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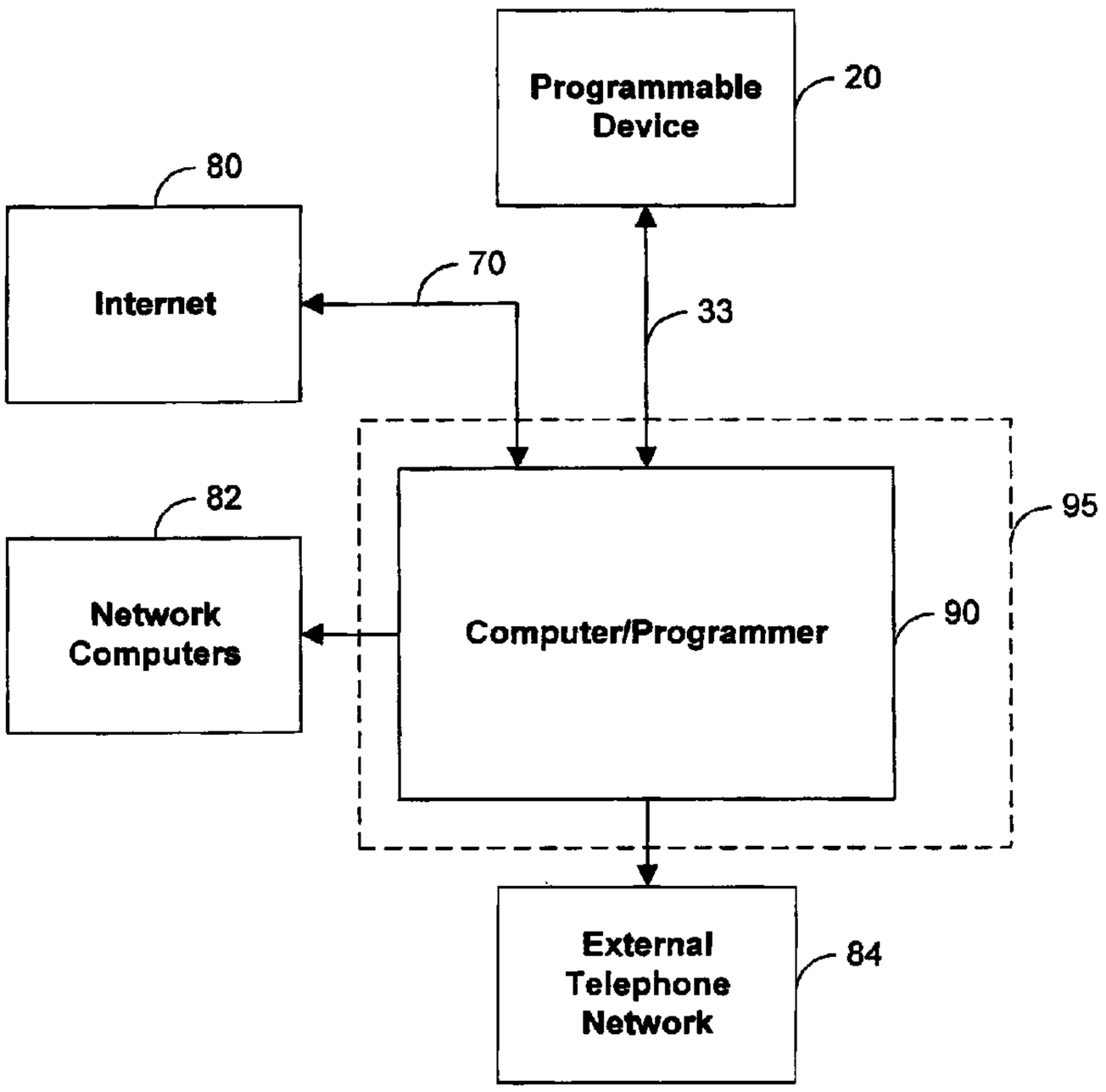
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(54) Title: METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES



(57) Abrégé/Abstract:
A device for programming user-defined information into an electronic device is provided. The programmer allows a user to program customized information, such as user-selected audio, video, or Internet access information into his or her programmable device. Such electronic devices include wireless telephones, pagers, and personal digital assistants. The programmer allows a user to, among other things, customize the device to suit his or her particular taste.

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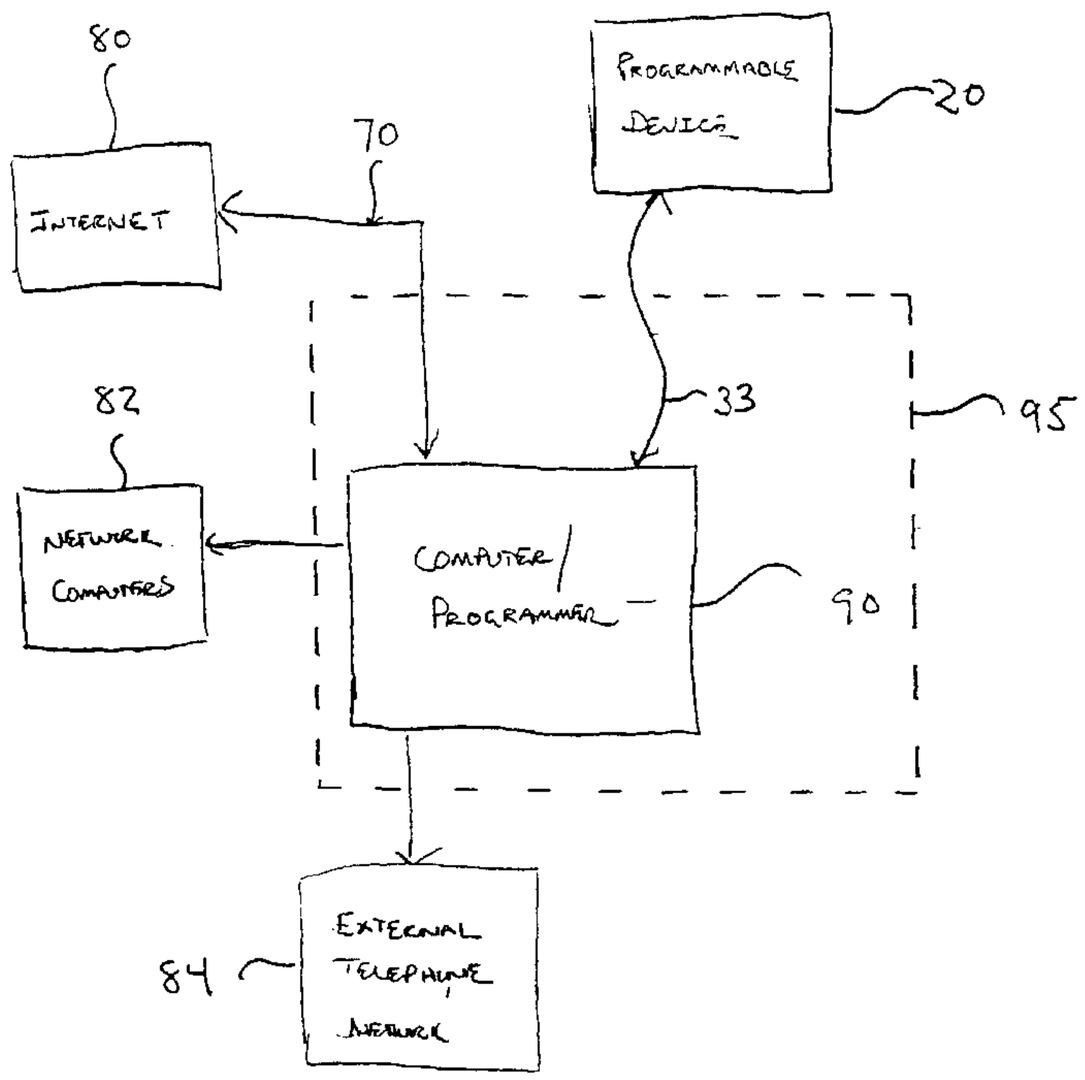
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(54) Title: METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES



(57) Abstract: A device for programming user-defined information into an electronic device is provided. The programmer allows a user to program customized information, such as user-selected audio, video, or Internet access information into his or her programmable device. Such electronic devices include wireless telephones, pagers, and personal digital assistants. The programmer allows a user to, among other things, customize the device to suit his or her particular taste.

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METHODS AND APPARATUSES FOR PROGRAMMING USER-DEFINED INFORMATION INTO ELECTRONIC DEVICES

Background of the Invention

This application relates to electronic devices, and more particularly to a programming apparatus that allows users to program user-defined information into their electronic device.

There are many types of electronic devices available to consumers today that have the ability to produce both audio sounds and video displays. Many of these devices provide users with the ability to select and play a particular piece of audio or video. A television viewer, for example, may tune to a TV channel and watch a particular program, or connect a VCR or DVD player to the television in order to view a specific program not currently being broadcast. Similarly, an audio system user may tune a receiver to a particular

radio station to hear a certain genre of music, or connect a CD or tape player to the system in order to hear specific pieces of music. In both cases, the audio and video is user-selectable.

Currently, however, there are many electronic products that offer an audio/video playing capability that are not fully user-programmable. Users of such devices (*e.g.*, wireless or cordless telephones, pagers, personal digital assistants (PDAs), hand-held computers and the like) have to choose from a limited selection of pre-programmed information (*e.g.*, audio clips, video clips or frames, *etc.*) placed there by the manufacturer. This severely limits the user's ability to customize the device to suit his or her particular taste. Furthermore, most pre-programmed audio tends to be rather generic and can be confusing when a device of a nearby user generates a sound similar to or the same as that of another user's device. Although a programmable memory within many such electronic devices could support user-defined audio, currently, no system exists for programming such information into an electronic device.

The same is true for user-defined video. For example, certain types of user-defined video information, such as video clips, frames, and other digital or analog images could be programmed into an electronic device (*e.g.*, PDA, wireless phone, or any portable display device) and displayed at a time of the user choosing. Although a programmable memory within such a device could support user-defined video, currently, no system exists for programming such information into the device.

Summary Of The Invention

It is therefore an object of the present invention to provide an apparatus that allows a user to

program user-defined audio information into a programmable electronic device.

It is a further object of the present invention to provide an apparatus that allows a user to program user-defined video information into a programmable electronic device.

These and other objects of the present invention are accomplished by providing methods apparatuses that allow a user to program user-defined information into his or her electronic device. In one embodiment of the present invention, the programming apparatus includes processing circuitry and first and second communications links. In operation, a user selects a piece of information from a source such as a computer disk drive, the Internet, or a remote database using the first communications link. The programming apparatus may download this information and compare its format with that required by the programmable device to determine format compatibility. If the two formats are compatible, the programming apparatus may download the selected information into the programmable device. If the formats are not compatible, the programming apparatus may convert the downloaded file to a format compatible with that required by the programmable electronic device. The programming apparatus may also provide the user with an opportunity to edit the converted file. Once editing is complete, the resulting file may then be programmed into the programmable device for subsequent use.

