transmissions and the fact that FCC (Federal Communication Commission) regulations might not apply to these transmissions. In one embodiment, an asynchronous direct sequence CDMA system with a common spreading code is utilized. Similar CDMA systems are well known and discussed, for example, in U.S. Pat. No. 5,103,459</i></p>
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Defendant's Invalidity Contentions
Exhibit E2

	<p><i>and U.S. Pat. No. 5,546,381, both of which are hereby incorporated by reference.</i></p> <p><i>Asmussen at 51:37-64.</i></p> <p><i>FIG. 4 shows the basic hardware components of the set top terminal 220. The set top terminal 220 has a tuner 603, digital demodulator 606, decryptor 600, and demultiplexers 609, 616 as well as audio equipment 612 and a remote control interface 626 for receiving and processing signals from the remote control unit 900. An optional modem 627 allows communication between a microprocessor 602 and the cable headend 208. An NTSC encoder 625 provides a standard NTSC video output.</i></p> <p><i>Asmussen at 15:15-23.</i></p>
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Exhibit E2

	<p style="text-align: center;"><i>Fig. 4</i></p> <p><i>Asmussen at Fig. 4.</i></p>
<p>[1(b)] and second digital information from the another communication apparatus;</p>	<p>Asmussen discloses receiving second digital information from the another communication apparatus, e.g., video of a called party.</p> <p><i>Such features include the capability to send and receive video calls through the set top terminal equipped with a camera and microphone. The video call can be communicated through the cable television delivery system or other communications networks.</i></p>

Defendant's Invalidity Contentions
Exhibit E2

	<p><i>Asmussen at 4:5-9.</i></p> <p><i>To support video calling, the instructions also enable the microprocessor 602 to process video signals from a camera, to process audio signals from a microphone and to control a camera and microphone. The microprocessor 602 may be a single microprocessor, as shown, or may be several microprocessors, such as a general microprocessor, a camera microprocessor and a microphone processor.</i></p> <p><i>Asmussen at 15:27-33.</i></p> <p><i>Additionally, the set top terminal 220 includes a camera input 666 and a microphone jack 667, by which a camera and microphone, respectively, can be connected. Alternatively, a camera and microphone can be built into the set top terminal 220.</i></p> <p><i>Asmussen at 16:34-38.</i></p> <p><i>FIG. 10 further depicts an optional camera interface 326 and an optional microphone interface 328 for connection with a camera 2000 and a microphone 2002, respectively.</i></p> <p><i>Asmussen at 25:43-46.</i></p>
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Defendant's Invalidity Contentions
Exhibit E2

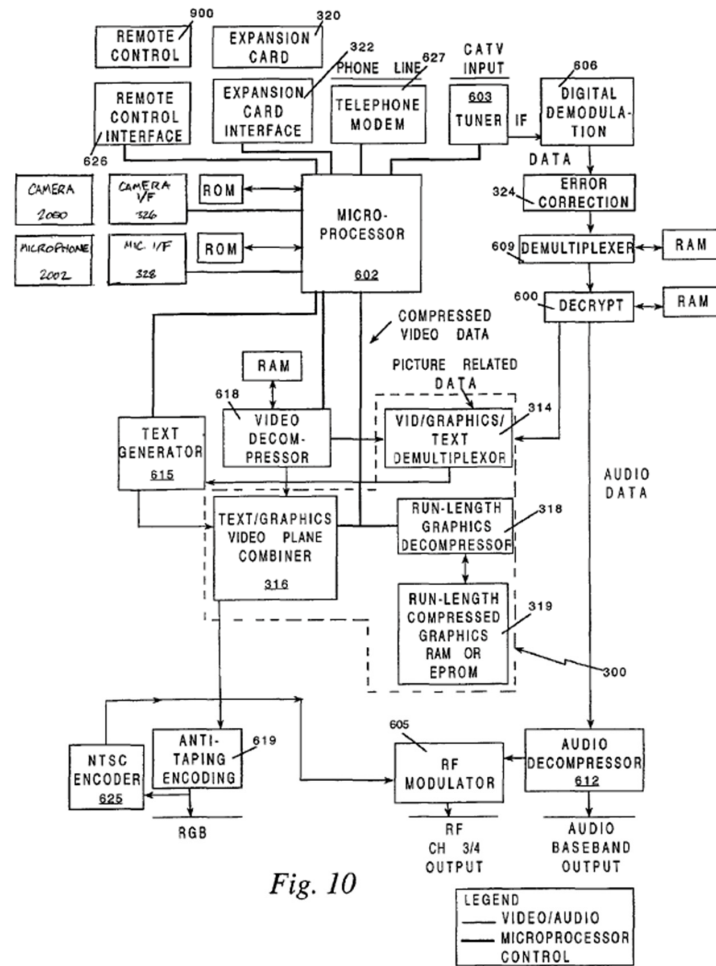


Fig. 10

Asmussen at Fig. 10.

Defendant's Invalidity Contentions
Exhibit E2

	<p><i>To support video calling capabilities, the remote control unit 900 preferably includes a call answer button (not shown) and a call hang up button (not shown). The call answer button and the call hang up button may be separate buttons or the same button. To support video calling with outgoing video, the remote control unit 900 preferably includes a camera activation button (not shown) and buttons or other controls for pointing the camera 2000. The cursor movement buttons 370 a joystick, a trackball or something similar can be used for camera pointing in a camera control mode.</i></p> <p><i>Asmussen at 31:39-46.</i></p> <p><i>Automatic Program Pause Feature</i> <i>An apparatus and method consistent with the present invention provides for automatically pausing of a video program in response to detection of an occurrence of a communications event or related triggering event. The term "communications event" includes any communication of information through any wireline or wireless medium, examples of which are provided below. The term "triggering event" includes a user's access to a communications event, examples of which are provided below. During the pausing, the video program is buffered such that a user may replay portions of it and perform other VCR-type functions of the program. In addition, the apparatus and method provide an indication of the communications event to the user by displaying, for example, text or graphics on a video display for the video program. For example, based upon detection of an incoming telephone call, the apparatus pauses the video program and displays an indication of the call overlaid on the paused video program or inset within it. This feature thus permits a user to automatically obtain an indication of a particular event while, at the same time, having the video program buffered such that portions of it are not missed, which is particularly useful for "live" video programs.</i></p> <p><i>Asmussen at 43:18-40.</i></p>
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Exhibit E2

	<p><i>As shown in FIG. 24d, detection of an incoming web page may result in display of a web page 1405. Web pages includes pages formatted, for example, in HyperText Markup Language (HTML) for transmission over the Internet using web browsers. Also, a user's access to the web page may constitute a triggering event, resulting in pausing and buffering of the video program. Many other types of triggering events are possible, involving a user's access to other types of communications events. Examples of other communications events include, but are not limited to, the following: a page to a pager number; an incoming cell phone call; an incoming facsimile transmission; an indication of a voice mail; or an incoming video call. Likewise, examples of other triggering events include, but are not limited to, the following: a user's access to a page to pager number; a user answering an incoming cell phone call; a user accessing or otherwise requesting to view an incoming facsimile transmission; a user's access to a pending voice mail message; a user's access to his or her personal web page; or a user's initiation of a video call.</i></p> <p><i>Asmussen at 44:1-19.</i></p> <p><i>Basic Video Call Functionality</i> <i>A preferred form of the present invention provides video calling capability in the set top terminal 220. To support video calling, the set top terminal 220 is augmented with additional features, as shown in FIG. 30. The additional features can be integrated into an enhanced set top terminal 220 or provided as one or more upgrades to a more basic set top terminal 220. In FIG. 30, a camera 2000 and an input device 704 are included in the set top terminal 220. The camera 2000 is preferably a small video camera located and oriented on the set top terminal 220 so that it is typically directed at the face, torso, or entire body of one viewing the display 602. The direction of pointing is preferably manually adjustable by the user. Alternatively or additionally, the camera 2000 can be pointed, focused and otherwise controlled electronically.</i></p> <p><i>Asmussen at 49:41-56.</i></p>
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Defendant's Invalidity Contentions
Exhibit E2

	<p><i>In regards to reception, an incoming (i.e., downstream) video conferencing signal is received by a receiver 750, decoded by a channel decoder 755, decrypted by a decryptor 760, and demultiplexed with proper relative timing among video, audio and other data components by a demultiplexer synchronizer 765. Video signals are decompressed by a video source decoder 770 and output for display on a display device 602, which is typically the television 222. Audio signals are decompressed by an audio source decoder 775 and output for playing on the speaker/microphone 2002, the speaker portion of which may be the speaker(s) of the television 222 Data files, such as electronic books, are stored in one or more files 777. Again, the order of processing can be different from that illustrated.</i></p> <p><i>Asmussen at 50:44-57.</i></p> <p><i>Each of the set top terminals 220 participating in a video conference call broadcasts its audio/video signal(s), and any set top terminals 220 that receives the signal(s) performs the necessary processing to output the audio and video components in combination with those of other received signal(s).</i></p> <p><i>Asmussen at 52:20-25.</i></p>
[1(c)] a camera configured to generate video information which is included in third digital information;	<p>Asmussen discloses a camera configured to generate video information which is included in third digital information. For example, Asmussen's video and audio source encoders 705 and 710 respectively perform the encoding/decoding of the video and audio. <i>Asmussen at 50:18-31.</i></p>

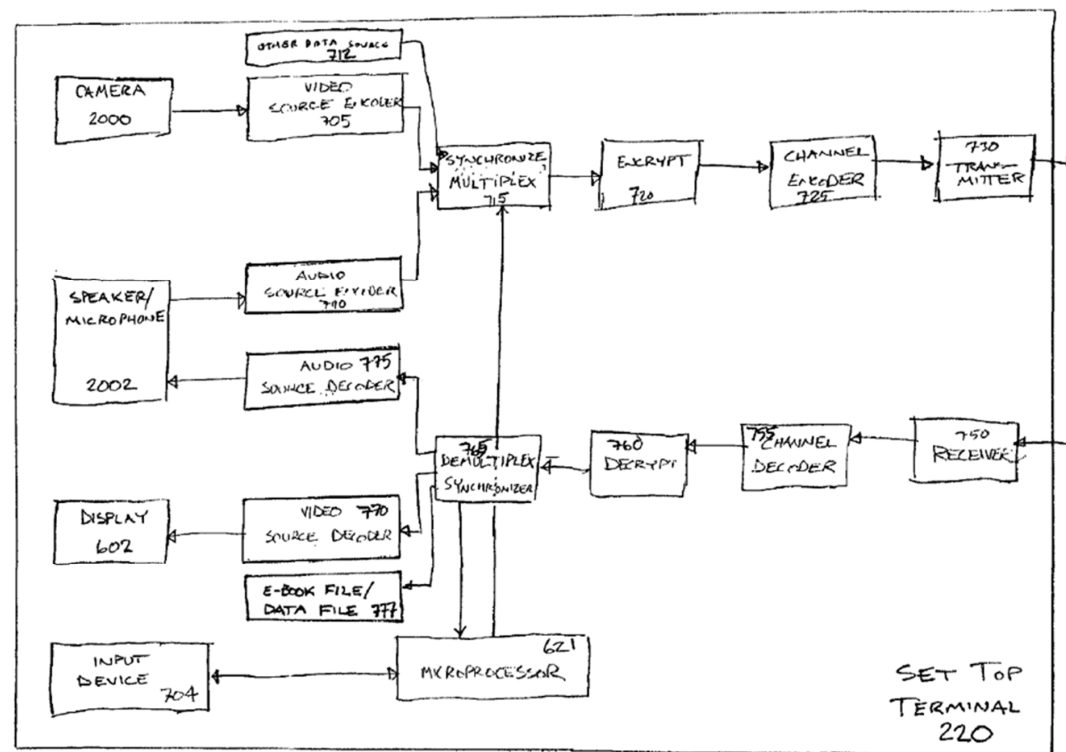


Fig. 30

Asmussen at Fig. 30.

FIG. 30 is a block diagram of video call transmission and reception functions of the set top terminal 220. In regards to transmission, a video signal from the camera 2000 is subjected to source encoding (i.e., conversion to spectrally efficient or compressed digital form) by a video source encoder 705, and an audio signal from the speaker/microphone 2002 is subjected to source encoding

Defendant's Invalidity Contentions
Exhibit E2

	<p><i>by an audio source encoder 710. The source encoded video and audio signal are synchronized and multiplexed together by a synchronizer multiplexer 715. The video source encoder 705, audio source encoder 710 and the synchronizer multiplexer 715 together can function to perform standard audio/visual encoding algorithms such as MPEG (motion picture expert group) or ITU standard H.261 or H.263, which are well known in the art.</i></p> <p><i>Asmussen at 50:18-31.</i></p> <p><i>A preferred form of the present invention provides video calling capability in the set top terminal 220. To support video calling, the set top terminal 220 is augmented with additional features, as shown in FIG. 30. The additional features can be integrated into an enhanced set top terminal 220 or provided as one or more upgrades to a more basic set top terminal 220. In FIG. 30, a camera 2000 and an input device 704 are included in the set top terminal 220. The camera 2000 is preferably a small video camera located and oriented on the set top terminal 220 so that it is typically directed at the face, torso, or entire body of one viewing the display 602. The direction of pointing is preferably manually adjustable by the user. Alternatively or additionally, the camera 2000 can be pointed, focused and otherwise controlled electronically.</i></p> <p><i>Asmussen at 49:43-56.</i></p> <p><i>A set top terminal 220 performs signal processing associated with the transmission and reception of call content. In regards to transmission, the audio signal sensed by the speaker/microphone 2002 is converted to digital form and compressed. For Voice or speech audio, the following families of algorithms are particularly Suitable: pulse code modulation (PCM), delta modulation (DM) and linear predictive coding (LPC). Each of the above families of algorithms includes variations, such as differential and adaptive variations. Similarly, the video signal sensed by the camera 2000 is converted to digital form and compressed. The fundamental techniques for image compression include vector quantization, discrete cosine transforms, and run-length</i></p>
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Defendant's Invalidity Contentions
Exhibit E2

	<p><i>encoding. Combinations of these techniques are also possible. For video sequences of images, interframe encoding based on motion prediction can be applied to provide further compression gains. These techniques as well as others are utilized in standard video compression algorithms, including low-rate MPEG and ITU Standard H.261 and H.263 for video conferencing, which are well known in the art. Any compression algorithm that produces acceptably low bit rates for video and/or audio transmission through the network and can be implemented in real time with acceptably Small delay is Suit able for use with the present invention. Encoding of video and audio may be distinct or interrelated. By way of example, MPEG is a combined standard for both video and audio. These and other features are disclosed in additional detail in the 128 patent.</i></p> <p><i>Asmussen 55:56-56:16.</i></p> <p>Alternatively, Bear discloses a camera.</p> <p><i>A system and method for improved video capture on a personal computer is provided. The personal computer is equipped with video controls and a camera with a privacy lens cover. A sensor for sensing when the lens cover is closed may be used along with an actuator for mechanically opening the lens cover, so that the system may optionally open the lens cover automatically for video capture applications. A user may easily capture a video stream or still images using the video controls provided. A user may also answer an incoming phone call that supports video by pressing the camera button or, optionally, the user can set a preference so that the camera is automatically enabled whenever answering a call that supports video. Additionally, the system may automatically transition to or from video anytime during a call.</i></p> <p><i>Bear at Abstract.</i></p>
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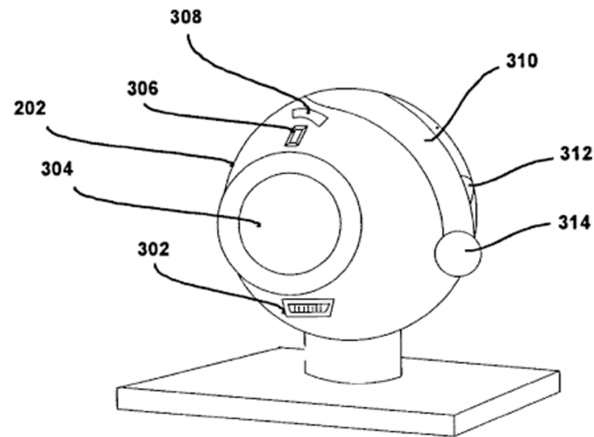


FIG. 3

Bear at Fig. 3.