In another aspect of the invention, a user may send customized information such as an audio or video file called a "signature" when placing a telephone call. This feature allows a user to select and send a signature file to the person receiving the telephone call such that the person receiving the call is alerted by that file.

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According to another aspect of the invention, there is provided a method of customizing a wireless telephone by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the method comprising: connecting to a remote database that includes a plurality of lists of audio files; allowing a user of the wireless telephone to browse at least one of the lists of audio files; allowing the user of the wireless telephone to select at least one of the audio files from the browsed list; optionally reviewing the selected audio file before downloading the selected audio into the wireless telephone; and allowing the user to optionally download the selected audio file for use as an indicia of an incoming communication.

The invention provides, in a further aspect, a method of customizing a wireless telephone by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the method comprising: allowing the user to electronically or acoustically couple the wireless telephone to an external audio source; allowing the use of the wireless telephone to select and record an audio sample from the external source; optionally converting the audio sample to a format suitable for use in the wireless telephone; and allowing the user to optionally store the recorded audio sample into a programmable memory for use as an indicia of an incoming communication.

The invention also provides a wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising: a communications link capable of connecting to a remote database that includes a plurality of lists of audio files; a display screen that allows a user of the wireless telephone to

browse at least one of the lists of audio files and view selectable audio files present in the browsed list; a speaker and processing circuitry configured to allow the user to optionally review a selected audio file before downloading the selected audio file into the wireless telephone; and a programmable memory circuit for allowing the user to optionally store the selected audio file for use as an indicia of an incoming communication.

In accordance with a still further aspect of the invention, there is provided a wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising: a communications link capable of connecting to a remote database that includes a plurality of lists of audio files; a display screen that allows a user of the wireless telephone to browse at least one of the plurality of lists of audio files and view selectable audio files present in the browsed list; processing circuitry configured to receive a selected audio file from the communications link; and a programmable memory circuit for allowing the user to optionally store the selected audio file for use as an indicia of an incoming communication.

According to another aspect of the invention, there is provided a wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising: means for connecting to a remote database that includes a plurality of lists of audio files; means for browsing at least one of the lists of audio files; means for selecting at least one of the audio files from the browsed list; means for optionally reviewing the selected audio file before downloading the

selected audio file into the wireless telephone; and means for downloading the selected audio file for use as an indicia of an incoming communication.

The invention provides, in a further aspect, a wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising: means for connecting to a remote database that includes a plurality of audio files; means for selecting at least one of the audio files from the database; means for downloading and storing the selected audio file for use as an indicia of an incoming communication; and means for preventing the unauthorized distribution of a selected audio file stored in the wireless telephone.

The invention also provides a wireless telephone that may be customized by searching for and selecting an audio file from a remote computer and programming the selected audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising: a communications link capable of connecting to a database in the remote computer that includes a plurality of lists of audio files in Motion Pictures Expert Group (MPEG), Waveform audio file (WAV), or MPEG 2 layer 3 (MP3) format; a display screen and a mobile Internet browser that allows a user of the wireless telephone to browse at least one of the plurality of lists of audio files and view selectable audio files present in the browsed list; processing circuitry configured to receive a selected one of the audio files from the communications link; a programmable memory circuit for allowing the user to optionally store the selected audio file for use as an indicia of an incoming communication; and an enhanced performance speaker capable of providing a substantially full range of audio sounds from

MPEG, WAV, or MP3 files when one of the stored audio files is played as an indicia of an incoming communication.

In accordance with a still further aspect of the invention, there is provided a wireless telephone that may be customized by searching for and selecting an audio file from a remote computer and programming the selected audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising: a communications link capable of connecting to a database in the remote computer that includes a plurality of polyphonic audio files; a display screen and a browsing application program that allows a user of the wireless telephone to browse the polyphonic audio files and select at least one polyphonic audio file therefrom; processing circuitry configured to supervise receipt of a selected polyphonic audio file from the communications link; a programmable memory circuit for allowing the user to optionally store the selected polyphonic audio file for use as an indicia of an incoming communication; and an enhanced performance speaker capable of providing a substantially full range of audio sounds from the selected polyphonic audio file when the selected polyphonic audio file is played as an indicia of an incoming communication.

According to another aspect of the invention, there is provided a wireless telephone that may be customized by searching for and selecting an audio file from a remote computer and programming the selected audio file into the wireless telephone for use at a time specified by the user, the telephone comprising: a communications link capable of connecting to a database in the remote computer that includes a plurality of polyphonic audio files; a display screen and a browsing application program that allows a user of the wireless telephone to browse the

polyphonic audio files and select at least one polyphonic audio file therefrom; processing circuitry configured to supervise receipt of a selected polyphonic audio file from the communications link; a programmable memory circuit for allowing the user to optionally store the selected polyphonic audio file for use as an indicia of an incoming communication; and an enhanced performance speaker capable of providing a substantially full range of audio sounds from the selected polyphonic audio file when the selected polyphonic audio file is played.

The invention provides, in a further aspect, a wireless telephone that may be customized by programming an audio file into the wireless telephone for use at a time specified by a user of the wireless telephone, the telephone comprising: means for connecting to a remote database that includes a plurality of lists of polyphonic audio files; means for browsing at least one of the lists of polyphonic audio files; means for selecting at least one of the polyphonic audio files from the browsed list; means for optionally reviewing the selected polyphonic audio file before downloading the selected polyphonic audio into a memory circuit in the wireless telephone; and means for downloading the selected polyphonic audio file for use at the time specified by the user of the wireless telephone.

The invention also provides a method for programming a video file into a wireless telephone, the method comprising: connecting to a remote database that includes a plurality of lists of video files; allowing a user of the wireless telephone to browse at least one of the lists of video files; allowing the user of the wireless telephone to select at least one of the video files from the browsed list; optionally reviewing the selected video file before downloading the selected video into the wireless

telephone; and allowing the user to optionally download the selected video file for present or subsequent use.

In accordance with a still further aspect of the invention, there is provided a method of programming a video file into the wireless telephone, the method comprising: connecting to a remote database that includes a plurality of video files; allowing the user of the wireless telephone to browse and select at least one of the video files; allowing the user to optionally download the selected video file into a programmable memory for present or subsequent use.

According to another aspect of the invention, there is provided a wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising: a communications link capable of connecting to a remote database that includes a plurality of lists of video files; a display screen that allows a user of the wireless telephone to browse at least one of the lists of video files and view selectable video files present in the browsed list; a speaker, display screen, and processing circuitry configured to allow the user to optionally review a selected video file before downloading the selected video file into the wireless telephone; and a programmable memory circuit for allowing the user to optionally store the selected video file for present or subsequent use.

The invention provides, in a further aspect, a wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising: a communications link capable of connecting to a remote database that includes a plurality of lists of video files; a display screen that allows a user of the wireless telephone to browse at least one of the

plurality of lists of video files and view selectable video files present in the browsed list; processing circuitry configured to receive a selected video file from the communications link; and a programmable memory circuit for allowing the user to optionally store the selected video file for present or subsequent use.

The invention also provides a wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising: means for connecting to a remote database that includes a plurality of lists of video files; means for browsing at least one of the lists of video files; means for selecting at least one of the video files from the browsed list; means for optionally reviewing the selected video file before downloading the selected video into the wireless telephone; and means for downloading the selected video file for present or subsequent use.

The invention also provides a wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising: means for connecting to a remote database that includes a plurality of video files; means for browsing and selecting at least one of the video files; means for optionally downloading the selected video file into a programmable memory for present or subsequent use.

In accordance with a still further aspect of the invention, there is provided a wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising: means for connecting to a remote database that includes a plurality of video files; means for selecting at least one of the video files from the database; means for downloading

and storing the selected video file for present or subsequent use; and means for preventing the unauthorized distribution of a selected video file stored in the wireless telephone.

According to another aspect of the invention, there is provided a wireless telephone capable of searching for and selecting a video file from a remote computer and programming the selected video file into the wireless telephone for present or subsequent use, the telephone comprising: a communications link capable of connecting to a database in the remote computer that comprises a plurality of lists of video files in Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD) format; a display screen and a mobile Internet browser that allows a user of the wireless telephone to browse at least one of the plurality of lists of video files and view selectable video files present in the browsed list; processing circuitry configured to receive a selected one of the video files from the communications link; a programmable memory circuit for allowing the user to optionally store the selected video file for present or subsequent use; and an enhanced performance speaker capable of providing a substantially full range of audio sounds from an audio portion of the JPEG, MPEG, GIF, AVI, or DVD files when one of the stored video files is played.

The invention provides, in a further aspect, a wireless telephone capable of searching for and selecting a video file from a remote computer and programming the selected video file into the wireless telephone for present or subsequent use, the telephone comprising: a communications link capable of connecting to a database in

the remote computer that includes a plurality of video files; a display screen and a browsing application program that allows a user of the wireless telephone to browse the video files and select at least one video file therefrom; processing circuitry configured to supervise receipt of a selected video file from the communications link; a programmable memory circuit for allowing the user to optionally store the selected video file for use; and an enhanced performance speaker capable of providing a substantially full range of audio sounds that may be associated with the selected video file when the selected video file is played.

The invention also provides a wireless telephone that may be customized by searching for and selecting a video file from a remote computer and programming the selected video file into the wireless telephone for use at a time specified by a user, of the telephone, comprising: a communications link capable of connecting to a database in the remote computer that includes a plurality of video files; a display screen and a browsing application program that allows a user of the wireless telephone to browse the video files and select at least one video file therefrom; processing circuitry configured to supervise receipt of a selected video file from the communications link; a programmable memory circuit for allowing the user to optionally store the selected video file for use at a time specified by the user; and an enhanced performance speaker capable of providing a substantially full range of audio sounds that may be associated with the selected video file when the selected video file is played.

Brief Description Of The Drawings

The above and other objects and advantages of the present invention will be apparent upon consideration of the following detailed description, taken in conjunction with the accompanying drawings, in which like reference characters refer to like parts throughout, and in which:

FIG. 1 is a generalized block diagram of a system for programming user-defined information into an electronic device in accordance with one embodiment of the present invention.

FIG. 2 is a schematic diagram of a programmer constructed in accordance with one possible embodiment of the present invention.

FIG. 3 shows a computer based implementation of a programmer constructed in accordance with one embodiment of the present invention.

FIG. 4a shows an alternate embodiment of a computer based implementation of a programmer constructed in accordance with the principles of the present invention.