As generally represented in FIG. 3, the camera 202 coupled to the computer system 110 may include a microphone 302, a lens 304, a camera indicator light 306, a video capture button 308, a lens cover 310, a sensor 312, and an actuator 314. The capture button 308 may be located on the body of the camera where the right index finger normally rests while manually aiming the lens. Its behavior may vary and depends on the controlling software that is running when it is pressed. While an audio/video (A/V) capture application is executing, pressing the capture button 308 usually triggers an image or video stream capture, depending on the mode setting.

Because the state of the capture button 308 may not be readily apparent to a user, a camera indicator light 306 such as an LED may be used in conjunction

Defendant's Invalidity Contentions
Exhibit E2

	<p><i>with the capture button 308. The camera indicator light 306 may be adjacent the camera lens 304 or integrated into the capture button 308. The camera indicator light 306 may indicate state via various colors and flash patterns, e.g., steady state unlit when the camera is off, steady state red when video capture is taking place, a slowly blinking red indicator light when there is an incoming video call, or steady state green when the camera is used for proximity detection. Note that although video-capable applications can set this indicator to a particular color such as red when recording, the firmware may additionally ensure the indicator is set to red if the camera is actively streaming video.</i></p> <p><i>Bear at 7:35-60.</i></p> <p><i>Bear teaches the camera generates video information.</i></p> <p><i>Briefly, the present invention provides a system and method for capturing and otherwise working with video on a personal computer. In one implementation, the present invention provides a camera that may include a microphone, a lens, a camera indicator light, a video capture button, and a lens cover that acts as a safeguard against inadvertent video recording or damage to the lens. In another implementation, a sensor for determining when the lens cover is closed may be used, along with an actuator for mechanically opening the lens cover, so that the system may optionally open the lens cover automatically for video capture applications. The actuator may be controlled by a button such as a shutter button or may be controlled by system software. Closing the lens cover secures active capture operations and, for example, may close an audio/video capture application. Opening the lens cover prepares the camera for capture, and may stream preview video to the audio/video capture application.</i></p> <p><i>Bear at 2:14-30.</i></p> <p><i>The present invention allows different types of video to be captured. For example, an audio/video application may capture a video stream or still images. If a user has selected still images to be captured, the audio/video application</i></p>
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	<p><i>may set the camera capture indicator light to green to indicate that the application is in preview mode. A user may conveniently snap a still image by pressing the capture button. The application may then set the camera capture indicator light to blink red for a few moments while the image is captured. After the image has been captured, the application may display a confirmation dialog box to the user to allow for saving the image.</i></p> <p><i>Bear at 2:47-57.</i></p> <p><i>A user who wishes to capture a video stream opens the lens cover 310, whether manually or by pressing an actuator button that opens the lens cover 310. Before capture of a video stream occurs, the system is in the Stopped 902 state. Whenever a capture event is received and the shutter 310 is open, the system transitions to the Capturing 904 state and the camera begins capturing a video stream. In one embodiment, the shutter may only be opened by the user for privacy reasons. In this case, the user may press the shutter button 404 to open the lens cover or manually move the lens cover to expose the lens. In another embodiment, the lens cover may be automatically opened whenever a capture event occurs. A capture event occurs whenever the user presses the capture button 308 while in the Stopped state 902. It will be appreciated by those skilled in the art that there are other ways of generating a capture event, such as opening the shutter 310, pressing the record button within the transport controls of FIG. 7, selecting a menu item using a graphical user interface, and so forth. In yet a third embodiment, image analysis software may sense when the lens is uncovered or covered by any way known to those skilled in the art, including detecting the amount of light received through the camera lens. When the images analysis software senses that the lens is uncovered, a capture event is generated. For example, the image analysis software may determine that sufficient light is being received through the camera lens, and a capture event may be generated that triggers the camera to begin capturing a video stream.</i></p> <p><i>Bear at 10:38-64; see also id. at 9:46-61, 10:27-38, Fig. 9.</i></p>
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Defendant's Invalidity Contentions
Exhibit E2

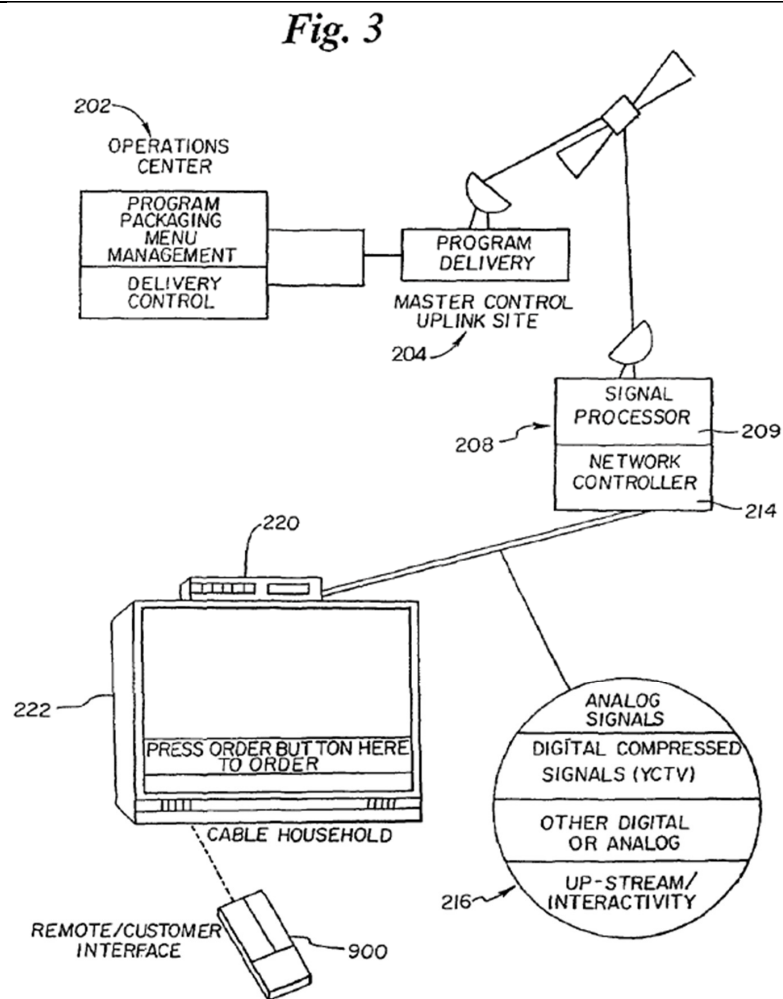
	<p>It would have been obvious to a PHOSITA to configure Asmussen's set-top video phone system with Bear's camera that generates video information. Like Asmussen, Bear teaches a videophone conference system and associated hardware, such as a camera. <i>Bear</i> at 7:35-60. A PHOSITA would have been motivated to implement Bear's camera to enhance the set top box of Asmussen with the additional capabilities of generating video information using a user-friendly, "simplified" system. <i>See Bear</i> at 1:65-2:10. This would have predictably enabled the set-top box of Asmussen to generate video information in the same way with a reasonable expectation of success.</p>
<p>[1(d)] a display configured to display at least the first and the second digital information; and</p>	<p>Asmussen discloses a display configured to display at least the first and the second digital information.</p> <p><i>The set top terminal also includes features for caller identification of video calls and dual display of video programs and video calls, such as picture in picture.</i></p> <p><i>Asmussen</i> at Abstract.</p> <p><i>The present invention is a set top converter box or terminal for a television program delivery system. More specifically, the present invention is an advanced set top converter box that acts as a terminal in the viewer's home. The set top terminal is a key component of a digital cable television delivery system. The set top terminal is an upgradeable system that provides for the decompression of digital program signals. The preferred set top terminal provides both a menu generation capability as well as a number of advanced features and functional capabilities.</i></p> <p><i>Asmussen</i> at 3:20-30.</p> <p><i>Such features include the capability to send and receive video calls through the set top terminal equipped with a camera and microphone. The video call can be communicated through the cable television delivery system or other communications networks.</i></p> <p><i>Other such features include a system for automatically pausing a video program in response to detection of the occurrence of a video call event or</i></p>

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Exhibit E2

	<p><i>triggering event. In response to an incoming video phone call, message, web page, or other video information, the system pauses the video program and displays an indication of the occurrence of the video call event. Alternatively, the system pauses the video program in response to a triggering event, which includes a user's access to a video call event. The system also buffers the video program while paused, permitting a user to replay missed portions of it. As used herein "video programs" include live or prerecorded programs from any source such as, for example, a broadcast television signal transmission, a cable television signal transmission, satellite television, video streaming over the Internet or other network, a VCR, a computer memory such as a hard disk, CD-ROM, or digital versatile disk (DVD).</i></p> <p><i>Still other such features include caller identification of video calls and dual display of video programs and video calls, such as picture in picture. The video call functionality can be built into a set top terminal or provided as a hardware upgrade to a set top terminal.</i></p> <p><i>Asmussen at 4:5-30.</i></p> <p><i>The video display 1400 may be implemented with a television 222 or any device for displaying a video program, such as a computer monitor or flat screen display.</i></p> <p><i>Asmussen at 43:50-53.</i></p> <p><i>The input device 704 performs the function of accepting user input in order to establish and manage a video call, e.g., entering party identifiers, hanging up, etc. The input device 704 may be a physical joined with the set top terminal 220 or apart from the set top terminal 220. Exemplary forms of the input device 704 include a telephone style number key pad; cursor/pointer movement device, such as a track ball, joystick or touchpad; click-type buttons; and a wired or wireless interface to a separate keyboard. Alternatively or additionally, the display 222 and the input device 704 can be combined in the form of a touchscreen. The input device 704 may be a combinations of several different</i></p>
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Exhibit E2

	<p><i>forms, including the illustrative ones just mentioned. In a preferred embodiment, the input device 704 is the remote control 900.</i></p> <p><i>Asmussen at 49:57-50:3.</i></p> <p><i>In the simplest embodiment, the remote 900, may be built with only cursor movement and a go button. In more sophisticated embodiments, the remote control 900 may be provided with buttons that are programmable to perform specific functions for a series of entries. An intelligent or Smart remote control 900 would increase both the cost and capability of the set top terminal 220 system. Using the augmented remote control 900 depicted in FIG. 13a, a subscriber can navigate the program menu system of the set top terminal 220.</i></p> <p><i>Asmussen at 30:1-9.</i></p> <p><i>In regards to reception, an incoming (i.e., downstream) video conferencing signal is received by a receiver 750, decoded by a channel decoder 755, decrypted by a decryptor 760, and demultiplexed with proper relative timing among video, audio and other data components by a demultiplexer synchronizer 765. Video signals are decompressed by a video source decoder 770 and output for display on a display device 602, which is typically the television 222. Audio signals are decompressed by an audio source decoder 775 and output for playing on the speaker/microphone 2002, the speaker portion of which may be the speaker(s) of the television 222.</i></p> <p><i>Asmussen at 50:44-54.</i></p>
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Asmussen at Fig. 3.

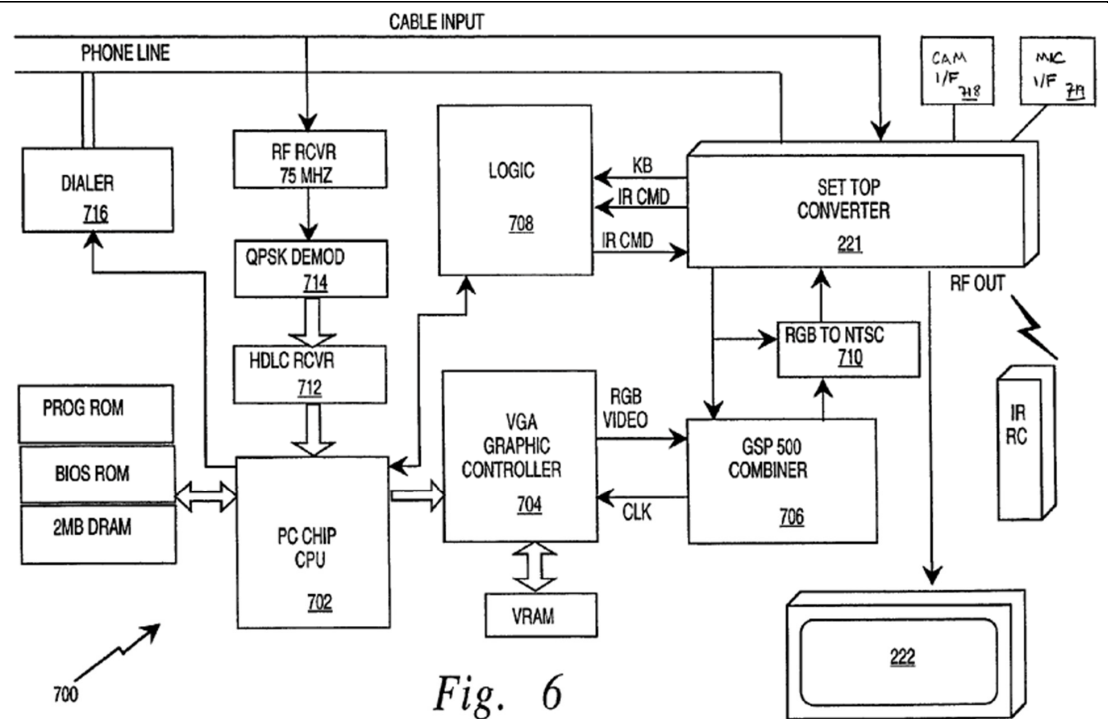


Fig. 6

Asmussen at Fig. 6.