FIG. 4b shows an alternate network embodiment of the computer based implementation in shown in FIG. 4a.

FIG. 5 illustrates an imbedded implementation of the programmer shown in FIG. 2.

FIG. 6 shows yet another embodiment of a computer based implementation the programmer in shown in FIG. 4b.

FIG. 7 is a schematic diagram of one possible embodiment of a wireless telephone that can receive and play user-defined audio in accordance with one aspect of the present invention.

FIGS. 8-9 show a flow chart illustrating some of the steps involved in programming user-defined

information into an electronic device in accordance with one embodiment of the present invention.

FIGS. 10-12 show a flow chart illustrating some of the steps involved in sending and receiving signature information in accordance with one embodiment of the present invention.

Detailed Description of the Invention

FIG. 1 shows a block diagram of a system 10 for programming user-defined information (*e.g.*, audio, video, or Internet access information, *etc.*) into an electronic device in accordance with one embodiment of the present invention. As shown in FIG. 1, system 10 generally includes a programmable electronic device 20, a device programmer 30, and a source 50. Programmer 30 is connected to source 50 via link 31, and to device 20 via link 32.

Programmable device 20 may be any portable electronic device (*e.g.*, a wireless telephone, a pager, a handheld computer, personal digital assistant (PDA), *etc.*). Device 20 may also be any device which integrates some or all of the functions of such devices into one device. For example, device 20 may be a PDA capable of making wireless telephone calls, a PDA with paging functions, a wireless telephone with some PDA or paging functions, a handheld or notebook computer with some or all of the functions of a PDA, a pager, and a telephone, *etc.*

In FIG. 1, links 31 and 32 may be, for example, communications links (*e.g.*, serial ports, parallel ports, universal serial buses (USB), RS232, GPIB, *etc.*), modems (*e.g.*, any suitable analog or digital modems, cellular modems, or cable modems), a network interface link (*e.g.*, Ethernet links, token ring links, *etc.*), wireless communications links (*e.g.*, cellular telephone links,

wireless Internet links, infrared links, *etc.*), or any other suitable hard-wired or wireless Internet or communications links.

Source 50 may be any device or combination of devices suitable for providing user-defined information to programmer 30 (*e.g.*, the Internet, an optical disc player (CD, DVD), a cassette player, a VCR, a digital camera, or any suitable storage device containing computer programs or files, *etc.*).

In operation, a user may choose certain information, such as Internet configuration information, an audio sample of a popular song, a video clip or frame, *etc.*, that is available from source 50 and transfer it to programmer 30. Programmer 30 may then process this information into a suitable format (or may simply route the information if no format conversion is required), and program it into a programmable memory within device 20 (not shown). Device 20 may then retrieve this information when a certain event occurs (*e.g.*, when receiving an incoming telephone call, browsing the Internet, or when programmed to do so by a user, *etc.*).

Programmer 30 may also coordinate or perform certain functions related to the routing and storing of information within device 20. For example, programmer 30 may communicate with (or simply search) device 20 to find available memory locations in which to store the user-defined information. Programmer 30 may also communicate with device 20 to determine which format the incoming information should be converted to so that the information is compatible with the downloading requirements of device 20. For audio files, this may include, but is not limited to, converting to or from any of the following format types: analog; MIDI; MPEG; PCM; Windows Media Audio Code (WMA); WAV; or Adaptive Transform Acoustic Coding (ATRAC), or to or from any

other suitable audio format, *etc.* For video files, this may include, but is not limited to, converting to or from any of the following format types: analog; JPEG; MPEG; GIF; AVI, or to or from any other suitable video format, *etc.* Text files may include, for example, HTML files, Wireless Markup Language (WML) files, WordPerfect™ files, Microsoft Office™ files, or any other suitable text files.

If multiple blocks of information are being programmed into device 20, programmer 30 may "tag" the different blocks so that device 20 and/or a user may distinguish among the different blocks stored therein. After the information has been provided, programmer 30 may communicate with device 20 to confirm that the information has been correctly received.

A more detailed diagram of one possible embodiment of programmer 30 is illustrated in FIG. 2. As illustrated, programmer 30 may include a transducer 25, a processor 34, a programmable memory 36, an analog-to-digital (A/D) converter 38, signal processing circuitry (SPC) 40, an output buffer 42, and an input buffer 44. Generally speaking, processor 40 controls the operation of programmer 30. Programmer 30 may be configured to receive and process both analog and digital signals. It may also acquire acoustic signals via transducer 25 (if installed).

In operation, programmer 30 may download certain user-selected information from source 50 via link 31. This information, such as audio or video files, in the form of electronic signals, may be received from link 31 and directed to input buffer 44. As mentioned above, these signals may need to be processed in order to be compatible with the format required by programmable device 20. For example, if analog input signals are received at input buffer 44 and device 20 requires a

digital format, the analog signals may be routed to A/D converter 38 for conversion into a suitable digital form (*e.g.*, into PCM, PAM, *etc.*). Further processing into another digital format (*e.g.*, MP3, ATRAC, WMA, *etc.*) may be accomplished by routing the converted signals to SPC 40 or processor 34 (discussed in more detail below). On the other hand, if digital input signals are received at input buffer 44 and device 20 requires analog signals, the digital signals may be routed to SPC 40 or to a dedicated digital-to-analog (D/A) converter (not shown) for conversion to the analog domain.

Processor 34 may route incoming signals from source 50 to memory 36, SPC 40, or directly to output buffer 42 depending on the circumstances. For example, some or all of the input signals received from source 50 may require further processing to meet the downloading specifications of device 20. In this case, the incoming signals that require processing may be routed to SPC 40 for such processing. For example, incoming MP3 or WMA signals may be routed to SPC 40 and converted to ATRAC format (or vice-versa). Once this conversion is complete, the resulting information may be stored in memory 36, or routed to output buffer 42 for programming in device 20. Input signals that do not require a format change may be routed directly from input buffer 44 to memory 36, or output buffer 42. Although not shown in FIG. 2, programmer 30 preferably has a display screen and a data input device, such as a keyboard associated with it so that a user may, among other things, browse and select files, monitor file transfers, and ensure that device 20 has properly received the selected files.

In one embodiment of the present invention, SPC 40 may be programmable so that the conversion and processing protocols contained therein may be periodically updated.

Furthermore, in some embodiments, processor 34 may be programmed via software routines in programmable memory 36 to perform some or all of the functions of SPC 40. In this case, an SPC of reduced processing capacity may be used or SPC 40 may be removed altogether from programmer 30.

Audio signals may also be acquired and processed by programmer 30. Transducer 25 may acquire an acoustic signal from a stereo or other audio source and convert it to an electrical signal. This electrical signal may then be processed in a way similar to the way the above-described analog signal was processed. That is, the electrical signal may be routed to A/D converter 38 and/or SPC 40 and then stored in memory 36 or output buffer 42, for example.

It will be understood that the generalized system shown in FIG. 1 may be implemented in many ways. For example, as shown in FIG. 3, system 100 may be implemented using a computer-based architecture. In this case, some or all of programmer 30 may be installed in or connected to a computer, such as a personal computer. For example, in FIG. 3, programmer 30 may be installed in an expansion slot and connected to an interface bus such as an ISA or PCI bus (not shown) in computer 60. In this configuration, programmer 30 may receive user-defined information via the interface bus in computer 60 and operate as described above with the interface bus acting as part of link 31. Some or all of programmer 30 may also be external to computer 60 and connected to it via a link similar to link 31 (not shown). Furthermore, in certain embodiments, some of the functions of programmer 30 may be distributed between computer 60 and programmer 30. For example, programmer 30 may be constructed such that it partially or fully relies on the processing capability of computer 60. In this type of

embodiment, programmer 30 may be constructed without processor 34 or with a processor of reduced capacity. Programmer 30 may also be constructed such that it partially or fully relies on the memory capacity of computer 60. Moreover, signal processing functions such as those performed by SPC 40 could also be fully or partially carried out by circuitry or software resident within computer 60.

As shown in FIG. 3, computer 60 may be connected to Internet 80 through link 70. Link 70 may be, for example, a modem (*e.g.*, any suitable analog or digital modem, cellular modem, or cable modem), a network interface link (*e.g.*, an Ethernet link, token ring link, *etc.*), a wireless communications link (*e.g.*, a wireless telephone link, a wireless Internet link, an infrared link, *etc.*), or any other suitable hard-wired or wireless communications link. With this configuration, a user may download information from Internet 80 (*e.g.*, using electronic distribution (ED) services) and/or from a disc drive or other devices (not shown) connected to computer 60 and program that information into device 20 (via programmer 30 and link 32).

It will be understood, of course, that computer 60, with a suitable communications link, such as link 32, may be programmed with software to function as programmer 30. In this way, a user may take advantage of the fact that many of the components of programmer 30 are resident within computer 60. For example, computer 60 may contain a processor, such as processor 34 and programmable memory circuitry such as memory 36. Computer 60 may also include signal processing circuitry such as SPC 40, or software that instructs processor 34 to perform the necessary format conversions. Computer 60 may include circuitry similar to input buffer 44 and output buffer 42. Such circuitry may include random

access memory (RAM) or cache memory in computer 60. Computer 60 also may include internal or external A/D conversion circuitry, such as A/D converter 38, and an internal or external transducer 25.

As shown in FIG. 4a, computer 60, programmed to function as programmer 30, may be connected to Internet 80 through link 70 and to device 20 through link 32. This arrangement allows a user to select information from Internet 80 or from a storage device connected to computer 30 (not shown) for programming into device 20.

Using the generalized system shown in FIG. 4a, user-defined information may be programmed into device 20 in many ways. For example, computer 60 may be part of a communications network 95, such as a telephone network, that provides Internet and/or telephone access to programmable device 20 (shown in FIG 4b). Communications network 95 may be provide hard-wired or wireless telephone or Internet access (or combination of the two). This arrangement is generally illustrated in FIG. 4b as architecture 200, in which computer 90, for the sake of clarity, represents computer 60, configured at least in part, to function as programmer 30.

With this configuration, a user of device 20 may access Internet 80 and select information for downloading into device 20. It will be understood, however, that in this implementation, at least a portion of computer 90 is configured to function as programmer 30, and that computer 90 may continue to perform other functions such as communicating with network computers 82, communicating with Internet 80, interfacing with external telephone network 84, and coordinating wireless Internet and telephone access *etc.*, in addition to performing some or all of the above-described programming functions.