For example, based upon detection of an incoming telephone call, the apparatus pauses the video program and displays an indication of the call overlayed on the paused video program or inset within it. This feature thus permits a user to automatically obtain an indication of a particular event while, at the same time, having the video program buffered such that portions of it are not missed, which is particularly useful for "live" video programs.

	<p><i>Asmussen at 43:33-40.</i></p> <p><i>Because the mini-network 1010 of FIG. 32 is fully meshed, it can operate under distributed control. Preferably, a receiver oriented control protocol is utilized. Each of the set top terminals 220 participating in a video conference call broadcasts its audio/video signal(s), and any set top terminals 220 that receives the signal(s) performs the necessary processing to output the audio and video components in combination with those of other received signal(s). Preferably, the video portions of the incoming signals are scaled and displayed together in some arrangement on the display 602, while the audio portions of the incoming signals are summed, synchronized to the video, if necessary, so that a summed, synchronized audio signal is sounded from the speaker/microphone 2002.</i></p> <p><i>Asmussen at 52:18-31.</i></p> <p><i>To support video calling, a video call options menu 1022 is preferably provided. In the video call options menu 1022, the user can set up such things as turning caller ID on/off, turning automatic program pausing on/off, the default state of the video camera 2000 (on or off), time periods when calls shall not interrupt programming and shall be automatically messaged instead (e.g., during favorite programs), how video call images are displayed (e.g., picture-in-picture, on a blue screen or on a paused image of the current program).</i></p> <p><i>Asmussen at 21:34-42.</i></p> <p><i>Video Call-Video Program Picture-in-Picture</i> <i>Picture-in-picture viewing of a video program and a video call together is also possible. The viewer/call participant can select different orientations of the video components (e.g., call video in program video, vice versa, split screen). The viewer/call participant can also select whether to hear the call audio, the program audio or a summation of both. As an example, two sports enthusiasts may each watch the same sports event program while engaging in an interactive picture-in-picture video call to discuss the action. In addition, other content</i></p>
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Exhibit E2

	<p><i>may be exchanged as part of the call, including files, a whiteboard and/or "telestrator" or "John Madden Pen" markings on the video program, making the program-call combination a shared multimedia experience.</i></p> <p><i>Asmussen at 59:43-56.</i></p>
[1(e)] a processor;	<p>Asmussen discloses a processor.</p> <p><i>The set top terminal of the present invention may be achieved through a set of hardware upgrades to any of the following embodiments: (1) an existing set top converter upgraded with a circuit card (which has a microprocessor electronically connected to the set top converter); (2) an industry standard decompression converter upgradeable by either an upgrade module or a menu generation card; and (3) a set top converter box capable of both decompression and menu generation. The hardware upgrades provide additional advanced features and functional capabilities to any of these embodiments.</i></p> <p><i>Asmussen at 3:31-41.</i></p> <p><i>In the simplest embodiment, available converter boxes such as those manufactured by General Instruments or Scientific Atlanta, may be modified and upgraded to perform the functions of a set top terminal 220. The preferred upgrade is a circuit card with a microprocessor which is electronically connected to or inserted into the converter box.</i></p> <p><i>Asmussen at 12:34-39.</i></p> <p><i>The microprocessor 602 is capable of executing program instructions stored in memory. These instructions allow a user to access various menus by making selections on the remote control 900. To support video calling, the instructions also enable the microprocessor 602 to process video signals from a camera, to process audio signals from a microphone and to control a camera and microphone. The microprocessor 602 may be a single microprocessor, as</i></p>

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Exhibit E2

	<p><i>shown, or may be several microprocessors, such as a general microprocessor, a camera microprocessor and a microphone processor.</i></p> <p><i>Asmussen at 15:24-33.</i></p> <p><i>FIG. 11 shows RF signals, depicted at 330, being received at by a data receiver 332 and tuner 603 working in unison. Both of these devices are interfaced with the microprocessor 602, which receives inputs, depicted at 338, from the subscriber, either through the set top terminal's keypad 645 or remote control unit 900. All cable signals intended for reception on the subscriber's TV are accessed by the tuner 603 and subsequently processed by the processing circuitry 340. This processing circuitry 340 typically includes additional components for descrambling, demodulation, volume control and remodulation on a Channel 3 or 4 TV carrier.</i></p> <p><i>Asmussen at 26:1-11.</i></p> <p><i>Any received data includes information regarding channels and programs available for selection. The subscriber may enter a series of commands using the keypad 645 or remote control 900 in order to choose a channel or program. Upon receipt of such commands, the set top terminal's microprocessor 602 instructs the tuner 603 to tune to the proper frequency of the channel or program desired and subsequently instructs the processing circuitry 340 to begin descrambling of this channel or program.</i></p> <p><i>Asmussen at 26:21-29.</i></p> <p><i>The set top terminal's microprocessor coordinates all CATV signal reception and also interacts with various upstream data transmission components 604, which have been described above.</i></p> <p><i>Asmussen at 26:60-63.</i></p>
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	<p><i>During this processing, the microprocessor 602 coordinates the demultiplexing of the programming signals.</i></p> <p><i>Asmussen at 36:13-15.</i></p>
<p>[1(f)] wherein when the processor receives an inbound videophone call notice while displaying the first digital information on the display, the processor pauses the displaying of the first digital information and renders the camera operative;</p>	<p>Asmussen discloses wherein when the processor receives an inbound videophone call notice while displaying the first digital information on the display, the processor pauses the displaying of the first digital information.</p> <p><i>The set top terminal also includes features for caller identification of video calls and dual display of video programs and video calls, such as picture in picture.</i></p> <p><i>Asmussen at Abstract.</i></p> <p><i>Still other such features include caller identification of video calls and dual display of video programs and video calls, such as picture in picture. The video call functionality can be built into a set top terminal or provided as a hardware upgrade to a set top terminal.</i></p> <p><i>Asmussen at 4:26-30.</i></p> <p><i>vi. Video Call-Video Program Picture-in-Picture</i> <i>Picture-in-picture viewing of a video program and a video call together is also possible. The viewer/call participant can select different orientations of the video components (e.g., call video in program video, vice versa, split screen). The viewer/call participant can also select whether to hear the call audio, the program audio or a summation of both. As an example, two sports enthusiasts may each watch the same sports event program while engaging in an interactive picture-in-picture video call to discuss the action. In addition, other content may be exchanged as part of the call, including files, a whiteboard and/or "telestrator" or "John Madden Pen" markings on the video program, making the program-call combination a shared multimedia experience.</i></p>

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Exhibit E2

	<p><i>Asmussen at 59:43-56.</i></p> <p><i>In response to an incoming video phone call, message, web page, or other video communications information, the system pauses the video program and displays an indication of the occurrence of the communications event.</i></p> <p><i>Asmussen at Abstract.</i></p> <p><i>If another type of communications event occurred (step 1451), such as receipt of an incoming video call, the system may display an indication of that type of communications event (step 1456). For any of the communications events, the system may alternatively display an icon, such as a telephone icon for a phone call or an envelope icon for an e-mail message, or display textual or other information providing an indication of the communications event. This display may be in the form of an overlay menu or a hidden menu. Alternatively, techniques such as picture-in-picture, split screen, or side-by-side screen displays may be used. After displaying an indication of the communications event, the system waits for user input (step 1457).</i></p> <p><i>Asmussen at 47:26-38.</i></p> <p><i>FIG. 28 is a flow chart of an event monitoring method 1440 for monitoring communications events and pausing a video program in response to detection of an occurrence of a communications event or triggering event. Event monitoring method 1440 may be implemented in software or firmware, including modules, for execution by microprocessor 602 in set top terminal 220; alternatively, it may be implemented with other processor-controlled devices for use in displaying a video program on an associated display device.</i></p> <p><i>Asmussen at 46:27-35.</i></p>
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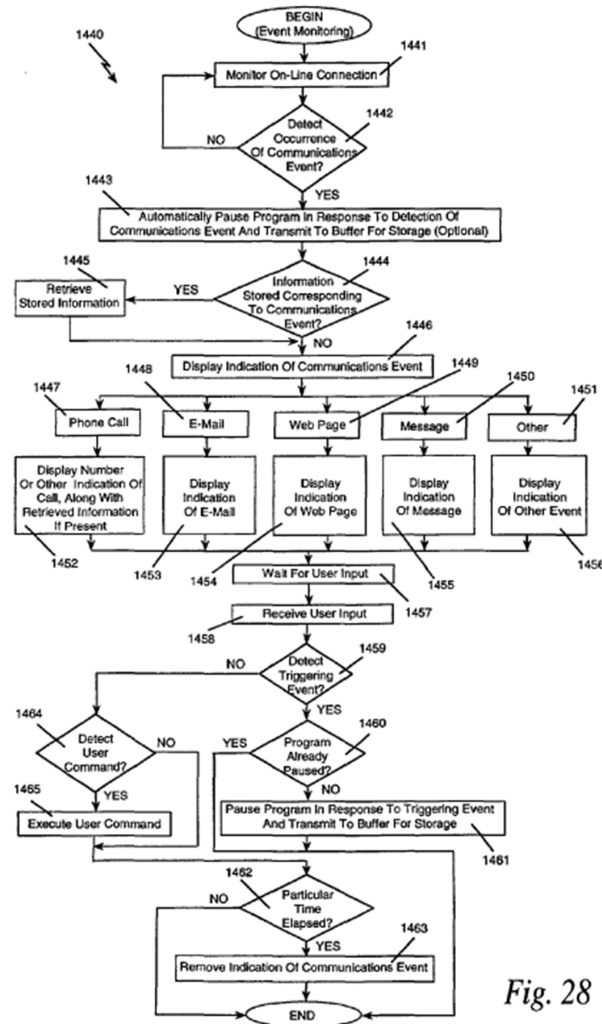


Fig. 28

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Exhibit E2

	<p><i>Asmussen at Fig. 28.</i></p> <p><i>Other such features include a system for automatically pausing a video program in response to detection of the occurrence of a video call event or triggering event. In response to an incoming video phone call, message, web page, or other video information, the system pauses the video program and displays an indication of the occurrence of the video call event. Alternatively, the system pauses the video program in response to a triggering event, which includes a user's access to a video call event.</i></p> <p><i>Asmussen at 4:10-18.</i></p> <p><i>Automatic Program Pause Feature</i> <i>An apparatus and method consistent with the present invention provides for automatically pausing of a video program in response to detection of an occurrence of a communications event or related triggering event. The term "communications event" includes any communication of information through any wireline or wireless medium, examples of which are provided below. The term "triggering event" includes a user's access to a communications event, examples of which are provided below. During the pausing, the video program is buffered such that a user may replay portions of it and perform other VCR-type functions of the program. In addition, the apparatus and method provide an indication of the communications event to the user by displaying, for example, text or graphics on a video display for the video program. For example, based upon detection of an incoming telephone call, the apparatus pauses the video program and displays an indication of the call overlaid on the paused video program or inset within it. This feature thus permits a user to automatically obtain an indication of a particular event while, at the same time, having the video program buffered such that portions of it are not missed, which is particularly useful for "live" video programs.</i></p> <p><i>Asmussen at 43:18-40.</i></p>
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Exhibit E2

	<p><i>This program pause feature provides the user with an indication of a particular communications event, while buffering the paused video program. The user can thus take a particular action in response to the communications event without missing any substantial portion of the video program. For example, in response to display of an indication of an incoming telephone call, the user may choose to answer the telephone call while the video program is buffered.</i></p> <p><i>Asmussen at 44:0-27.</i></p> <p><i>FIGS. 25 and 26 illustrate how use of the buffer for a video program permits the user to replay portions of the video program and execute other VCR-type functions for it. This feature is particularly useful for real-time ("live") video program transmission, where the user typically would otherwise lose portions of the transmission when the video program is paused. This feature may be used with any type of video program, whether transmitted, for example, in real-time or prerecorded. The buffer receives and stores the video program for subsequent playback. Various techniques are known for converting a video program into a digital signal, potentially compressing it, and storing it onto a storage device for subsequent replay. The buffer may be implemented with a storage device such as a hard disk drive or the RAM controlled by set top terminal 220, as shown in FIG. 4. Alternatively, the buffer can be implemented with a storage device at cable headend 208 or with any type of storage device receiving a video program for display on an associated display device.</i></p> <p><i>Asmussen at 44:38-56.</i></p> <p><i>To support video calling, a video call options menu 1022 is preferably provided. In the video call options menu 1022, the user can set up such things as turning caller ID on/off, turning automatic program pausing on/off, the default state of the video camera 2000 (on or off), time periods when calls shall not interrupt programming and shall be automatically messaged instead (e.g., during favorite programs), how video call images are displayed (e.g., picture-in-picture, on a blue screen or on a paused image of the current program).</i></p>
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	<p><i>Asmussen at 21:34-42.</i></p> <p><i>FIG. 30 is a block diagram of video call transmission and reception functions of the set top terminal 220. In regards to transmission, a video signal from the camera 2000 is subjected to source encoding (i.e., conversion to spectrally efficient or compressed digital form) by a video source encoder 705, and an audio signal from the speaker/microphone 2002 is subjected to source encoding by an audio source encoder 710. The source encoded video and audio signals are synchronized and multiplexed together by a synchronizer multiplexer 715. The video source encoder 705, audio source encoder 710 and the synchronizer multiplexer 715 together can function to perform standard audio/visual encoding algorithms such as MPEG (motion picture expert group) or ITU standard H.261 or H.263, which are well known in the art. Other media signals, signals containing signaling information or data signals from a data source 712 can also be multiplexed with the audio and video signals, as described in greater detail below. The multiplexed audio/visual signal output from the synchronizer multiplexer 715 is optionally encrypted by an encryptor 720 and channel encoded (e.g., forward error correction encoding and/or interleaving) by a channel encoder 725 before being transmitted by a transmitter 730 upstream into a video conferencing connection network. Those skilled in the art will appreciate that the transmission functions illustrated in FIG. 30 can be implemented in an order different from that illustrated.</i></p> <p><i>Asmussen at 50:18-43.</i></p>
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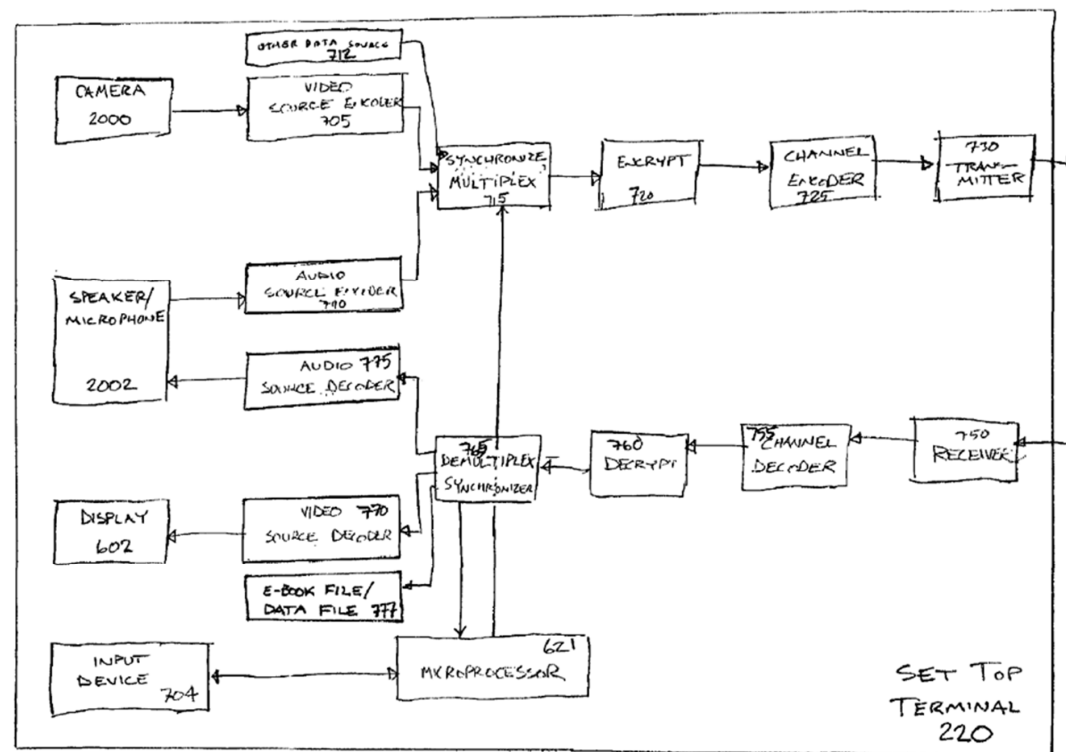


Fig. 30

Asmussen at Fig. 30.

Program Pausing for Video Calls

The automatic program pause feature described in section C(4)(1), above, can be used without modification when the communications event is a video call event, which is a communication event involving video in any way.

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Exhibit E2

	<p><i>Asmussen</i> at 59:37-42.</p> <p>Additionally or alternatively, it would have been obvious to a PHOSITA to configure Asmussen's set-top box device wherein the processor automatically pauses the display and renders the camera operative due to an incoming videophone call notification, as taught by Marley. Marley teaches a set-top box device wherein when the processor receives an incoming videophone call notification the processor displays that notification on the display. The processor pauses the current program being displayed and renders the camera and microphone operative. Asmussen teaches a similar set-top box device wherein when the processor receives an incoming videophone call notification, the processor automatically pauses the current program being displayed due to this notification without the need for user acknowledgement. It would have been obvious to a PHOSITA to configure Asmussen so that the processor both pauses the display and renders the camera and microphone operative automatically upon receipt of an incoming videophone call notification, based on the teaching of Marley wherein the processor pauses the display and renders the camera and microphone operative. Combining prior art elements according to known methods would have yielded the predictable result of allowing the processor to automatically pause the display and render the camera operative with a reasonable expectation of success.</p> <p><i>Once the proper phone number was entered or recalled, PAVP 108 would cause a request to connect with residential location 202 to be sent to MSO 110 (407). This request could be routed by MSO 110 in a manner not unlike a standard VoIP voice or video that is regularly handled by MSO's today, and a connection would be established with video telephone set-top box 300 at residential location 202.</i></p> <p><i>Marley</i> at ¶ [0019].</p>
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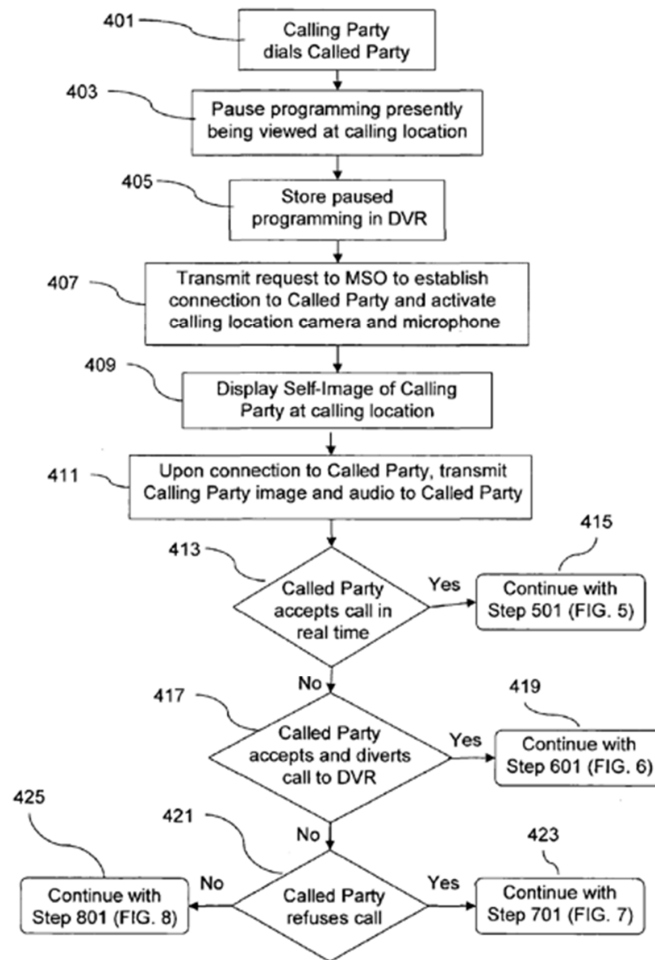


FIG. 4

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	<p><i>Marley</i> at Fig. 4.</p> <p><i>Upon establishment of a connection to video telephone set-top box 300 the video image and audio from camera 104 and microphone 106 would be transmitted for reception by set-top box 300 (411). PAVP 308 would then generate a caller ID message (a window, a crawler, an overlay) on monitor 320. The called party would then press the appropriate button on remote control 324 or manual input panel 314 to either: 1) accept the call in real-time (413, 415); 2) accept the call but divert it to DVR memory 316 as a video answering machine (417,419); or 3) refuse the call (421, 423)</i></p> <p><i>Marley</i> at ¶ [0020].</p> <p><i>Option 1) As shown in FIG. 5, after calling party initiates ("dials") a video call, the call placed to residential location 202 is accepted in real-time (501). Acceptance of the call causes PAVP 308 to mute and/or pause any programming presently being viewed on monitor 320 (503), and store the paused programming in DVR memory 316 for viewing after the termination of the video call (505). VTP 302 activates camera 104 and microphone 106, and in conjunction with PAVP 308, transmits the video image and audio from camera 304 and microphone 306 for reception by set-top box 100 (507), and provides a real time "selfimage" of camera 304's output on a portion of monitor 320 for viewing by the called party (509).</i></p> <p><i>Marley</i> at ¶ [0022].</p> <p>A PHOSITA would have understood that ¶ [0022] of <i>Marley</i> contains a typographical error. As written, VTP 302 is activating the camera and microphone of the remote calling set-top box 122. This does not make sense within the <i>Marley</i> disclosed system. Rather, a PHOSITA would have reasonably understood <i>Marley</i>'s VTP 302 to activate the camera 304 (not 104) and microphone 306 (not 106) of the local set-top box.</p>
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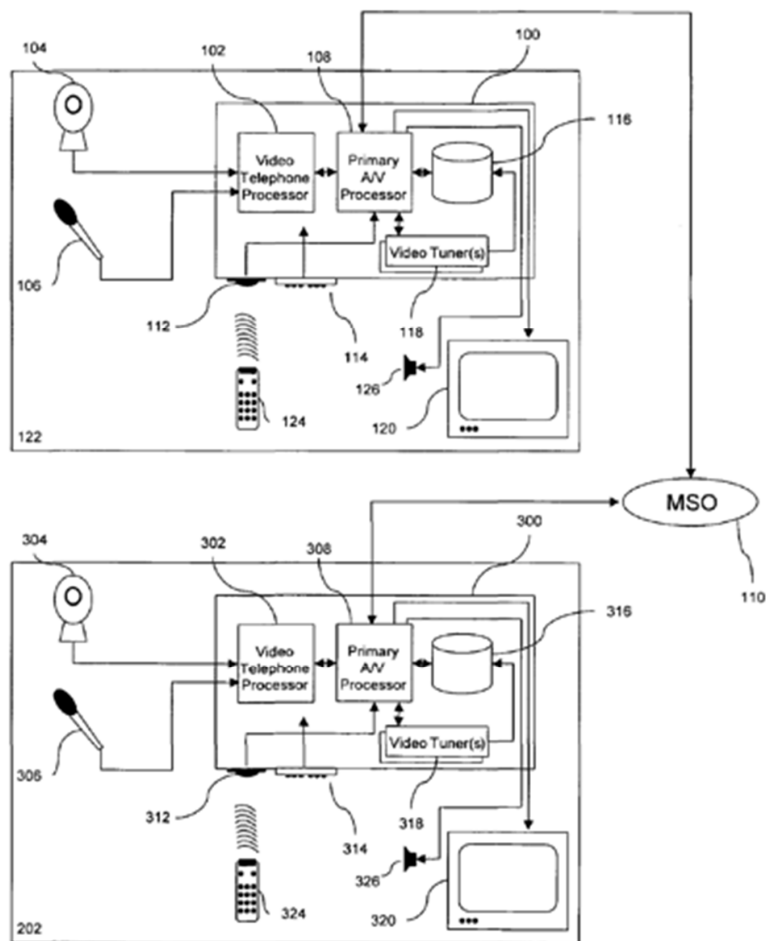


FIG. 3

Marley at Fig. 3.

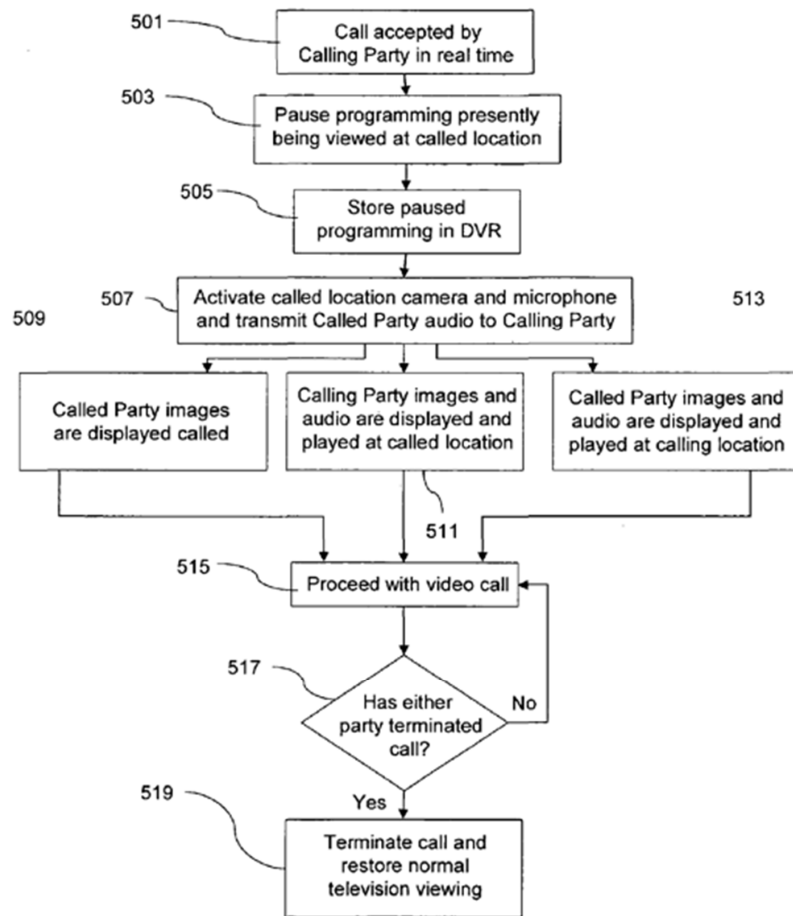


FIG. 5

Marley at Fig. 5.