In operation, computer 90 may communicate with device 20 to determine its format requirements and perform any conversions necessary to make user-selected information compatible with those requirements. This allows a user to select information, such as audio and/or video, that is available on the Internet or on a remote network computer, and program that information into device 20. This may be accomplished via communications link 33 (which may be any type of link previously described as suitable for link 32). For example, a user may wish to download video images from an Internet site to a hand-held computer, such as a PDA, or to a wireless telephone. The user may communicate with computer 90 via a wireless link 33 and select information from Internet 80 using an Internet browser installed in device 20. Such a browser may be a Wireless Application Protocol (WAP) compliant browser for supporting wireless Internet services. Computer 90 ensures format compatibility of the information, transmits the information to device 20, and may communicate with device 20 to confirm that the selected information has been properly received. Device 20 may provide a visual, audio, or tactile output to indicate the requested information has been successfully received.

Computer 90 may also coordinate information downloading with respect to the memory capacity of device 20. For example, if the user-selected information exceeds the available memory of device 20, computer 90 may inform the user, via link 33, that the selected information is larger than the available memory. In such an event, the user may be prompted to cancel or modify the information request. In certain instances, however, the user may instruct computer 90 to provide the information in a "scrolling" fashion (*i.e.*, provide it in portions) so that all the requested information may be

reviewed, albeit in sections. This may be particularly desirable in instances where large files, such as video files, are requested.

In some embodiments of the present invention, computer 90 may simply contact a remote computer or Internet site to fulfill requests for audio or video information in a particular format. Such web sites or remote computers may act as virtual "jukeboxes" of video and audio information, containing extensive lists of such information in a variety of formats available for downloading. Using this approach, a user may select a particular piece of information in a certain format from a list displayed on a screen of programmable device 20. Computer 90 may receive this as a request via link 33 and handle the information transfer to device 20. In some embodiments, format selection may be transparent to the user. That is, the user may simply request a piece of information and computer 90 may determine and then request information in a format appropriate for the requesting device.

In another embodiment, a remote computer or Internet site may perform a format conversion of information requested by computer 90 or device 20. For example, a user may access an Internet site or remote computer using communications network 95 and enter a title or description of the desired audio or video information along with format requirements. The remote computer or Internet site may then search the Internet or other databases to find a file that matches the user's description. Once this file is found, the Internet site or remote computer may convert that file to the requested format, (using a system similar to the described above) and provide it to device 20 via computer 90 and/or link 33. It will be understood, of course, that

embodiments such as these are within the scope of the present invention.

If desired, a user may also employ the systems shown in FIGS. 4a and 4b to download remotely stored information such as Internet access information to device 20. For example, a user may have customized bookmarks or web page addresses stored in a remote personal computer or on Internet 80. The user may employ wireless link 32 or 33 to contact that remote computer or Internet site and then download the Internet access information for use in device 20. This feature is desirable because it relieves the user of the burden of having to type in complicated Internet access information from the small keyboard of a wireless telephone or hand-held computer. It also spares the user from having to re-enter customized Internet information that is already present in another location, into their electronic device. Moreover, such a feature is convenient when a user wishes to access information on a remote computer that is not currently available in device 20. For example, a user may wish to view spreadsheet information stored on a remote computer with device 20. Rather than having to download this information form a hard-wired access point, a user may simply employ wireless link 33 (*e.g.*, a wireless modem or Internet connection) to access that remote computer or Internet site and download that information to device 20.

Another feature which may be implemented using the embodiments shown in FIGS. 4a and 4b is a "signature" feature. This allows device 20 to send user-defined information, which may be indicative of the user's personal taste or identity, along with other information when performing certain functions. For example, if a user is placing a wireless telephone call or paging someone with device 20, he or she may select the

signature feature in order to send user-defined audio or video along with, or prior to, that call. A user may accomplish this by browsing through a menu on device 20 that displays available signature options, and by choosing a particular file (not shown). If the user chooses an audio file, for example, device 20 may send that selected audio file when a call or page is placed (or a period of time before the call or page is placed). This audio file may temporarily replace the "ring sequence" of the device receiving the incoming call so that the person receiving the incoming call will be alerted by hearing the audio file sent by the caller. The person receiving the call may be able to discern the identity of the caller or other information from the audio file. After the call is complete, the ring sequence of the receiving device may be returned to its former configuration (either by computer 60 or by the receiving device).

In another embodiment, a user may program certain audio or video files into device 20 that are activated when a certain person calls. For example, a user may program device 20 so that certain signature files are played in response to receiving a characteristic indicative of the caller, such as the caller's telephone number. In this way, a user will be able to identify the caller by the sound and/or display generated by device 20. Users may also program signatures in device 20 to be played at predetermined times. For example, a user (or caller) may program "Happy Birthday" or "Jingle Bells" into device 20 to play on a certain day, or may program device 20 to play a certain signature file at specified time (*e.g.*, as an alarm).

In yet another embodiment, a user, when placing a call, may invoke a menu on device 20, which displays a list of signature files available for the person being

called. This list may be defined by the person receiving the call. For example, the person receiving the call may create a signature file list by selecting certain audio and/or video files and placing them in a database of a remote computer such as computer 90 by using, for example, a personal computer connected to the Internet. In some embodiments, signature files may also be stored in a device 20 of the person receiving the call. In this implementation, a list of signature file names may be stored in computer 90 so that a caller may browse the names of signature files stored in the device of the person receiving the call. Signature files may also be stored in a combination of both computer 90 and device 20.

In some embodiments, the signature information may not necessarily be user-defined. For example, a list of pre-selected signature files may stored on computer 90 or a remote computer from which a user of device 20 may choose. Such a list may be created by a wireless service provider, an Internet provider, an Internet site, or a manufacturer of the wireless telephone.

With these implementations, the caller may simply select a signature file from the displayed list. The selected file is then sent along with the call by computer 90 (if the selected signature file is stored in computer 90) or associated with the incoming call at device 20 (if the selected signature file is stored in device 20). In some embodiments, the caller may be able to preview signatures before sending them. For example, computer 90 may send the selected signature file to the caller for his or her review.

In systems that have a video capability, a video file containing a video clip or frame may be sent instead of or in addition to the audio sample. This may be accomplished by selecting a video option from a signature

menu and choosing a video file. In this case, the person receiving the call is alerted by seeing or hearing the video clip and/or associated audio. It will be appreciated that a video clip may have its own audio portion associated with it so that the video clip (or frame) by itself would be sufficient to alert the person receiving the incoming call.

The above-described signature feature may be implemented in many ways. In some embodiments, for example, the audio or video signatures may be stored in (the caller's) device 20 and sent along with the outgoing call or page via link 33 and computer 90. In other embodiments, however, the signature information may be stored in computer 90 and associated with the outgoing call when it is processed by computer 90. This type of embodiment may be implemented when it is desired to conserve memory space within device 20. In still other embodiments, signature information may be stored in both device 20 and computer 90. In any case, computer 90 may determine the format requirements of the device receiving the incoming call or page and convert the accompanying signature information into a suitable format.

Another implementation of a system in accordance with this invention may use an architecture 300, which is shown in FIG. 5. Using this arrangement, programmer 30 (or similar circuitry) may be embedded within programmable device 20. User-defined information may be provided to device 20 from source 50 via link 32. Such information may be routed to programmer 30, which may perform some or all of the above-described functions.

If source 50 is an acoustic source, however, link 32 may not be needed. For example, if a user desires to program an acoustic sound into device 20, the user may place a transducer 25, (*e.g.*, a speaker/ microphone existing within or external to device 20) near

the acoustic signal source, place device 20 into an "acquisition mode," and record an audio sample. In this case, transducer 25 coverts the acoustic signal into an electrical signal, which is provided to programmer 30 for processing and possibly storage within device 20. A visual, audio, or tactile output may be provided by device 20 to indicate a sample has been successfully loaded. A user may employ transducer 25 to acquire and record, for example, a verbal message or sound effect (*e.g.*, laughter, crying, sneezing, *etc.*) for use as a signature file.

Other embodiments of the present invention may use the embedded architecture of system 400 as shown in FIG. 6. Using this arrangement, user-defined information may be requested by device 20 via link 32 and computer 60. With this approach, a user may select information from Internet 80 or a remote computer and perform any necessary format conversion within device 20.

In addition to selecting user-defined information with programmer 30, a user may customize that information by performing various editing procedures. For example, a user may find an audio track or video clip that suits his or her taste. It may be desired, however, to utilize only a portion of that track or clip. In this case, a user may edit or "sample" a portion of the information to obtain the desired segment. For example, a user may wish to sample a few bars of a popular song and send it along as signature information when making a wireless telephone call. Such editing may be accomplished, for example, by using an application program with programmer 30 or by using known software with computer 60. Furthermore, once the user has edited a particular piece of information, he or she may be given the option to review the piece to ensure it is acceptable. When a user is satisfied with an edited segment, he or she may save it and be given an

opportunity to "name" that segment, so that it may be readily identified later by a user of device 20.

It will be appreciated that various other types of editing procedures are also possible. For example, a user may combine and/or further edit the content of segments of information. This may be accomplished using "cut and paste" routines in an application program. Other types of revisions may include modifying the color or content of a portion of video clip or frame, as well as editing the audio track that accompanies a video clip or frame. It may also include revising or combining audio segments or creating customized audio segments to accompany video clips or frames.

In some instances, a user may wish to download large portions of copyrighted audio or video. To prevent improper usage of such material, programmer 30 may include copyright protection software such as software that conforms with the Secure Digital Music Initiative (SDMI). Generally speaking, this may allow an owner of such material to "check out" a finite number of copies so that unauthorized distribution is prevented.

A schematic diagram of a portion of a wireless telephone 500 that can receive and play user-defined audio and/or video is shown in FIG. 7. As illustrated in FIG. 7, telephone 500 may include antenna 510, receiver/transmitter (R/T) circuit 520, processor 530, communications interface 532, speaker/transducer 540, alerting circuit 550, and optionally, programmer 30 (or similar circuitry).

A user may program information into telephone 500 in several ways. For example, a user may connect telephone 500 to an external programmer 30 (not shown in FIG. 7) via link 32 to program user-defined audio or video in telephone 500 as described above. Processor 530 may route this information to alerting circuit 550 for

storage and subsequent use. Afterwards, the user may configure telephone 500 to play a certain user-defined audio file stored in alerting circuit 550 when receiving an incoming call. Thus, when a call is received, processor 530 may instruct alerting circuit 550 to play the selected file through speaker 540. If a video file is chosen, processor 530 may instruct alerting circuit 550 to play the user-selected video file through a display screen on the telephone (not shown). Alerting circuit 550 may include programmable memory circuitry for storing user-defined information and driver circuitry (not shown) for driving speaker 540 and/or a display screen on telephone 500.