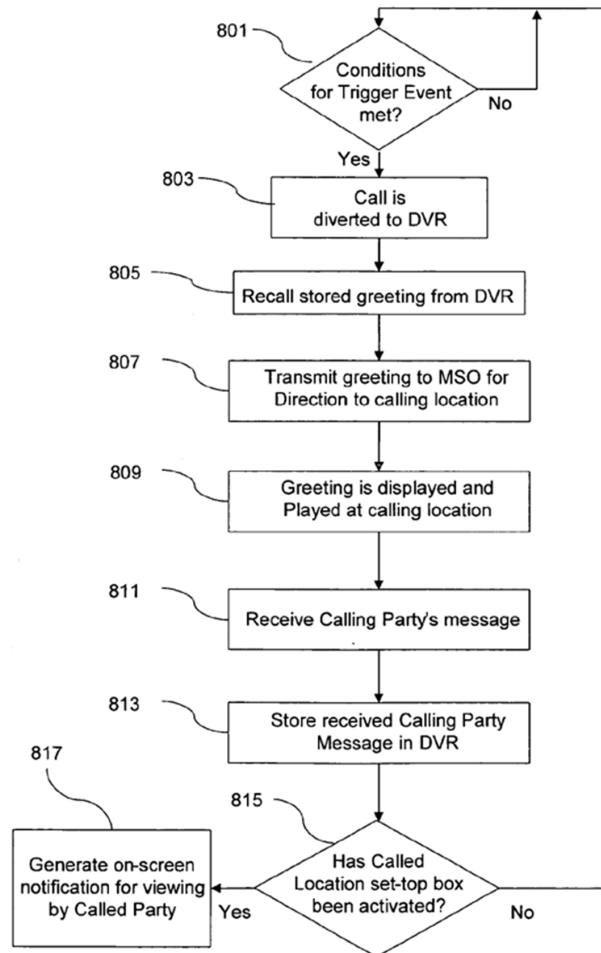


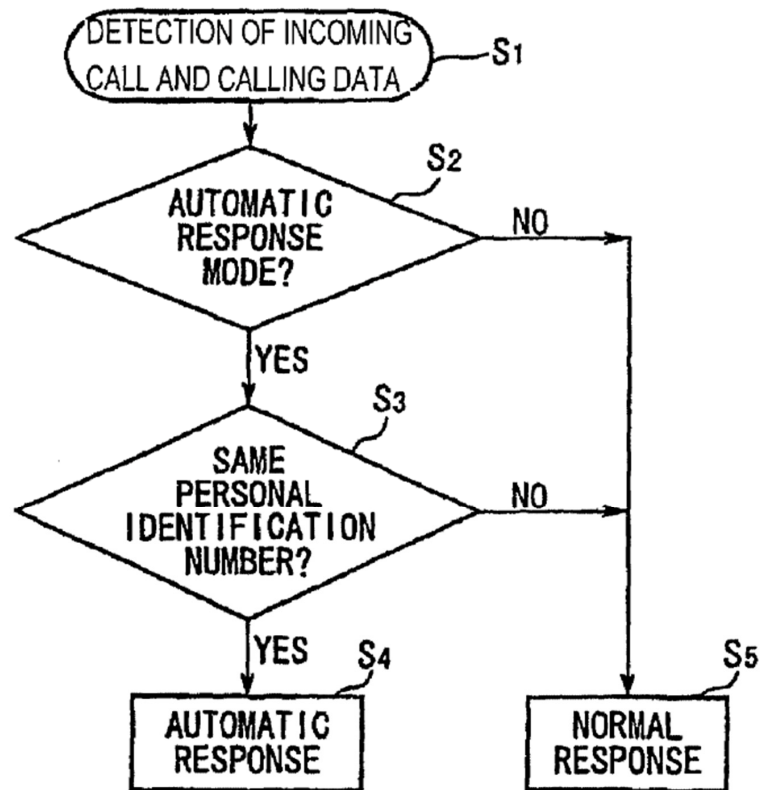
FIG. 8

	<p><i>Marley</i> at Fig. 8.</p> <p>Additionally or alternatively, it would have been obvious to a PHOSITA to configure Asmussen's set-top box device wherein the processor automatically renders the camera and microphone operative due to an incoming videophone call notification, as taught by Saburi. Saburi teaches a processor that receives an incoming videophone call notification and then automatically begins encoding the images and sound captured by the camera and microphone. <i>Saburi</i> at 6:51-7:7. It would have been obvious to a PHOSITA to take the teachings of Saburi, where the incoming notification causes the processor to automatically render the camera and microphone operative, and configure Asmussen so that, upon receipt of an incoming videophone call notification, its processor automatically both pauses the display, as taught by Asmussen, and renders the camera and microphone operative, as taught by Saburi. Saburi emphasizes that a benefit to automatically beginning to encode video and audio is that it will allow for "smooth two-way communication" even if the other party is not familiar with the operation of the device. <i>Saburi</i> at 1:50-53. Combining prior art elements according to known methods would have yielded the predictable result of allowing the processor to automatically pause the display and render the camera operative with a reasonable expectation of success.</p> <p><i>However, none of the above functions realizes smooth two-way communication using images and sound after automatic response.</i></p> <p><i>Saburi</i> at 1:50-53.</p> <p><i>In FIG. 6, the "automatic response" mode means a response mode in which when an incoming call from a particular opposite party who is permitted to have communication in an automatic response mode, the portable videophone unit 20 proceeds to an off-hook status without the key 23a being pressed down, and two-way communication in the VP mode is made possible.</i></p> <p><i>Saburi</i> at 6:10-16.</p>
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Exhibit E2

	<p><i>When the central processing unit 1 detects an incoming call (step S1), it judges whether or not the automatic response mode is activated by a key operation (step S2).</i></p> <p><i>If the result of the judgement in step S2 is "no", that is, if the automatic response mode is not activated, the processing proceeds to step S3, where processing for a normal response is carried out.</i></p> <p><i>In contrast, if the result of the judgement in step S2 is "yes", that is, if the automatic response mode is activated, authentication of the calling party is performed (step S4).</i></p> <p><i>Saburi at 6:25-36.</i></p> <p><i>On the other hand, if the result of the judgement in step S4 is "yes", that is, if the calling party has input correct personal identification number, the central processing unit 1 decides that the incoming call is from a party who is permitted to have communication in an automatic response mode, and the processing proceeds to step S5, where processing for communication in an automatic response mode is carried out.</i></p> <p><i>In step S5, whether the key 23a is pressed or not, the central processing unit 1 generates an off-hook status so as to connect the telephone line to make two-way communication in the VP mode possible.</i></p> <p><i>At this time, if the communication mode of the unit of the recipient party is set to the sound mode or the image mode, control signals from the central processing unit 1 operate switches 3, 4, and 5 to automatically switch the communication mode to the VP mode.</i></p> <p><i>As described above, since the portable videophone unit 20 of this embodiment automatically responds to an incoming call from the portable videophone unit of the opposite party and makes two-way communication using images and sound possible, smooth two-way communication using images and sound can be carried out, and the operability and the usability are improved.</i></p> <p><i>Saburi at 6:51-7:7.</i></p>
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FIG. 6



Saburi at Fig. 6.

	<p><i>Communication modes of this portable videophone unit 20 are switchable in three stage, that is, to the sound mode (communication by sound only), to the image mode (communication by images only), and to the VP mode (communication by sound and images) as described above corresponding to the positions of the switches 3, 4, and 5 which are driven by pressing the key 23c</i></p> <p><i>Saburi at 4:55-61.</i></p> <p><i>Communication modes of this portable videophone unit 20 are switchable in three stage, that is, to the sound mode (communication by sound only), to the image mode (communication by images only), and to the VP mode (communication by sound and images) as described above corresponding to the positions of the switches 3, 4, and 5 which are driven by pressing the key 23c</i> <i>[VP Mode]</i></p> <p><i>When the communication mode is set to the VP mode, all the switches 3, 4, and 5 are placed in the positions indicated by solid lines in FIG. 4.</i></p> <p><i>Images taken by the camera 22 are encoded by an image codec 11, and sent to a multiplexing/separating section 12.</i></p> <p><i>On the other hand, sound input by the microphone 26 is sent to a sound codec 13 via the switch 4, where the sound is encoded and sent to the multiplexing/separating section 12.</i></p> <p><i>The multiplexed data formed by multiplexing the image data and the sound data are sent to a time-division multiplex circuit 14 via the switch 3, and transmitted from the antenna 27 via the radio section 15.</i></p> <p><i>On the other hand, when the portable videophone unit 20 of the opposite party receives the multiplexed data by the antenna 27, these multiplexed data are sent to the multiplexing/ separating section 12 via the radio section 15, the time-division multiplex circuit 14, and the switch 3, where the data are separated into image data and sound data.</i></p> <p><i>The separated imaged data are decoded by the image codec 11, and the images are displayed by the display 21. In addition, the separated sound data are decoded by the sound codec 13 for image communication, and the sound is produced by the speaker 25.</i></p>
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	<p><i>Saburi</i> at 4:55-5:22.</p> <p>Additionally or alternatively, it would have been obvious to a PHOSITA to configure Asmussen's set-top box device wherein the processor automatically renders the camera operative due to an incoming videophone call, as taught by Bear. It would have been obvious to a PHOSITA to modify Asmussen's processor which automatically pauses the display due to an incoming notification, and then further modify the device to render the camera operative, as taught by Bear. Bear teaches a processor that receives an incoming call, launches an A/V capture application, and begins capturing video. <i>Bear</i> at 11:33-45, 11:61-12:7, Fig. 10. Combining prior art elements according to known methods would have yielded the predictable result of allowing the processor to automatically render the camera operative, without requiring user input and upon receipt of an incoming call, with a reasonable expectation of success.</p> <p><i>FIG. 10 presents a flowchart illustrating an A/V capture application using the video controls 402 to capture a video stream or still images. The A/V capture application may be launched whenever a capture event occurs such as opening the lens cover 310. Those skilled in the art will appreciate that there are other ways of launching the application, such as a user may launch it by pressing the capture button 308 or selecting the application from a menu of a graphical user interface, or the computer system may launch the application in response to receiving an incoming phone call that supports video, and so forth. First, the A/V capture application checks if a video stream or still images are to be captured at step 1002.</i></p> <p><i>Bear</i> at 11:33-45; see also <i>id.</i> at Fig. 10.</p> <p><i>If the user has not selected still images to be captured in the A/V capture application, then the application sets the camera capture indicator light 306 to red at step 1012 to indicate that the A/V capture application is in the mode of capturing a video stream. The camera begins capturing the video stream at step 1014. The application periodically checks if the user has made any indication to stop capturing the video stream at step 1016. If no indication has been made,</i></p>
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Exhibit E2

	<p><i>the application continues to capture the video stream at step 1014. If the user has pressed the capture button 308 or otherwise has made an indication to stop, the application then displays a dialog box for the user to confirm that the image is to be saved at step 1018. The application is then finished processing and the camera indicator light is turned off.</i></p> <p><i>Bear at 11:61-12:7.</i></p> <p><i>Optionally, the user can set a preference so that the camera is automatically enabled whenever answering a call that supports video.</i></p> <p><i>Bear at 6:44-46.</i></p>
<p>[1(g)] wherein the processor outputs the third digital information to the another communication apparatus and displays the second digital information of the videophone call on the display; and</p>	<p>Asmussen discloses wherein the processor outputs the third digital information to the another communication apparatus and displays the second digital information of the videophone call on the display.</p> <p><i>Basic Video Call Functionality</i> <i>A preferred form of the present invention provides video calling capability in the set top terminal 220. To support video calling, the set top terminal 220 is augmented with additional features, as shown in FIG. 30. The additional features can be integrated into an enhanced set top terminal 220 or provided as one or more upgrades to a more basic set top terminal 220. In FIG. 30, a camera 2000 and an input device 704 are included in the set top terminal 220. The camera 2000 is preferably a small video camera located and oriented on the set top terminal 220 so that it is typically directed at the face, torso, or entire body of one viewing the display 602. The direction of pointing is preferably manually adjustable by the user. Alternatively or additionally, the camera 2000 can be pointed, focused and otherwise controlled electronically.</i></p> <p><i>Asmussen at 49:42-56.</i></p>

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	<p><i>FIG. 30 is a block diagram of video call transmission and reception functions of the set top terminal 220. In regards to transmission, a video signal from the camera 2000 is subjected to source encoding (i.e., conversion to spectrally efficient or compressed digital form) by a video source encoder 705, and an audio signal from the speaker/microphone 2002 is subjected to source encoding by an audio source encoder 710. The source encoded video and audio signals are synchronized and multiplexed together by a synchronizer multiplexer 715. The video source encoder 705, audio source encoder 710 and the synchronizer multiplexer 715 together can function to perform standard audio/visual encoding algorithms such as MPEG (motion picture expert group) or ITU standard H.261 or H.263, which are well known in the art. Other media signals, signals containing signaling information or data signals from a data source 712 can also be multiplexed with the audio and video signals, as described in greater detail below. The multiplexed audio/visual signal output from the synchronizer multiplexer 715 is optionally encrypted by an encryptor 720 and channel encoded (e.g., forward error correction encoding and/or interleaving) by a channel encoder 725 before being transmitted by a transmitter 730 upstream into a video conferencing connection network. Those skilled in the art will appreciate that the transmission functions illustrated in FIG. 30 can be implemented in an order different from that illustrated.</i></p> <p><i>Asmussen at 50:18-43.</i></p>
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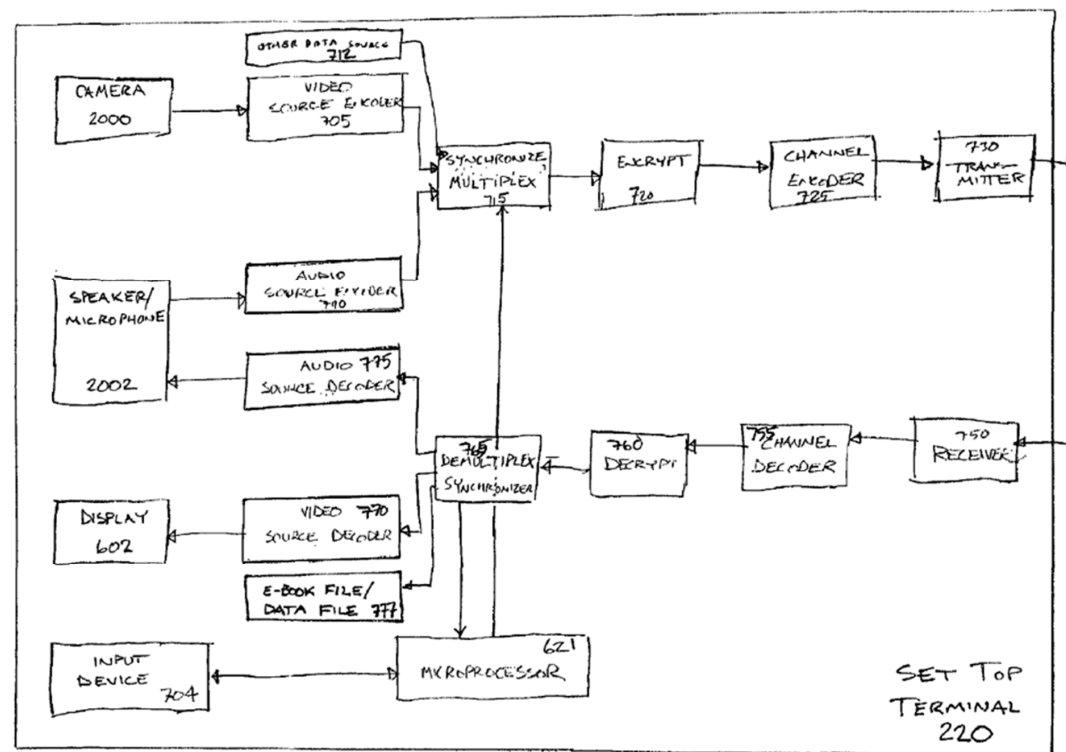


Fig. 30

Asmussen at Fig. 30.