Telephone 500 may also receive user-defined information from communications network 95 via link 33 and antenna 510. With this implementation, user defined information, such as a signature file, may be received by antenna 510 and demodulated with R/T circuit 520. Processor 530 may then route the demodulated signals to an appropriate location. In the case of a signature file, for example, processor 530 may check the format of the incoming file to ensure it is compatible with the format required by alerting circuit 550. If the format is compatible, the incoming file may be routed to alerting 550 for storage and subsequent use or to speaker 540 for immediate playing. If the format is not compatible, the incoming file may be routed to programmer 30 for conversion. After conversion is complete, processor 530 may instruct programmer 30 to route the converted file to speaker 540 or alerting circuit 550. If a video file was sent as a signature file, processor 530 may instruct alerting circuit 550 to play the user-selected video file through a display in telephone 500 (not shown). In some embodiments,

speaker 540 may be an enhanced performance speaker (as compared to those currently installed in telephones) with a capacity for generating a full range of audio sounds. Moreover, it will be understood that circuitry similar to that shown in FIG. 7 may be installed for use in other communication devices such as PDA's, pagers, notebook computers, *etc.*

Some of the steps involved in programming user-defined information into programmable device 20 as described herein are illustrated in the flow chart of FIGS. 8-9. It will be understood that although programmer 30 is used in the following description, computer/programmer 90 may also perform some or all of these (or similar) steps.

At step 100 in FIG. 8, programmer 30 allows the user to browse information for potential programming into device 20. As mentioned above, this may include browsing audio/video information on the Internet, or on a hard, floppy, or optical disc drive of a computer. At step 102, the user may choose certain files for programming into device 20. Next, at step 104, programmer 30 may determine the format requirements of device 20 and compare the format of the selected files to that specified by device 20. This may be accomplished, for example, by electronically polling device 20. At step 105, if the formats are compatible, programmer 30 may go directly to step 108. If the formats are not compatible, at step 106, programmer 30 may convert the selected files to a format compatible with device 20. In some embodiments, the user may be prompted to confirm that the conversion should be performed. In addition, programmer 30 may also prompt the user to supply a name for the converted file. Moreover, if the selected file cannot be converted, programmer 30 may so inform the user.

Next, programmer 30 provides the user with an option of editing the contents of the resulting files at step 108. If desired, the user may first review the converted file to determine if editing is warranted. At step 109, if the user chooses not to edit the file, programmer 30 may go directly to step 112 (shown in FIG. 9). If the user decides to edit the file, he or she may do so at step 110. When finished editing, the user may be a given the option of reviewing the file at step 111 by returning to step 108 to determine whether the file is acceptable or requires further revision. Programmer 30 may alternate between steps 108-110 until the user is satisfied with the resulting file. When editing is complete, programmer 30 provides the user with the option of programming the file into device 20 at step 112. At this point, (step 113) the user may exit the program at step 114 or return to step 100 to browse more information.

It will be understood that these steps are merely illustrative, and are not meant to be comprehensive or necessarily performed in the order shown. For example, it may be desired to edit a file already stored in device 20. In this case, a user may bypass steps 100-106 and go directly to step 108. In some embodiments, selected files may be revised before converting them to format compatible with device 20. This may be desirable when the file's original format facilitates the editing process. In addition, programmer 30 may determine the format requirements of device 20 at any time before the conversion occurs. A user may also name or revise the name of a selected file at any time.

Some of the steps involved in sending signature files to programmable device 20 as described herein are illustrated in the flow chart of FIGS. 10-12.

At step 150 in FIG. 10, device 20 allows the user to browse signature files for potential transmission to device 20 of the person receiving the call (hereinafter the "receiver"). At step 150, the user may be provided with option of creating a new signature file if a suitable signature file not found on the list. At step 154 the user may select a signature file. Once a signature file is selected, computer 90, at step 156, may determine the location of the selected signature file. Such locations may include, but are not limited to, the caller's device 20, the receiver's device 20, or computer 90.

If computer 90 determines that the signature file is located in the user's device 20 (*i.e.*, the caller's device 20) computer 90 may retrieve that file from the user's device 20 at step 158. Next, computer 90 may compare the format requirements of the receiver's device 20 with the format of the retrieved file to determine if they are compatible at step 160. If the formats are compatible, computer 90 may go directly to step 164. If the formats are not compatible, computer 90 may convert the signature file to an acceptable format at step 162. At step 164, the signature file may be sent along with, or somewhat before, the outgoing call. At step 166, the receiver's device 20 may replace its ring sequence with the signature file and play the signature file. At step 167, the receiver's ring sequence may be returned to its original setting and the program may exit.

If, however, the signature file is located in computer 90 (step 156), computer 90 may retrieve that file at step 168 (FIG. 11). Next, computer 90 may compare the format requirements of the receiver's device 20 with the format of the retrieved file to determine if they are compatible at step 170. If the

formats are compatible, computer 90 may go directly to step 174. If the formats are not compatible, computer 90 may convert the signature file to an acceptable format at step 172. At step 174, the signature file may be sent along with, or somewhat before, the outgoing call. At step 176, the receiver's device 20 may replace its ring sequence with the signature file and play the signature file. At step 177 the receiver's ring sequence may return to its original setting and the program may exit.

On the other hand, if computer 90 determines at step 156 that the signature file is located in the receiver's device 20, computer 90 may transmit an indicia indicative of the selected file to the receiver's device 20 along with the outgoing call at step 178 (FIG. 12). Next, the receiver's device 20 may associate a signature file that corresponds to the indicia, replace its ring sequence with that signature file, and play that signature file at step 180. At step 182, the receiver's ring sequence may be returned to its original setting and the program may exit. It is assumed for the purposes of this illustration that signatures files stored in the receiver's device 20 are already in a suitable format. However, if this is not the case, a conversion step may be added between step 178 and step 180 (not shown).

It will be understood that these steps are merely illustrative, and are not meant to be comprehensive or necessarily performed in the order shown. For example, computer 90 may determine the format requirements of device 20 at any time before the conversion occurs.

Thus, it is seen that a device for programming user-defined information into an electronic device is provided. The programmer allows a user to program customized information, such as audio, video, or Internet access information into his or programmable device. This allows a user to, among other things, customize his or

her device to suit the user's particular taste. It will be understood that the foregoing is only illustrative of the principles of the invention, and that various modifications can be made by those skilled in the art without departing from the scope and spirit of the invention. For example, it is not necessary that programmable memory within device be a fixed programmable memory. That is, a removable memory module may be programmed externally from a given programmable device and subsequently installed in that device. Furthermore, the many aspects of the invention are suitable for use with hard-wired, cordless, or wireless communications devices. For example, user-defined audio and video and signature files may be used with hard-wired or cordless telephone systems. Accordingly, such embodiments will be recognized as within the scope of the present invention.

Persons skilled in the art will appreciate that the present invention can be practiced by other than the described embodiments, which are presented for purposes of illustration rather than of limitation, and the present invention is limited only by the claims which follow.

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CLAIMS:

1. A method of customizing a wireless telephone by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the method comprising:

connecting to a remote database that includes a plurality of lists of audio files;

allowing a user of the wireless telephone to browse at least one of the lists of audio files;

allowing the user of the wireless telephone to select at least one of the audio files from the browsed list;

optionally reviewing the selected audio file before downloading the selected audio into the wireless telephone; and

allowing the user to optionally download the selected audio file for use as an indicia of an incoming communication.

2. The method of claim 1 wherein the format of the selected audio file is from the group comprising: Music Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

3. The method of claim 1 further comprising allowing the user to search the remote database for a certain desired audio file using title or description information to aid in locating the desired audio file.

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4. The method of claim 3 wherein the searching further comprises searching the Internet or other remote databases for the desired audio file.

5. The method of claim 1 wherein the browsing of audio files is accomplished at least in part using a Wireless Application Protocol (WAP) compliant system.

6. The method of claim 1 further comprising providing a visual indication to confirm the selected audio file has been successfully downloaded.

7. The method of claim 1 further comprising providing an audio indication to confirm the selected audio file has been successfully downloaded.

8. The method of claim 1 further comprising:

downloading a selected audio file into the wireless telephone; and

associating the downloaded audio file with a characteristic indicative of a caller such that the associated audio file plays when the indicative characteristic is received by the wireless telephone.

9. The method of claim 1 wherein the characteristic indicative of the caller is the caller's telephone number.

10. A method of customizing a wireless telephone by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the method comprising:

allowing the user to electronically or acoustically couple the wireless telephone to an external audio source;

allowing the user of the wireless telephone to select and record an audio sample from the external source;

optionally converting the audio sample to a format suitable for use in the wireless telephone; and

allowing the user to optionally store the recorded audio sample into a programmable memory for use as an indicia of an incoming communication.

11. The method of claim 10 further comprising allowing the user to optionally review the recorded audio sample before storing the selected audio sample into the wireless telephone.

12. The method of claim 10 wherein the format of the recorded audio sample is from the group comprising: Music Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

13. The method of claim 10 further comprising providing a visual indication to confirm the recorded audio sample has been successfully stored.

14. The method of claim 10 further comprising providing an audio indication to confirm the recorded audio sample has been successfully stored.

15. The method of claim 10 further comprising:

allowing the user to associate the recorded audio sample with a characteristic indicative of a caller such that the associated audio sample plays when the indicative characteristic is received by the wireless telephone.

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16. The method of claim 15 wherein the characteristic indicative of the caller is the caller's telephone number.

17. A wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising:

a communications link capable of connecting to a remote database that includes a plurality of lists of audio files;

a display screen that allows a user of the wireless telephone to browse at least one of the lists of audio files and view selectable audio files present in the browsed list;

a speaker and processing circuitry configured to allow the user to optionally review a selected audio file before downloading the selected audio file into the wireless telephone; and

a programmable memory circuit for allowing the user to optionally store the selected audio file for use as an indicia of an incoming communication.

18. The wireless telephone of claim 17 wherein the programmable memory circuit is configured to store audio files in a format selected from the group comprising: Music Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

19. The wireless telephone of claim 17 wherein the speaker and processing circuitry is configured to play audio files in a format selected from the group comprising: Music

Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

20. The wireless telephone of claim 17 wherein the wireless telephone is configured to allow the user to search the remote database for a certain desired audio file using title or description information to aid in locating the desired audio file.

21. The wireless telephone of claim 17 wherein the wireless telephone is configured to search the Internet or other remote databases for the desired audio file.

22. The wireless telephone of claim 17 wherein the wireless telephone includes a Wireless Application Protocol (WAP) compliant Internet browser.

23. The wireless telephone of claim 17 configured to provide a visual indication on the display screen of the wireless to confirm the selected audio file has been successfully downloaded.

24. The wireless telephone of claim 17 configured to allow the user to associate a downloaded audio file with a characteristic indicative of a caller such that the associated audio file plays when the indicative characteristic is received by the wireless telephone.