In regards to reception, an incoming (i.e., downstream) video conferencing signal is received by a receiver 750, decoded by a channel decoder 755, decrypted by a decryptor 760, and demultiplexed with proper relative timing among video, audio and other data components by a demultiplexer synchronizer 765. Video signals are decompressed by a video source decoder

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Exhibit E2

	<p><i>770 and output for display on a display device 602, which is typically the television 222. Audio signals are decompressed by an audio source decoder 775 and output for playing on the speaker/microphone 2002, the speaker portion of which may be the speaker(s) of the television 222 Data files, such as electronic books, are stored in one or more files 777. Again, the order of processing can be different from that illustrated.</i></p> <p><i>Asmussen at 50:44-57.</i></p> <p><i>The set top terminal also includes features for caller identification of video calls and dual display of video programs and video calls, such as picture in picture.</i></p> <p><i>Asmussen at Abstract.</i></p> <p><i>Still other such features include caller identification of video calls and dual display of video programs and video calls, such as picture in picture. The video call functionality can be built into a set top terminal or provided as a hardware upgrade to a set top terminal.</i></p> <p><i>Asmussen at 4:26-30.</i></p> <p><i>vi. Video Call-Video Program Picture-in-Picture</i> <i>Picture-in-picture viewing of a video program and a video call together is also possible. The viewer/call participant can select different orientations of the video components (e.g., call video in program video, vice versa, split screen). The viewer/call participant can also select whether to hear the call audio, the program audio or a summation of both. As an example, two sports enthusiasts may each watch the same sports event program while engaging in an interactive picture-in-picture video call to discuss the action. In addition, other content may be exchanged as part of the call, including files, a whiteboard and/or "telestrator" or "John Madden Pen" markings on the video program, making the program-call combination a shared multimedia experience.</i></p>
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	<i>Asmussen</i> at 59:43-56.
[1(h)] wherein when the processor receives an input for stopping the videophone call, the processor stops output of the third digital information and stops the camera.	<p><i>Asmussen</i> discloses wherein when the processor receives an input for stopping the videophone call, the processor stops output of the third digital information and stops the camera. For example, <i>Asmussen</i> receives input from a user's remote to "hang up" when a user wishes to end the call. Upon the ending of the call a user can begin playback of the program. <i>Asmussen</i> at 31:33-48 and Abstract. A PHOSITA would have reasonably understood or otherwise find it obvious that because normal television viewing is restored upon termination of the call, the processor stops outputting the third digital information and stops the camera. Additionally, a PHOSITA would have understood that upon the camera and microphone being deactivated upon termination of a videophone call, the system no longer encodes and outputs data from the camera and microphone.</p> <p><i>FIG. 11 shows RF signals, depicted at 330, being received at by a data receiver 332 and tuner 603 working in unison. Both of these devices are interfaced with the microprocessor 602, which receives inputs, depicted at 338, from the subscriber, either through the set top terminal's keypad 645 or remote control unit 900.</i></p> <p><i>Asmussen</i> at 26:1-6.</p>

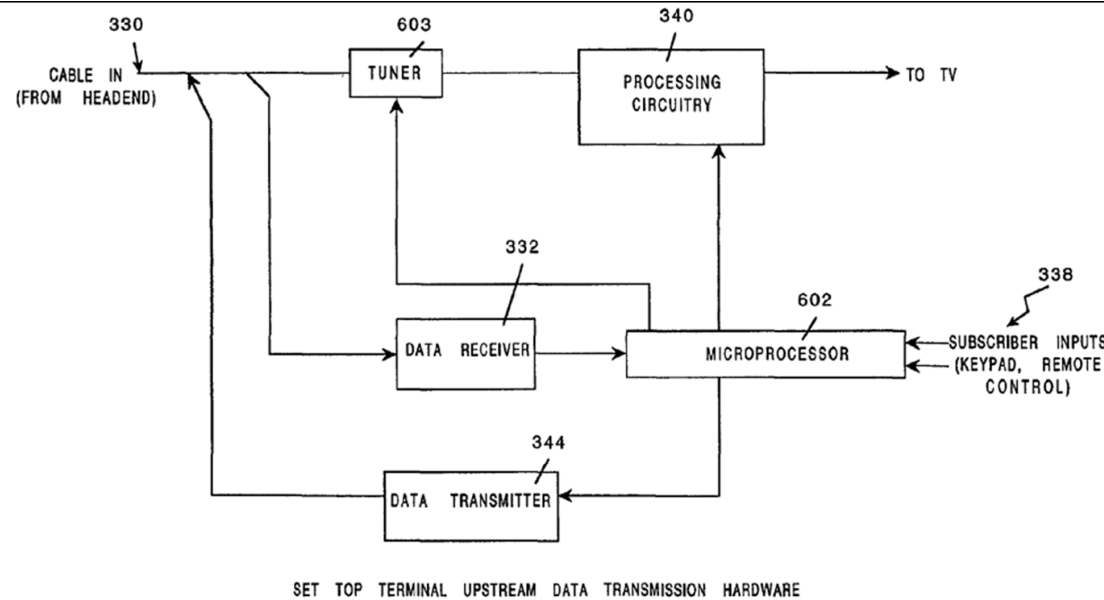


Fig. 11

Asmussen at Fig. 11.

Additionally, although the remote control unit 900 communicates with the set top box by means of infrared transmission, other forms of communication are contemplated, including ultra-sound, radio frequency and other electromagnetic frequency communication.

To support video calling capabilities, the remote control unit 900 preferably includes a call answer button (not shown) and a call hang up button (not shown). The call answer button and the call hang up button may be separate buttons or the same button. To support video calling with outgoing video, the remote control unit 900 preferably includes a camera activation button (not shown) and buttons or other controls for pointing the camera 2000. The cursor

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	<p><i>movement buttons 370, a joystick, a trackball or something similar can be used for camera pointing in a camera control mode.</i></p> <p><i>Asmussen at 31:33-48.</i></p> <p><i>A set top terminal equipped with a camera and microphone includes the capability to send and receive video calls through a cable television delivery system or other communications networks. In response to detection of the occurrence of a video call event or triggering event, a video program is automatically paused. In response to an incoming video phone call, message, web page, or other video communications information, the system pauses the video program and displays an indication of the occurrence of the communications event. The system also buffers the video program while paused, permitting a user to replay missed portions of it. Alternatively, the system waits for a triggering event, which includes the user's access to the communications event, in order to pause the video program. The set top terminal also includes features for caller identification of video calls and dual display of video programs and video calls, such as picture in picture. A hardware upgrade for adding video call functionality to a set top terminal is also disclosed.</i></p> <p><i>Asmussen at Abstract.</i></p> <p><i>Other such features include a system for automatically pausing a video program in response to detection of the occurrence of a video call event or triggering event. In response to an incoming video phone call, message, web page, or other Video information, the system pauses the video program and displays an indication of the occurrence of the video call event. Alternatively, the system pauses the video program in response to a triggering event, which includes a user's access to a video call event. The system also buffers the video program while paused, permitting a user to replay missed portions of it.</i></p> <p><i>Asmussen at 4:10-20.</i></p>
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	<p><i>This program pause feature provides the user with an indication of a particular communications event, while buffering the paused video program. The user can thus take a particular action in response to the communications event without missing any substantial portion of the video program.</i></p> <p><i>Asmussen at 44:20-24.</i></p> <p>Additionally or alternatively, it would have been obvious to a PHOSITA to configure Asmussen's set-top box device wherein when the processor receives an input for stopping the videophone call, the processor stops the camera, as taught by Bear. Bear teaches a processor that stops the camera when the call is over. <i>Bear at 6:50-54, 7: 46-60.</i> Combining prior art elements according to known methods would have yielded the predictable result of configuring the processor to stop the camera when the call is over with a reasonable expectation of success, as no further video functionality need be performed given that the call is over.</p> <p><i>When the call is over, the user may hang up by pressing the camera button which will terminate the call and turn off the camera indicator light.</i></p> <p><i>Bear at 3:5-7.</i></p> <p><i>When the call is over, the system may be configured such that the user may hang up by pressing the camera button, which will terminate the call and turn off the camera indicator light.</i></p> <p><i>Bear at 6:50-53; see also id. at 12:23-25.</i></p> <p>Bear further teaches that when the camera indicator light is off or unlit, the camera is off.</p> <p><i>Because the state of the capture button 308 may not be readily apparent to a user, a camera indicator light 306 such as an LED may be used in conjunction with the capture button 308. The camera indicator light 306 may be adjacent the camera lens 304 or integrated into the capture button 308. The camera indicator light 306 may indicate state via various colors and flash patterns, e.g.,</i></p>
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Exhibit E2

	<p><i>steady state unlit when the camera is off, steady state red when video capture is taking place, a slowly blinking red indicator light when there is an incoming video call, or steady state green when the camera is used for proximity detection. Note that although video-capable applications can set this indicator to a particular color such as red when recording, the firmware may additionally ensure the indicator is set to red if the camera is actively streaming video.</i></p> <p><i>Bear at 7:46-60.</i></p>
Claim 2	
<p>2. The communication apparatus according to claim 1, wherein after the videophone call is finished, the processor restarts the displaying of the first digital information.</p>	<p>Asmussen discloses wherein after the videophone call is finished, the processor restarts the displaying of the first digital information.</p> <p><i>A set top terminal equipped with a camera and microphone includes the capability to send and receive video calls through a cable television delivery system or other communications networks. In response to detection of the occurrence of a video call event or triggering event, a video program is automatically paused. In response to an incoming video phone call, message, web page, or other video communications information, the system pauses the video program and displays an indication of the occurrence of the communications event. The system also buffers the video program while paused, permitting a user to replay missed portions of it. Alternatively, the system waits for a triggering event, which includes the user's access to the communications event, in order to pause the video program. The set top terminal also includes features for caller identification of video calls and dual display of video programs and video calls, such as picture in picture. A hardware upgrade for adding video call functionality to a set top terminal is also disclosed.</i></p> <p><i>Asmussen at Abstract.</i></p> <p><i>Other such features include a system for automatically pausing a video program in response to detection of the occurrence of a video call event or triggering event. In response to an incoming video phone call, message, web</i></p>

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Exhibit E2

	<p><i>page, or other Video information, the system pauses the video program and displays an indication of the occurrence of the video call event. Alternatively, the system pauses the video program in response to a triggering event, which includes a user's access to a video call event. The system also buffers the video program while paused, permitting a user to replay missed portions of it.</i></p> <p><i>Asmussen at 4:10-20.</i></p> <p><i>This program pause feature provides the user with an indication of a particular communications event, while buffering the paused video program. The user can thus take a particular action in response to the communications event without missing any substantial portion of the video program.</i></p> <p><i>Asmussen at 44:20-24.</i></p> <p><i>FIGS. 25 and 26 illustrate how use of the buffer for a video program permits the user to replay portions of the video program and execute other VCR-type functions for it. This feature is particularly useful for real-time ("live") video program transmission, where the user typically would otherwise lose portions of the transmission when the video program is paused. This feature may be used with any type of video program, whether transmitted, for example, in real-time or prerecorded. The buffer receives and stores the video program for subsequent playback.</i></p> <p><i>Asmussen at 44:38-47.</i></p>
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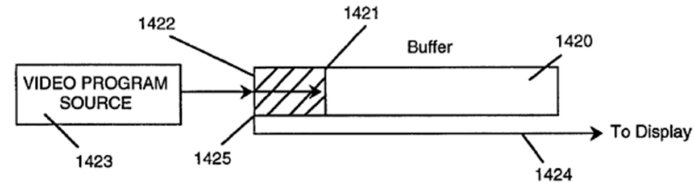


Fig. 25

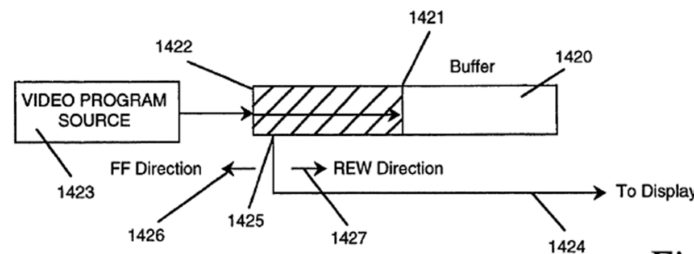


Fig. 26

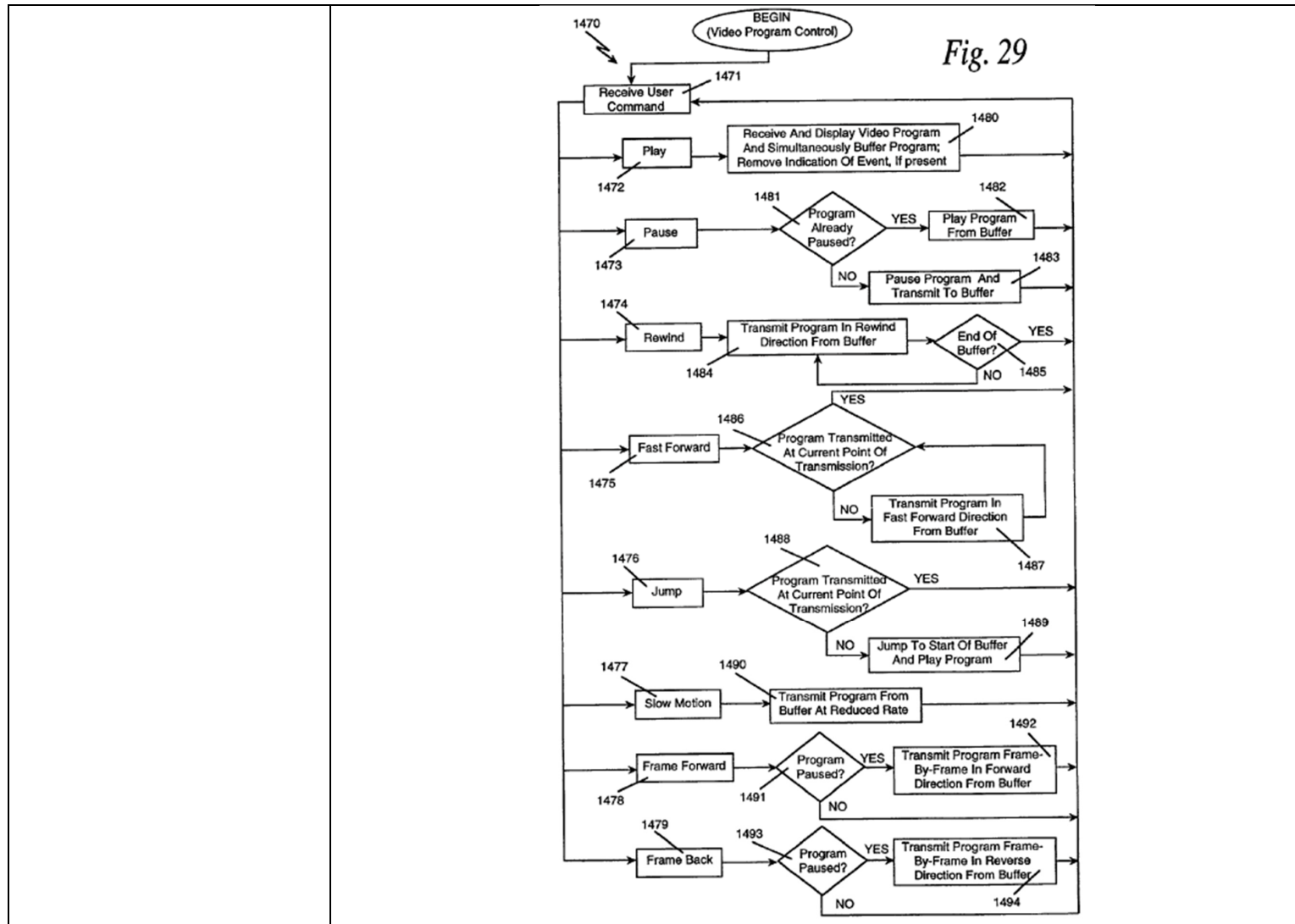
Asmussen at Fig. 25 and 26.

As shown in FIG. 25, a buffer 1420 receives a video signal from a video program source 1423, which includes any source of a video signal for use in displaying a video program. Examples include broadcast television, and other wireless and cable television transmission, and electronic devices out putting video signals. The video signal is typically processed for storage within buffer 1420, such as through conversion to a digital signal, compression, and filtering. Buffer point 1422 in buffer 1420 illustrates a point of current transmission. In other words, a beginning of the buffer corresponds with a current transmission of a video program from video program source 1423. The video program is transmitted from the buffer to a video program display 1424.