25. The method of claim 17 wherein the characteristic indicative of the caller is the caller's telephone number.

26. A wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising:

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a communications link capable of connecting to a remote database that includes a plurality of lists of audio files;

a display screen that allows a user of the wireless telephone to browse at least one of the plurality of lists of audio files and view selectable audio files present in the browsed list;

processing circuitry configured to receive a selected audio file from the communications link; and

a programmable memory circuit for allowing the user to optionally store the selected audio file for use as an indicia of an incoming communication.

27. The wireless telephone of claim 26 further comprising a speaker that operates in conjunction with the processing circuitry to allow the user to optionally review a selected audio file before downloading the selected audio file into the wireless telephone.

28. The wireless telephone of claim 26 wherein the programmable memory circuit is configured to store audio files in a format selected from the group comprising: Music Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

29. The wireless telephone of claim 26 wherein the speaker and processing circuitry is configured to play audio files in a format selected from the group comprising: Music Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file

(WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

30. The wireless telephone of claim 26 wherein the wireless telephone is configured to allow the user to search the remote database for a certain desired audio file using title or description information to aid in locating the desired audio file.

31. The wireless telephone of claim 29 wherein the wireless telephone is configured to search the Internet or other remote databases for the desired audio file.

32. The wireless telephone of claim 26 wherein the wireless telephone includes a Wireless Application Protocol (WAP) compliant Internet browser.

33. The wireless telephone of claim 26 configured to provide a visual indication on the display screen to confirm the selected audio file has been successfully downloaded.

34. The wireless telephone of claim 26 configured to allow the user to associate a downloaded audio file with a characteristic indicative of a caller such that the associated audio file plays when the indicative characteristic is received by the wireless telephone.

35. A wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising:

means for connecting to a remote database that includes a plurality of lists of audio files;

means for browsing at least one of the lists of audio files;

means for selecting at least one of the audio files from the browsed list;

means for optionally reviewing the selected audio file before downloading the selected audio file into the wireless telephone; and

means for downloading the selected audio file for use as an indicia of an incoming communication.

36. The wireless telephone of claim 35 further comprising means for searching the remote database for a certain desired audio file using title or description information to aid in locating the desired audio file.

37. The wireless telephone of claim 36 wherein the searching further comprises means for searching the Internet or other remote databases for the desired audio file.

38. The wireless telephone of claim 35 further comprising means for providing a visual indication to confirm the selected audio file has been successfully downloaded.

39. The wireless telephone of claim 35 further comprising means for providing an audio indication to confirm the selected audio file has been successfully downloaded.

40. The wireless telephone of claim 35 further comprising means for associating a downloaded audio file with a characteristic indicative of a caller such that the associated audio file plays when the indicative characteristic is received by the wireless telephone.

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41. The method of claim 1 further comprising preventing the unauthorized distribution of an audio file downloaded into the wireless telephone.

42. The method of claim 1 further comprising playing the selected audio file through an enhanced performance speaker capable of providing a substantially full range of audio sounds from Music Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio code (WMA), or Adaptive Transform Acoustic Coding (ATRAC).

43. The method of claim 1 characterized by the use of a personal computer to perform the browsing step.

44. The method of claim 1 further comprising providing the user with an opportunity to edit the selected audio file.

45. The method of claim 1 further comprising providing an indication that a memory capacity of the wireless telephone has been exceeded if the size of the audio file to be downloaded is larger than available memory space in the wireless telephone.

46. The method of claim 45 further comprising providing the user of the wireless telephone with the opportunity to cancel or modify a download request associated with an audio file download operation if the size of the audio file to be downloaded is larger than available memory space in the wireless telephone.

47. The wireless telephone of claim 26 wherein the wireless telephone is configured to prevent the unauthorized

distribution of an audio file stored in the programmable memory circuit.

48. The wireless telephone of claim 27 wherein the speaker is an enhanced performance speaker capable of providing a substantially full range of audio sounds from Music Instrument Digital Interface (MIDI), Motion Pictures Expert Group (MPEG), MPEG 2 layer 3 (MP3), Waveform audio file (WAV), Pulse Code Modulated (PCM), Windows Media Audio Code (WMA), or Adaptive Transform Acoustic Coding (ATRAC) files.

49. The wireless telephone of claim 26 configured to provide an indication that a memory capacity of the wireless telephone has been exceeded if the size of the audio file to be downloaded is larger than available memory space in the wireless telephone.

50. The wireless telephone of claim 49 configured to provide the user of the wireless telephone with the opportunity to cancel or modify a download request associated with an audio file download operation if the size of the audio file to be downloaded is larger than the available memory space in the wireless telephone.

51. A wireless telephone that may be customized by programming an audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising:

means for connecting to a remote database that includes a plurality of audio files;

means for selecting at least one of the audio files from the database;

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means for downloading and storing the selected audio file for use as an indicia of an incoming communication; and

means for preventing the unauthorized distribution of a selected audio file stored in the wireless telephone.

52. The wireless telephone of claim 51 further comprising means for indicating that a memory capacity of the wireless telephone has been exceeded if the size of the audio file to be downloaded is larger than available memory space in the wireless telephone.

53. A wireless telephone that may be customized by searching for and selecting an audio file from a remote computer and programming the selected audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising:

a communications link capable of connecting to a database in the remote computer that includes a plurality of lists of audio files in Motion Pictures Expert Group (MPEG), Waveform audio file (WAV), or MPEG 2 layer 3 (MP3) format;

a display screen and a mobile Internet browser that allows a user of the wireless telephone to browse at least one of the plurality of lists of audio files and view selectable audio files present in the browsed list;

processing circuitry configured to receive a selected one of the audio files from the communications link;

a programmable memory circuit for allowing the user to optionally store the selected audio file for use as an indicia of an incoming communication; and

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an enhanced performance speaker capable of providing a substantially full range of audio sounds from MPEG, WAV, or MP3 files when one of the stored audio files is played as an indicia of an incoming communication.

54. The wireless telephone of claim 53 configured to provide an indication that a memory capacity of the wireless telephone has been exceeded if the size of the audio file to be downloaded is larger than available memory space in the wireless telephone.

55. The wireless telephone of claim 53 wherein the enhanced performance speaker operates in conjunction with the processing circuitry to allow the user to optionally review a selected audio file before downloading the selected audio file into the wireless telephone.

56. The wireless telephone of claim 53 configured to allow the user to search the remote database for a certain desired audio file using title or description information to aid in locating the desired audio file.

57. The wireless telephone of claim 53 configured to prevent the unauthorized distribution of an audio file stored in the programmable memory circuit.

58. A wireless telephone that may be customized by searching for and selecting an audio file from a remote computer and programming the selected audio file into the wireless telephone for use as an indicia of an incoming communication, the telephone comprising:

a communications link capable of connecting to a database in the remote computer that includes a plurality of polyphonic audio files;

a display screen and a browsing application program that allows a user of the wireless telephone to browse the polyphonic audio files and select at least one polyphonic audio file therefrom;

processing circuitry configured to supervise receipt of a selected polyphonic audio file from the communications link;

a programmable memory circuit for allowing the user to optionally store the selected polyphonic audio file for use as an indicia of an incoming communication; and

an enhanced performance speaker capable of providing a substantially full range of audio sounds from the selected polyphonic audio file when the selected polyphonic audio file is played as an indicia of an incoming communication.

59. The wireless telephone of claim 58 wherein the polyphonic audio file is selected from the group comprising Motion Pictures Expert Group (MPEG), MPEG 2 Layer 3 (MP3), or Waveform audio file (WAV) files.

60. The wireless telephone of claim 58 wherein the enhanced performance speaker operates in conjunction with the processing circuitry to allow the user to optionally review the selected polyphonic audio file before downloading the selected polyphonic audio file into the programmable memory circuit of the wireless telephone.

61. The wireless telephone of claim 58 configured to prevent the unauthorized distribution of the selected polyphonic audio file stored in the programmable memory circuit.

62. The wireless telephone of claim 53 wherein the communications link is capable of connecting to a database in the remote computer that includes a plurality of lists of audio files in polyphonic Music Instrument Digital Interface (MIDI) format.

63. The wireless telephone of claim 55 configured to provide the user of the wireless telephone with the option of downloading the selected polyphonic audio file into a programmable memory in the wireless telephone after reviewing the selected polyphonic audio file.

64. The wireless telephone of claim 63 configured to provide the user of the wireless telephone with the option of editing the selected polyphonic audio file before programming the selected polyphonic audio file into the programmable memory in the wireless telephone.

65. The wireless telephone of claim 57 wherein the wireless telephone is configured to operate in conjunction with copyright protection software to prevent the unauthorized distribution of the selected polyphonic audio file stored in the programmable memory circuit.

66. The wireless telephone of claim 58 wherein the group of polyphonic audio files include audio files in polyphonic Music Instrument Digital Interface (MIDI) format.

67. The wireless telephone of claim 60 configured to provide the user of the wireless telephone with the option of downloading the selected polyphonic audio file into a programmable memory in the wireless telephone after reviewing the selected polyphonic audio file.

68. The wireless telephone of claim 67 configured to provide the user of the wireless telephone with the option

of editing the selected polyphonic audio file before programming the selected polyphonic audio file into the programmable memory in the wireless telephone.

69. The wireless telephone of claim 61 wherein the wireless telephone is configured to operate with copyright protection software to prevent the unauthorized distribution of the selected polyphonic audio file stored in the programmable memory circuit.

70. A wireless telephone that may be customized by searching for and selecting an audio file from a remote computer and programming the selected audio file into the wireless telephone for use at a time specified by the user, the telephone comprising:

a communications link capable of connecting to a database in the remote computer that includes a plurality of polyphonic audio files;

a display screen and a browsing application program that allows a user of the wireless telephone to browse the polyphonic audio files and select at least one polyphonic audio file therefrom;

processing circuitry configured to supervise receipt of a selected polyphonic audio file from the communications link;

a programmable memory circuit for allowing the user to optionally store the selected polyphonic audio file for use as an indicia of an incoming communication; and

an enhanced performance speaker capable of providing a substantially full range of audio sounds from the selected polyphonic audio file when the selected polyphonic audio file is played.

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71. The wireless telephone of claim 70 wherein the polyphonic audio file is selected from the group comprising Motion Pictures Expert Group (MPEG), Waveform audio file (WAV), or MPEG 2 layer 3 (MP3) files.

72. The wireless telephone of claim 70 wherein the enhanced performance speaker operates in conjunction with the processing circuitry to allow the user to optionally review the selected polyphonic audio file before downloading the selected polyphonic audio file into the programmable memory circuit of the wireless telephone.

73. The wireless telephone of claim 70 configured to prevent the unauthorized distribution of the selected polyphonic audio file stored in the programmable memory circuit.