Upon reading the video signal from buffer 1420, various processing of it may occur for Subsequent display on a television or other display device. For

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Exhibit E2

	<p><i>example, the stored video signal is typically converted to an analog signal, amplified, and filtered before transmission to the display device. A transmission point 1425 illustrates a point of transmission of the video program from buffer 1420 to display 1424. Therefore, when the system transmits the video program from the start of the buffer, with transmission point 1425 corresponding to the point of current transmission 1422, the video program is transmitted in real-time.</i></p> <p><i>Asmussen at 44:57-45:13.</i></p> <p><i>FIG. 26 illustrates use of the buffer for performing various video control functions, particularly after the video program has been paused. As the video program is paused, buffer point 1425 moves along buffer 1420 to track the last point of transmission of the video program. When the video program is paused, the user may execute various functions to continue to play the video program and play portions that were missed. Therefore, the amount of video buffered between point 1421 and buffer point 1425 represents an amount buffered before the video program was paused. The amount buffered between buffer point 1425 and point of current transmission 1422 represents the amount of video program missed by the user and buffered while the video program was paused. Upon requesting to play the video program, buffer point 1425 moves toward the beginning of buffer 1422 in order to play a buffered portion that was missed.</i></p> <p><i>Asmussen at 45:22-37.</i></p>
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Exhibit E2

	<p><i>Asmussen at Fig. 29.</i></p> <p><i>FIG. 29 illustrates video program control method 1470, which may be executed simultaneously with event monitoring method 1440. Video program control method 1470 permits VCR-type functions based upon use of the buffer as explained with respect to FIGS. 25 and 26. In addition, video program control method 1470 permits the user to enter a command in step 1457 in the flow chart in FIG. 28 in order to begin playing a video program after it has been paused in response to detection of an occurrence of a communications event.</i></p> <p><i>Asmussen at 48:29-38.</i></p>
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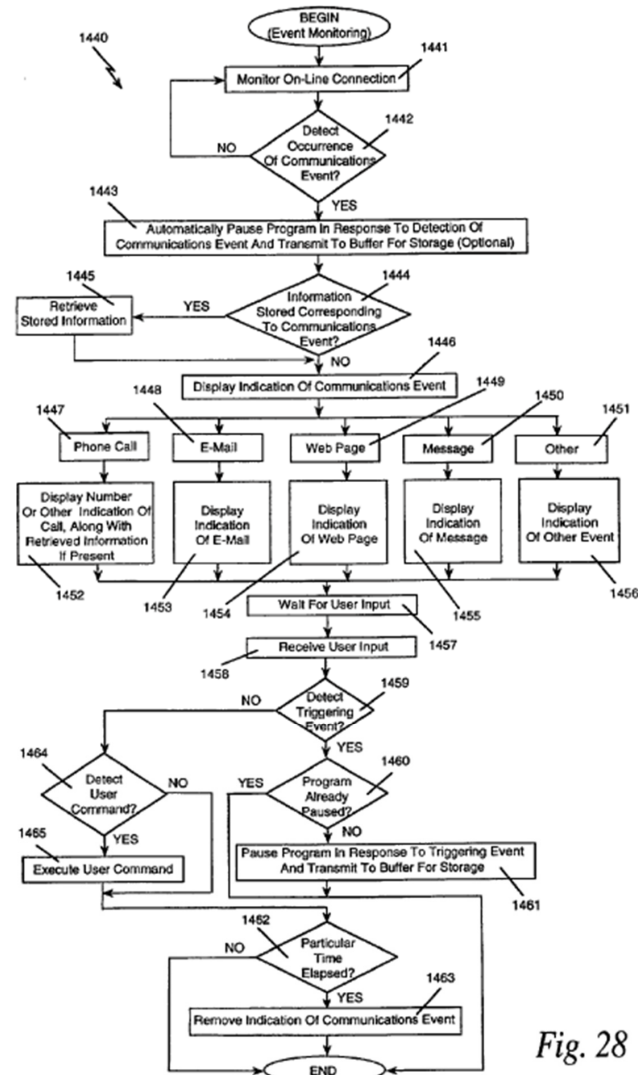


Fig. 28

	<p>Asmussen at Fig. 28.</p> <p>Additionally or alternatively, it would have been obvious to a PHOSITA to configure Asmussen's processor to restart the first digital information after the videophone call is finished, as taught by Allen. Like Asmussen, Allen teaches a set-top box device with a processor that automatically restarts displaying of the television program from the point at which the video call commenced in response to the termination of the call. Allen emphasizes a benefit of resuming the program from the point of pausing as allowing a "user to subsequently view the program in its entirety." <i>Allen</i> at ¶ [0008]. A PHOSITA would have been motivated to configure Asmussen's system to restart displaying of the first digital information thereby improving similar devices in the same way. Combining prior art elements according to known methods would have yielded the predictable result of restarting a paused program upon termination of a videophone call with a reasonable expectation of success.</p> <p><i>What is also needed is a system and method for automatically answering and recording video calls in Which a television program or other broadcast entertainment program is automatically buffered to allow a user to subsequently view the program in its entirety.</i></p> <p><i>Allen</i> at ¶ [0008].</p> <p><i>In certain embodiments, if the user accepts the request (or later interrupts the recording of a video message to communicate with the caller), the ITV system begins to buffer a television signal being currently displayed. When the video communication is terminated, the ITV system plays back the television program being buffered from the point in time at which the communication commenced.</i></p> <p><i>Allen</i> at ¶ [0027].</p> <p><i>Later, when the communication is terminated, the television signal 404 being buffered may be played back from the point in time at which the communication commenced. Buffering may continue during playback, effectively time-shifting the television signal 404 for the period of the communication. As a result, the</i></p>
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Exhibit E2

	<p><i>user 402 may provide complete attention to the caller 406 without missing significant portions of a television broadcast.</i></p> <p><i>Allen at ¶ [0084].</i></p> <p><i>Upon termination of the two-way video communication channel 602, a playback component 914 may begin to play back the buffered television signal 404 from the point in time at which communication commenced. The playback component 914 retrieves the buffered television signal 404 from the storage device 310 and displays the signal 404 on the television 104.</i></p> <p><i>Allen at ¶ [0096].</i></p> <p><i>A determination 1108 is then made whether the user accepts or rejects the request 408. If the user accepts, in certain embodiments, a television signal 404 currently being viewed is buffered 1110 to a storage device 310. Thereafter, two-way video communication is established 1112 between the user 402 and the caller 406. Next, a determination 1114 is made whether the communication has been terminated. If so, the television signal 404 being buffered is played back 1116 from a point in time at which the request 408 was accepted 1108. If not, the method returns to step 1114 to await the termination of the communication.</i></p> <p><i>Allen at ¶ [0101].</i></p>
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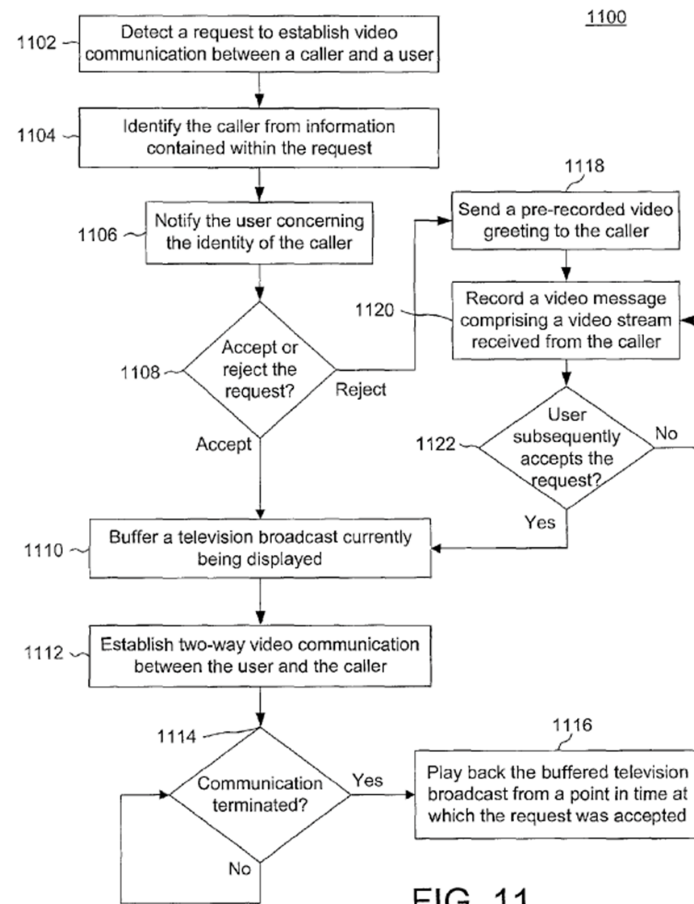


FIG. 11

Allen at Fig. 11.

Claim 3

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Exhibit E2

<p>3. The communication apparatus according to claim 2, further comprising a microphone configured to generate audio information which is included in the third digital information.</p>	<p>Asmussen discloses a microphone configured to generate audio information which is included in the third digital information. <i>See supra, Claims 1(c), 1(g).</i></p> <p>Additionally or alternatively, Asmussen in view of Bear renders this limitation obvious. <i>See supra, Claims 1(c), 1(g).</i></p>
<p><i>Claim 4</i></p>	
<p>4. The communication apparatus according to claim 3, wherein when the processor receives the inbound videophone call notice while displaying the first digital information on the display, the processor switches a function of processing video information of the first digital information to a function of processing video information of the second digital information of the videophone call.</p>	<p>Asmussen discloses when the processor receives the inbound videophone call notice while displaying the first digital information on the display, the processor switches a function of processing video information of the first digital information to a function of processing video information of the second digital information of the videophone call. <i>See supra, Claim 1(f).</i></p> <p>Asmussen further teaches the processor switching to a function of processing video information of the second digital information of the videophone call, e.g., displaying video signals from a calling party.</p> <p><i>In regards to reception, an incoming (i.e., downstream) video conferencing signal is received by a receiver 750, decoded by a channel decoder 755, decrypted by a decryptor 760, and demultiplexed with proper relative timing among video, audio and other data components by a demultiplexer synchronizer 765. Video signals are decompressed by a video source decoder 770 and output for display on a display device 602, which is typically the television 222. Audio signals are decompressed by an audio source decoder 775 and output for playing on the speaker/microphone 2002, the speaker portion of which may be the speaker(s) of the television 222. Data files, such as electronic books, are stored in one or more files 777. Again, the order of processing can be different from that illustrated.</i></p> <p><i>Asmussen at 50:44-57; see also id. at 50:18-43, 33:26-59.</i></p> <p>Alternatively, Asmussen in view of any of Marley, Saburi, and Bear renders this limitation obvious. <i>See supra, Claim 1(f).</i></p>

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Exhibit E2

Claim 5	
5. The communication apparatus according to claim 4, wherein when the processor receives an input for making an outbound videophone call to the another communication apparatus, the processor renders the camera and microphone operative and displays information indicating the outbound videophone call on the display calling message.	<p>Asmussen discloses wherein when the processor receives an input for making an outbound videophone call to the another communication apparatus, the processor renders the camera and microphone operative.</p> <p><i>FIG. 11 shows RF signals, depicted at 330, being received at by a data receiver 332 and tuner 603 working in unison. Both of these devices are interfaced with the microprocessor 602, which receives inputs, depicted at 338, from the subscriber, either through the set top terminal's keypad 645 or remote control unit 900.</i></p> <p><i>Asmussen at 26:1-6.</i></p>

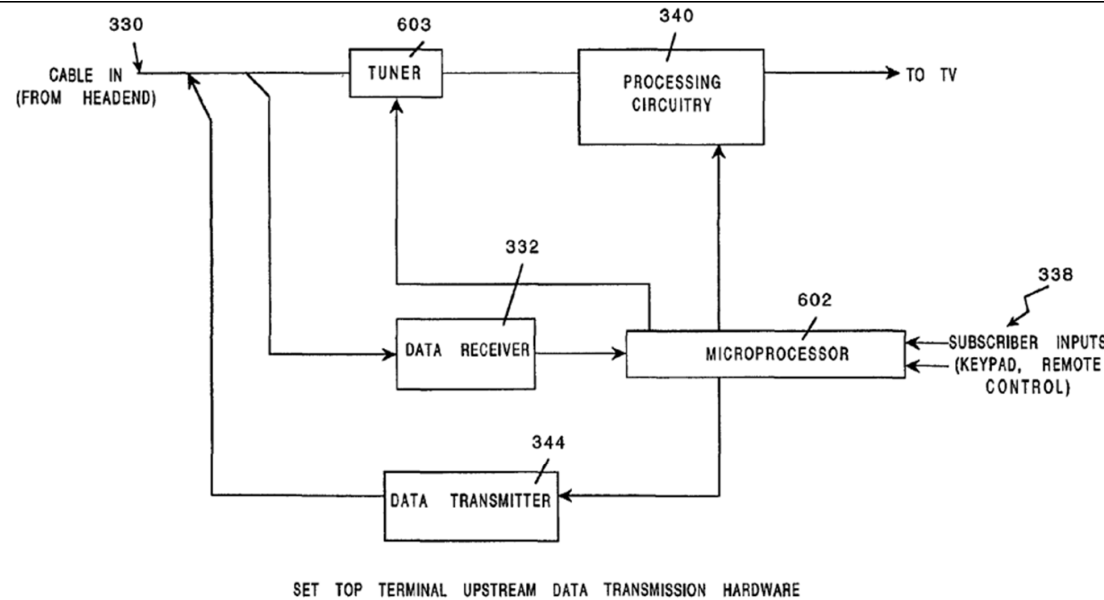


Fig. 11

Asmussen at Fig. 11.

Additionally, although the remote control unit 900 communicates with the set top box by means of infrared transmission, other forms of communication are contemplated, including ultra-sound, radio frequency and other electromagnetic frequency communication.