74. The wireless telephone of claim 71 wherein the group of polyphonic audio files includes audio files in polyphonic Music Instrument Digital Interface (MIDI) format.

75. The wireless telephone of claim 72 configured to provide the user of the wireless telephone with the option of downloading the selected polyphonic audio file into a programmable memory in the wireless telephone after reviewing the selected polyphonic audio file.

76. The wireless telephone of claim 75 configured to provide the user of the wireless telephone with the option of editing the selected polyphonic audio file before programming the selected polyphonic audio file into the programmable memory in the wireless telephone.

77. The wireless telephone of claim 73 wherein the wireless telephone is configured to operate in conjunction with copyright protection software to prevent the

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unauthorized distribution of the selected polyphonic audio file stored in the programmable memory circuit.

78. A wireless telephone that may be customized by programming an audio file into the wireless telephone for use at a time specified by a user of the wireless telephone, the telephone comprising:

means for connecting to a remote database that includes a plurality of lists of polyphonic audio files;

means for browsing at least one of the lists of polyphonic audio files;

means for selecting at least one of the polyphonic audio files from the browsed list;

means for optionally reviewing the selected polyphonic audio file before downloading the selected polyphonic audio into a memory circuit in the wireless telephone; and

means for downloading the selected polyphonic audio file for use at the time specified by the user of the wireless telephone.

79. The wireless telephone of claim 78 further comprising means for searching the remote database for a certain desired polyphonic audio file using title or description information to aid in locating the desired polyphonic audio file.

80. The wireless telephone of claim 79 wherein the searching further comprises means for searching the Internet or other remote databases for the desired polyphonic audio file.

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81. The wireless telephone of claim 78 further comprising means for providing a visual indication to confirm the selected polyphonic audio file has been successfully downloaded.

82. The wireless telephone of claim 78 further comprising means for providing an audio indication to confirm the selected polyphonic audio file has been successfully downloaded.

83. The wireless telephone of claim 78 wherein the browsing of polyphonic audio files is accomplished at least in part using a Wireless Application Protocol (WAP) compliant system.

84. The wireless telephone of claim 78 further comprising means for preventing unauthorized distribution of the selected polyphonic audio file stored in the programmable memory circuit.

85. A method for programming a video file into a wireless telephone, the method comprising:

connecting to a remote database that includes a plurality of lists of video files;

allowing a user of the wireless telephone to browse at least one of the lists of video files;

allowing the user of the wireless telephone to select at least one of the video files from the browsed list;

optionally reviewing the selected video file before downloading the selected video into the wireless telephone; and

allowing the user to optionally download the selected video file for present or subsequent use.

86. The method of claim 85 wherein the format of the selected video file is from the group comprising: Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD).

87. The method of claim 85 further comprising allowing the user to search the remote database for a certain desired video file using title or description information to aid in locating the desired video file.

88. The method of claim 87 wherein the searching further comprises searching the Internet or other remote databases for the desired video file.

89. The method of claim 85 wherein the browsing of video files is accomplished at least in part using a Wireless Application Protocol (WAP) compliant system.

90. The method of claim 85 further comprising providing a visual indication to confirm the selected video file has been successfully downloaded.

91. The method of claim 85 further comprising providing an audio indication to confirm the selected video file has been successfully downloaded.

92. The method of claim 85 further comprising:

downloading a selected video file into the wireless telephone; and

associating the downloaded video file with a characteristic indicative of a caller such that the

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associated video file plays when the indicative characteristic is received by the wireless telephone.

93. The method of claim 85 wherein the characteristic indicative of the caller is the caller's telephone number.

94. A method of programming a video file into the wireless telephone, the method comprising:

connecting to a remote database that includes a plurality of video files;

allowing the user of the wireless telephone to browse and select at least one of the video files;

allowing the user to optionally download the selected video file into a programmable memory for present or subsequent use.

95. The method of claim 94 further comprising allowing the user to optionally review the selected video file before downloading the selected video file into the wireless telephone.

96. The method of claim 94 wherein the format of the selected video file is from the group comprising: Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD).

97. The method of claim 94 further comprising allowing the user to search the remote database for a certain desired video file using title or description information to aid in locating the desired video file.

98. The method of claim 97 wherein the searching further comprises searching the Internet or other remote databases for the desired video file.

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99. The method of claim 94 wherein the browsing of video files is accomplished at least in part using a Wireless Application Protocol (WAP) compliant system.

100. The method of claim 94 further comprising providing a visual indication to confirm the selected video file has been successfully downloaded.

101. The method of claim 94 further comprising providing an audio indication to confirm the selected video file has been successfully downloaded.

102. The method of claim 94 further comprising:

downloading a selected video file into the wireless telephone; and

associating the downloaded video file with a characteristic indicative of a caller such that the associated video file plays when the indicative characteristic is received by the wireless telephone.

103. The method of claim 94 wherein the characteristic indicative of the caller is the caller's telephone number.

104. A wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising:

a communications link capable of connecting to a remote database that includes a plurality of lists of video files;

a display screen that allows a user of the wireless telephone to browse at least one of the lists of video files and view selectable video files present in the browsed list;

a speaker, display screen, and processing circuitry configured to allow the user to optionally review a selected video file before downloading the selected video file into the wireless telephone; and

a programmable memory circuit for allowing the user to optionally store the selected video file for present or subsequent use.

105. The wireless telephone of claim 104 wherein the programmable memory circuit is configured to store video files in a format selected from the group comprising: Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD).

106. The wireless telephone of claim 104 wherein the speaker, display screen and processing circuitry is configured to play video files in a format selected from the group comprising: Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD).

107. The wireless telephone of claim 104 wherein the wireless telephone is configured to allow the user to search the remote database for a certain desired video file using title or description information to aid in locating the desired video file.

108. The wireless telephone of claim 107 wherein the wireless telephone is configured to search the Internet or other remote databases for the desired video file.

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109. The wireless telephone of claim 104 wherein the wireless telephone includes a Wireless Application Protocol (WAP) compliant Internet browser.

110. The wireless telephone of claim 104 configured to provide a visual indication to confirm the selected video file has been successfully downloaded.

111. The wireless telephone of claim 104 configured to provide an audio indication to confirm the selected video file has been successfully downloaded.

112. The wireless telephone of claim 104 configured to allow the user to associate a downloaded video file with a characteristic indicative of a caller such that the associated video file plays when the indicative characteristic is received by the wireless telephone.

113. The wireless telephone of claim 104 wherein the characteristic indicative of the caller is the caller's telephone number.

114. A wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising:

a communications link capable of connecting to a remote database that includes a plurality of lists of video files;

a display screen that allows a user of the wireless telephone to browse at least one of the plurality of lists of video files and view selectable video files present in the browsed list;

processing circuitry configured to receive a selected video file from the communications link; and

a programmable memory circuit for allowing the user to optionally store the selected video file for present or subsequent use.

115. The wireless telephone of claim 114 wherein the display screen operates in conjunction with the processing circuitry to allow the user to optionally review a selected video file before downloading the selected video file into the wireless telephone.

116. The wireless telephone of claim 114 wherein the programmable memory circuit is configured to store video files in a format selected from the group comprising: Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD).

117. The wireless telephone of claim 114 wherein the display screen and processing circuitry is configured to play video files in a format selected from the group comprising: Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD).

118. The wireless telephone of claim 114 wherein the wireless telephone is configured to allow the user to search the remote database for a certain desired video file using title or description information to aid in locating the desired video file.

119. The wireless telephone of claim 118 wherein the wireless telephone is configured to search the Internet or other remote databases for the desired video file.

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120. The wireless telephone of claim 114 wherein the wireless telephone includes a Wireless Application Protocol (WAP) compliant Internet browser.

121. The wireless telephone of claim 114 configured to provide a visual indication to confirm the selected video file has been successfully downloaded.

122. The wireless telephone of claim 114 configured to provide an audio indication to confirm the selected video file has been successfully downloaded.

123. The wireless telephone of claim 114 configured to allow the user to associate a downloaded video file with a characteristic indicative of a caller such that the associated video file plays when the indicative characteristic is received by the wireless telephone.

124. A wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising:

means for connecting to a remote database that includes a plurality of lists of video files;

means for browsing at least one of the lists of video files;

means for selecting at least one of the video files from the browsed list;

means for optionally reviewing the selected video file before downloading the selected video into the wireless telephone; and

means for downloading the selected video file for present or subsequent use.

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125. The wireless telephone of claim 124 further comprising means for searching the remote database for a certain desired video file using title or description information to aid in locating the desired video file.

126. The wireless telephone of claim 125 wherein the searching further comprises means for searching the Internet or other remote databases for the desired video file.

127. The wireless telephone of claim 124 further comprising means for providing a visual indication to confirm the selected video file has been successfully downloaded.

128. The wireless telephone of claim 124 further comprising means for providing an audio indication to confirm the selected video file has been successfully downloaded.

129. The wireless telephone of claim 124 further comprising means for associating a downloaded video file with a characteristic indicative of a caller such that the associated video file plays when the indicative characteristic is received by the wireless telephone.

130. A wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising:

means for connecting to a remote database that includes a plurality of video files;

means for browsing and selecting at least one of the video files;

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means for optionally downloading the selected video file into a programmable memory for present or subsequent use.

131. The wireless telephone of claim 130 further comprising means for optionally reviewing the selected video file before downloading the selected video file into the wireless telephone.

132. The wireless telephone of claim 131 further comprising means for searching the remote database for a certain desired video file using title or description information to aid in locating the desired video file.

133. The wireless telephone of claim 130 wherein the searching further comprises means for searching the Internet or other remote databases for the desired video file.

134. The wireless telephone of claim 130 wherein the browsing of video files is accomplished at least in part using a Wireless Application Protocol (WAP) compliant system.

135. The wireless telephone of claim 130 further comprising providing a visual indication to confirm the selected video file has been successfully downloaded.

136. The wireless telephone of claim 130 further comprising providing an audio indication to confirm the selected video file has been successfully downloaded.

137. The wireless telephone of claim 130 further comprising means for associating a downloaded video file with a characteristic indicative of a caller such that the associated video file plays when the indicative characteristic is received by the wireless telephone.

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138. The method of claim 85 further comprising preventing the unauthorized distribution of a downloaded video file.

139. The method of claim 85 further comprising playing an audio portion the selected video file, if any, through an enhanced performance speaker capable of providing a substantially full range of sounds from the played video file.

140. The method of claim 85 characterized by the use of a personal computer to perform the browsing step.

141. The method of claim 85 further comprising providing the user with an opportunity to edit the selected video file.

142. The method of claim 85 further comprising providing an indication that a memory capacity of the wireless telephone has been exceeded if the size of the video file to be downloaded is larger than available memory space in the wireless telephone.