To support video calling capabilities, the remote control unit 900 preferably includes a call answer button (not shown) and a call hang up button (not shown). The call answer button and the call hang up button may be separate buttons or the same button. To support video calling with outgoing video, the remote control unit 900 preferably includes a camera activation button (not shown) and buttons or other controls for pointing the camera 2000. The cursor

Defendant's Invalidity Contentions
Exhibit E2

	<p><i>movement buttons 370, a joystick, a trackball or something similar can be used for camera pointing in a camera control mode.</i></p> <p><i>Asmussen at 31:33-48.</i></p> <p><i>The microprocessor 602 is capable of executing program instructions stored in memory. These instructions allow a user to access various menus by making selections on the remote control 900. To support video calling, the instructions also enable the microprocessor 602 to process video signals from a camera, to process audio signals from a microphone and to control a camera and microphone. The microprocessor 602 may be a single microprocessor, as shown, or may be several microprocessors, such as a general microprocessor, a camera microprocessor and a microphone processor.</i></p> <p><i>Asmussen at 15:24-33.</i></p> <p><i>A set top terminal equipped with a camera and microphone includes the capability to send and receive video calls through a cable television delivery system or other communications networks.</i></p> <p><i>Asmussen at Abstract.</i></p> <p><i>Basic Video Call Functionality</i> <i>A preferred form of the present invention provides video calling capability in the set top terminal 220. To support video calling, the set top terminal 220 is augmented with additional features, as shown in FIG. 30. The additional features can be integrated into an enhanced set top terminal 220 or provided as one or more upgrades to a more basic set top terminal 220. In FIG. 30, a camera 2000 and an input device 704 are included in the set top terminal 220. The camera 2000 is preferably a small video camera located and oriented on the set top terminal 220 so that it is typically directed at the face, torso, or entire body of one viewing the display 602. The direction of pointing is preferably</i></p>
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Defendant's Invalidity Contentions
Exhibit E2

	<p><i>manually adjustable by the user. Alternatively or additionally, the camera 2000 can be pointed, focused and otherwise controlled electronically.</i></p> <p><i>Asmussen at 49:42-56.</i></p> <p><i>FIG. 30 is a block diagram of video call transmission and reception functions of the set top terminal 220. In regards to transmission, a video signal from the camera 2000 is subjected to source encoding (i.e., conversion to spectrally efficient or compressed digital form) by a video source encoder 705, and an audio signal from the speaker/microphone 2002 is subjected to source encoding by an audio source encoder 710. The source encoded video and audio signals are synchronized and multiplexed together by a synchronizer multiplexer 715. The video source encoder 705, audio source encoder 710 and the synchronizer multiplexer 715 together can function to perform standard audio/visual encoding algorithms such as MPEG (motion picture expert group) or ITU standard H.261 or H.263, which are well known in the art. Other media signals, signals containing signaling information or data signals from a data source 712 can also be multiplexed with the audio and video signals, as described in greater detail below. The multiplexed audio/visual signal output from the synchronizer multiplexer 715 is optionally encrypted by an encryptor 720 and channel encoded (e.g., forward error correction encoding and/or interleaving) by a channel encoder 725 before being transmitted by a transmitter 730 upstream into a video conferencing connection network. Those skilled in the art will appreciate that the transmission functions illustrated in FIG. 30 can be implemented in an order different from that illustrated.</i></p> <p><i>Asmussen at 50:18-43.</i></p>
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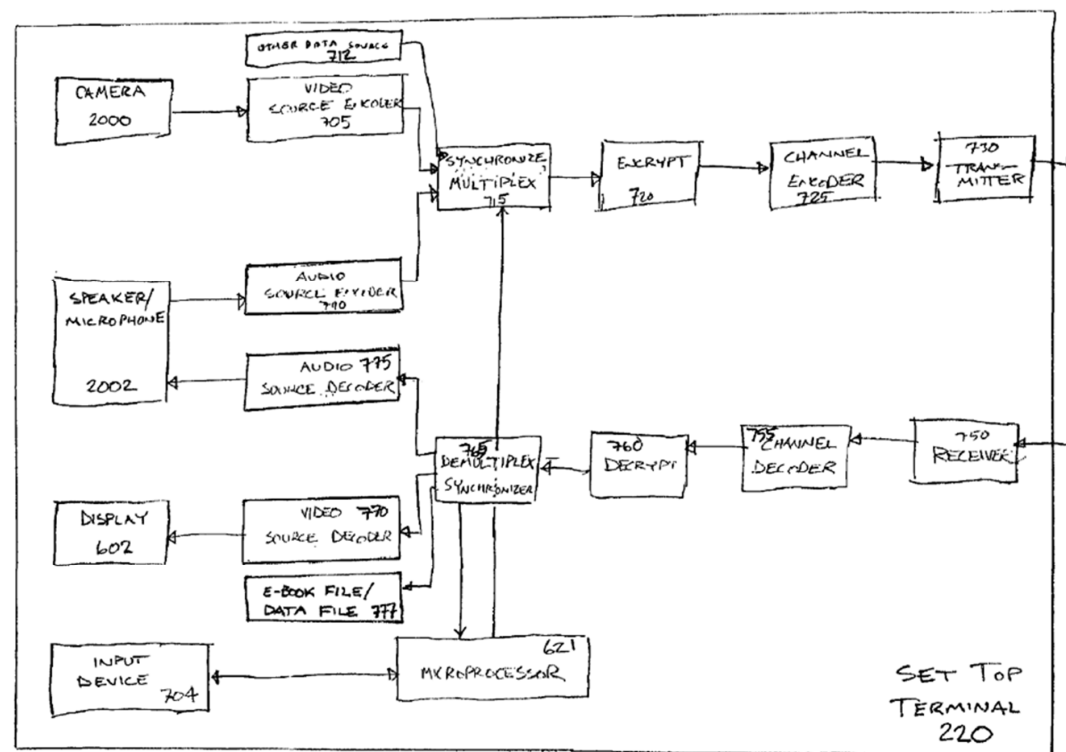


Fig. 30

Asmussen at Fig. 30.

Additionally or alternatively, it would have been obvious to a PHOSITA to modify Asmussen's processor to display information indicating the outbound videophone call on the display, as taught by Marley. Like Asmussen, Marley teaches a set-top box device that allows a user to make outgoing videophone calls. Marley teaches that its primary audio/video processor (PAVP) works in conjunction with its video telephone processor (VTP) to receive a dial command, activate the camera

	<p>and microphone, and display the camera's output on a portion of the display for viewing by the calling party. Marley refers to this displaying of the camera's image on the portion of the display as "self-image" feedback and states that it is "a feature presently found on commercially available video telephones" and is useful for "letting the calling party see the image being transmitted to the called party." <i>Marley</i> at ¶ [0019]. A PHOSITA would have been motivated to combine Marley with Asmussen to enhance the set-top box of Asmussen using the well-known techniques of "self-image" feedback, as taught by Marley. Such a combination of prior art elements according to known methods would have yielded predictable results thereby improving similar set-top boxes in the same way with a reasonable expectation of success.</p> <p><i>For purposes of this description, each of these residential locations is assumed to have a video telephone set-top box arrangement similar to that described for residential location 122.</i></p> <p><i>Marley</i> at ¶ [0016].</p> <p><i>With reference to FIG. 3 and FIG. 4, a calling party situated at residential location 122 would initiate a video call to a called party at residential location 202 by effecting a "dial" command using remote control 124 or manual input panel 114 (401). For example, after actuating a "dial" button, the calling party would then either manually enter the called party's video telephone number, or select the called party from a previously stored video "phone book" retrieved from DVR memory 116 and displayed on at least a portion of monitor 120. The receipt of a "dial" command by PAVP 108 would also initiate the muting and/or pausing of any programming presently being viewed on monitor 120 (403). Any paused programming would be stored in DVR memory 116 for viewing after the termination of the video call being established (405).</i></p> <p><i>Once the proper phone number was entered or recalled, PAVP 108 would cause a request to connect with residential location 202 to be sent to MSO 110 (407). This request could be routed by MSO 110 in a manner not unlike a standard VoIP voice or video that is regularly handled by MSO's today, and a connection would be established with video telephone set-top box 300 at residential</i></p>
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Defendant's Invalidity Contentions
Exhibit E2

	<p><i>location 202. In response to the "dial" command, PAVP 108 would also communicate with VTP 102 to activate camera 104 and microphone 106, and provide for the encoding of the audio from microphone 106 and images from camera 104 to a format compatible with PAVP 108 (407). VTP 102, in conjunction with PAVP 108, would also provide a real time image of camera 104's output on a portion of monitor 120 for viewing by the calling party (409). This type of "selfimage" feedback is a feature presently found on commercially available video telephones, letting the calling party see the image being transmitted to the called party.</i></p> <p><i>Marley at ¶ [0018]-[0019].</i></p>
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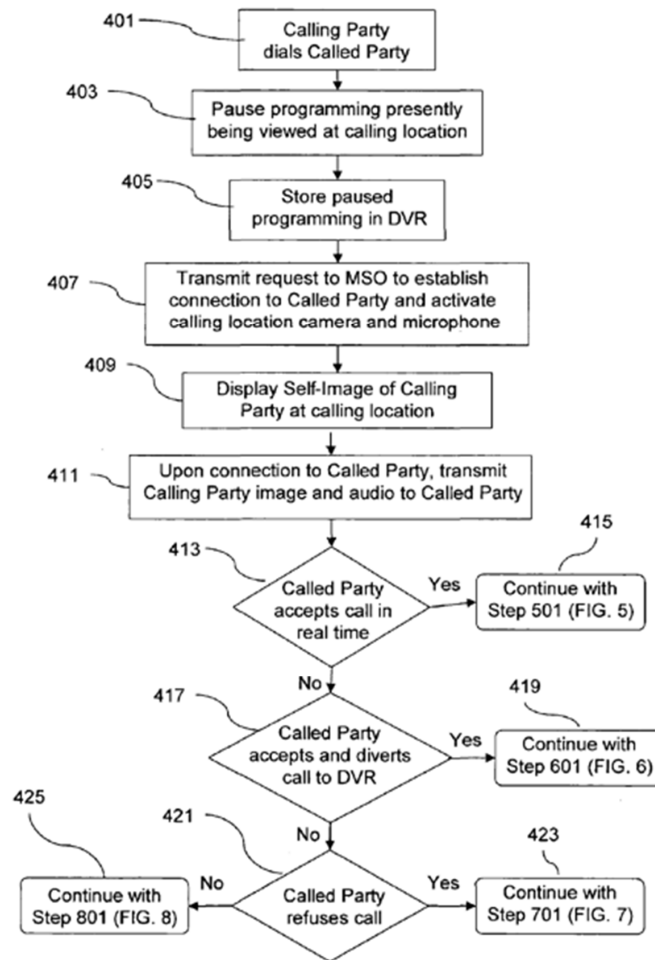


FIG. 4

Marley at Fig. 4.

Defendant's Invalidity Contentions
Exhibit E2

<i>Claim 8</i>	
[8(P)] A method for transmitting and receiving digital information for a communication apparatus,	To the extent the preamble is limiting, Asmussen discloses a method for transmitting and receiving digital information for a communication apparatus. <i>See supra, Claim 1(P)</i> .
[8(a)] wherein the communication apparatus comprises a camera,	Asmussen and/or Bear disclose(s) wherein the communication apparatus comprises a camera. <i>See supra, Claim 1(c)</i> .
[8(b)] a network interface,	Asmussen discloses wherein the communication apparatus comprises a network interface. <i>See supra, Claim 1(a)</i> .
[8(c)] a display	Asmussen discloses wherein the communication apparatus comprises a display. <i>See supra, Claim 1(d)</i> .
[8(d)] and a processor; and	Asmussen discloses wherein the communication apparatus comprises a processor. <i>See supra, Claim 1(e)</i> .
[8(e)] wherein the method is executed by the processor, the method comprising the steps of: displaying first digital information which is received from a contents server which is coupled to the communication apparatus via the network interface;	Asmussen discloses wherein the method is executed by the processor comprises the steps of: displaying first digital information which is received from a contents server which is coupled to the communication apparatus via the network interface. <i>See supra, Claims 1(a), 1(d)</i> .
8(f)] upon receiving an inbound videophone call notice while playing the first digital information, pausing the displaying of the first	<p>Asmussen discloses upon receiving an inbound videophone call notice while displaying the first digital information, pausing the displaying of the first digital information. <i>See supra, Claim 1(f)</i>.</p> <p>Alternatively, Asmussen in view of any of Marley, Saburi, and/or Bear renders this limitation obvious. <i>See supra, Claim 1(f)</i>.</p>

Defendant's Invalidity Contentions
Exhibit E2

digital information; rendering the camera operative;	
[8(g)] receiving second digital information from the another communication apparatus via the network interface;	Asmussen discloses receiving second digital information from the another communication apparatus via the network interface. <i>See supra, Claim 1(a), 1(b).</i>
[8(h)] generating video information which is included in third digital information by the camera;	Asmussen discloses generating video information which is included in third digital information by the camera. <i>See supra, Claim 1(c).</i>
[8(i)] displaying the second digital information on the display; and	Asmussen discloses displaying the second digital information on the display. <i>See supra, Claim 1(d).</i>
[8(j)] outputting the third digital information to an another communication apparatus;	Asmussen discloses outputting the third digital information to an another communication apparatus. <i>See supra, Claim 1(g).</i>
[8(k)] upon receiving an input for stopping the videophone call, stopping output of the third digital information; and stopping the camera.	Asmussen and/or Bear disclose(s) upon receiving an input for stopping the videophone call, stopping output of the third digital information and stopping the camera. <i>See supra, Claim 1(h).</i>
<i>Claim 9</i>	
9. The method according to claim 8, further comprising the step of: restarting the displaying of the first digital information after the videophone call is finished.	Asmussen discloses restarting the displaying of the first digital information after the videophone call is finished. <i>See supra, Claim 2.</i> Alternatively, Asmussen in view of Allen renders this limitation obvious. <i>See supra, Claim 2.</i>
<i>Claim 10</i>	

Defendant's Invalidity Contentions
Exhibit E2

10. The method according to claim 9, wherein the communication apparatus further comprises a microphone, and the method further comprising the step of: generating audio information which is included in the third digital information by the microphone.	Asmussen discloses wherein the communication apparatus further comprises a microphone, and the method further comprising the step of: generating audio information which is included in the third digital information by the microphone. <i>See supra, Claims 1(b), 1(c), 3.</i>
<i>Claim 11</i>	
11. The method according to claim 10, further comprising the step of: upon receiving the inbound videophone call notice while displaying the first digital information, switching a function of processing video information of the first digital information to a function of processing video information of the second digital information of the videophone call.	Asmussen discloses upon receiving the inbound videophone call notice while displaying the first digital information, switching a function of processing video information of the first digital information to a function of processing video information of the second digital information of the videophone call. <i>See supra, Claim 1(f), 4.</i> Alternatively, Asmussen in view of any of Marley, Saburi, and Bear renders this limitation obvious. <i>See supra, Claim 1(f), 4.</i>
<i>Claim 12</i>	
12. The method according to claim 11, further comprising the steps of: upon receiving an input for making an outbound videophone call to the another communication apparatus, rendering the camera and	Asmussen discloses upon receiving an input for making an outbound videophone call to the another communication apparatus, rendering the camera and microphone operative; and displaying information indicating the outbound videophone call on the display at the same time. <i>See supra, Claim 5.</i> Alternatively, Asmussen in view of Marley renders this limitation obvious. <i>See supra, Claim 5.</i>

Defendant's Invalidity Contentions
Exhibit E2

microphone operative; and displaying information indicating the outbound videophone call on the display at the same time.	
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