143. The method of claim 142 further comprising providing the user of the wireless telephone with the opportunity to cancel or modify a download request associated with an video file download operation if the size of the video file to be downloaded is larger than available memory space in the wireless telephone.

144. The wireless telephone of claim 114 wherein the wireless telephone is configured to prevent the unauthorized distribution of an video file stored in the programmable memory circuit.

145. The wireless telephone of claim 115 further comprising an enhanced performance speaker capable of

providing a substantially full range of audio sounds from an audio portion of the selected video file.

146. The wireless telephone of claim 114 configured to provide an indication that a memory capacity of the wireless telephone has been exceeded if the size of the video file to be downloaded is larger than available memory space in the wireless telephone.

147. The wireless telephone of claim 146 configured to provide the user of the wireless telephone with the opportunity to cancel or modify a download request associated with an video file download operation if the size of the video file to be downloaded is larger than the available memory space in the wireless telephone.

148. A wireless telephone capable of downloading a video file into the wireless telephone for present or subsequent use, the telephone comprising:

means for connecting to a remote database that includes a plurality of video files;

means for selecting at least one of the video files from the database;

means for downloading and storing the selected video file for present or subsequent use; and

means for preventing the unauthorized distribution of a selected video file stored in the wireless telephone.

149. The wireless telephone of claim 148 further comprising means for indicating that a memory capacity of the wireless telephone has been exceeded if the size of the video file to be downloaded is larger than available memory space in the wireless telephone.

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150. A wireless telephone capable of searching for and selecting a video file from a remote computer and programming the selected video file into the wireless telephone for present or subsequent use, the telephone comprising:

a communications link capable of connecting to a database in the remote computer that comprises a plurality of lists of video files in Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD) format;

a display screen and a mobile Internet browser that allows a user of the wireless telephone to browse at least one of the plurality of lists of video files and view selectable video files present in the browsed list;

processing circuitry configured to receive a selected one of the video files from the communications link;

a programmable memory circuit for allowing the user to optionally store the selected video file for present or subsequent use; and

an enhanced performance speaker capable of providing a substantially full range of audio sounds from an audio portion of the JPEG, MPEG, GIF, AVI, or DVD files when one of the stored video files is played.

151. The wireless telephone of claim 150 configured to provide an indication that a memory capacity of the wireless telephone has been exceeded if the size of the video file to be downloaded is larger than available memory space in the wireless telephone.

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152. The wireless telephone of claim 150 wherein the display screen operates in conjunction with the enhanced performance speaker and processing circuitry to allow the user to optionally review a selected video file before downloading the selected video file into the wireless telephone.

153. The wireless telephone of claim 150 configured to allow the user to search the remote database for a certain desired video file using title or description information to aid in locating the desired video file.

154. The wireless telephone of claim 150 configured to prevent the unauthorized distribution of an video file stored in the programmable memory circuit.

155. A wireless telephone capable of searching for and selecting a video file from a remote computer and programming the selected video file into the wireless telephone for present or subsequent use, the telephone comprising:

a communications link capable of connecting to a database in the remote computer that includes a plurality of video files;

a display screen and a browsing application program that allows a user of the wireless telephone to browse the video files and select at least one video file therefrom;

processing circuitry configured to supervise receipt of a selected video file from the communications link;

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a programmable memory circuit for allowing the user to optionally store the selected video file for use; and

an enhanced performance speaker capable of providing a substantially full range of audio sounds that may be associated with the selected video file when the selected video file is played.

156. The wireless telephone of claim 155 wherein the video file is selected from the group comprising Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD) files.

157. The wireless telephone of claim 155 wherein the display screen operates in conjunction with the enhanced performance speaker and processing circuitry to allow the user to optionally review the selected video file before downloading the selected video file into the programmable memory circuit of the wireless telephone.

158. The wireless telephone of claim 155 configured to prevent the unauthorized distribution of the selected video file stored in the programmable memory circuit.

159. The wireless telephone of claim 152 configured to provide the user of the wireless telephone with the option of downloading the selected video file into a programmable memory in the wireless telephone after reviewing the selected video file.

160. The wireless telephone of claim 159 configured to provide the user of the wireless telephone with the option of editing the selected video file before programming the

selected video file into the programmable memory in the wireless telephone.

161. The wireless telephone of claim 154 wherein the wireless telephone is configured to operate in conjunction with copyright protection software to prevent the unauthorized distribution of the selected video file stored in the programmable memory circuit.

162. The wireless telephone of claim 157 configured to provide the user of the wireless telephone with the option of downloading the selected video file into a programmable memory in the wireless telephone after reviewing the selected video file.

163. The wireless telephone of claim 162 configured to provide the user of the wireless telephone with the option of editing the selected video file before programming the selected video file into the programmable memory in the wireless telephone.

164. The wireless telephone of claim 158 wherein the wireless telephone is configured to operate with copyright protection software to prevent the unauthorized distribution of the selected video file stored in the programmable memory circuit.

165. A wireless telephone that may be customized by searching for and selecting a video file from a remote computer and programming the selected video file into the wireless telephone for use at a time specified by a user, of the telephone, comprising:

a communications link capable of connecting to a database in the remote computer that includes a plurality of video files;

a display screen and a browsing application program that allows a user of the wireless telephone to browse the video files and select at least one video file therefrom;

processing circuitry configured to supervise receipt of a selected video file from the communications link;

a programmable memory circuit for allowing the user to optionally store the selected video file for use at a time specified by the user; and

an enhanced performance speaker capable of providing a substantially full range of audio sounds that may be associated with the selected video file when the selected video file is played.

166. The wireless telephone of claim 165 wherein the video file is selected from the group comprising Joint Photographic Expert Group (JPEG), Motion Pictures Expert Group (MPEG), Graphic Interchange Format (GIF), Audio Video Interleaved (AVI), or Digital Versatile Disc format (DVD) files.

167. The wireless telephone of claim 165 wherein the display screen operates in conjunction with the enhanced performance speaker and processing circuitry to allow the user to optionally review the selected polyphonic video file before downloading the selected video file into the programmable memory circuit of the wireless telephone.

168. The wireless telephone of claim 165 configured to prevent the unauthorized distribution of the selected video file stored in the programmable memory circuit.

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169. The wireless telephone of claim 167 configured to provide the user of the wireless telephone with the option of downloading the selected video file into a programmable memory in the wireless telephone after reviewing the selected video file.

170. The wireless telephone of claim 169 configured to provide the user of the wireless telephone with the option of downloading the selected video file into a programmable memory in the wireless telephone after reviewing the selected video file.

171. The wireless telephone of claim 170 configured to provide the user of the wireless telephone with the option of editing the selected video file before programming the selected video file into the programmable memory in the wireless telephone.

SMART & BIGGAR

OTTAWA, CANADA

PATENT AGENTS

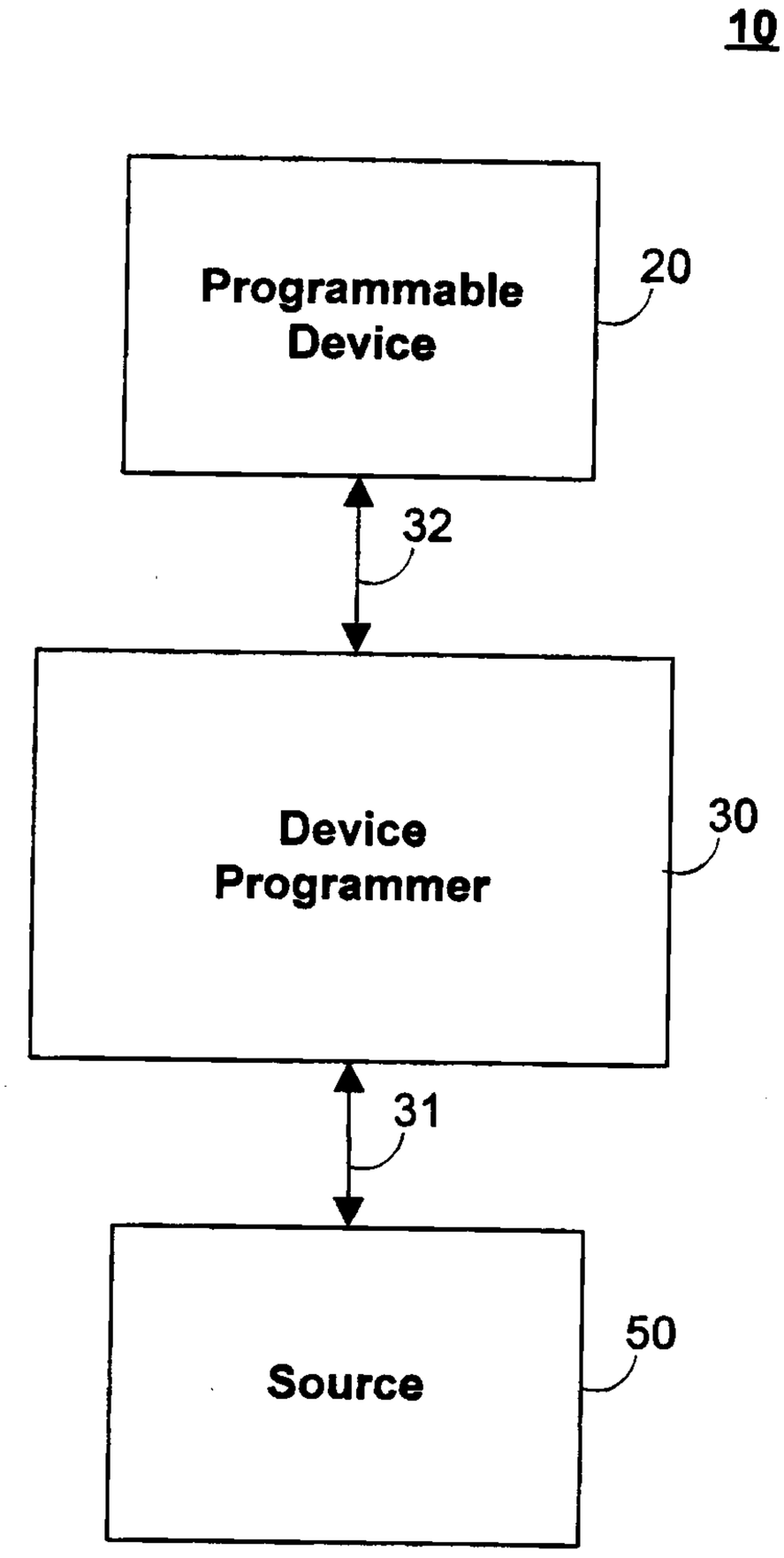

10
Programmable Device
20
32
Device Programmer
30
31
Source
50

FIG. 1

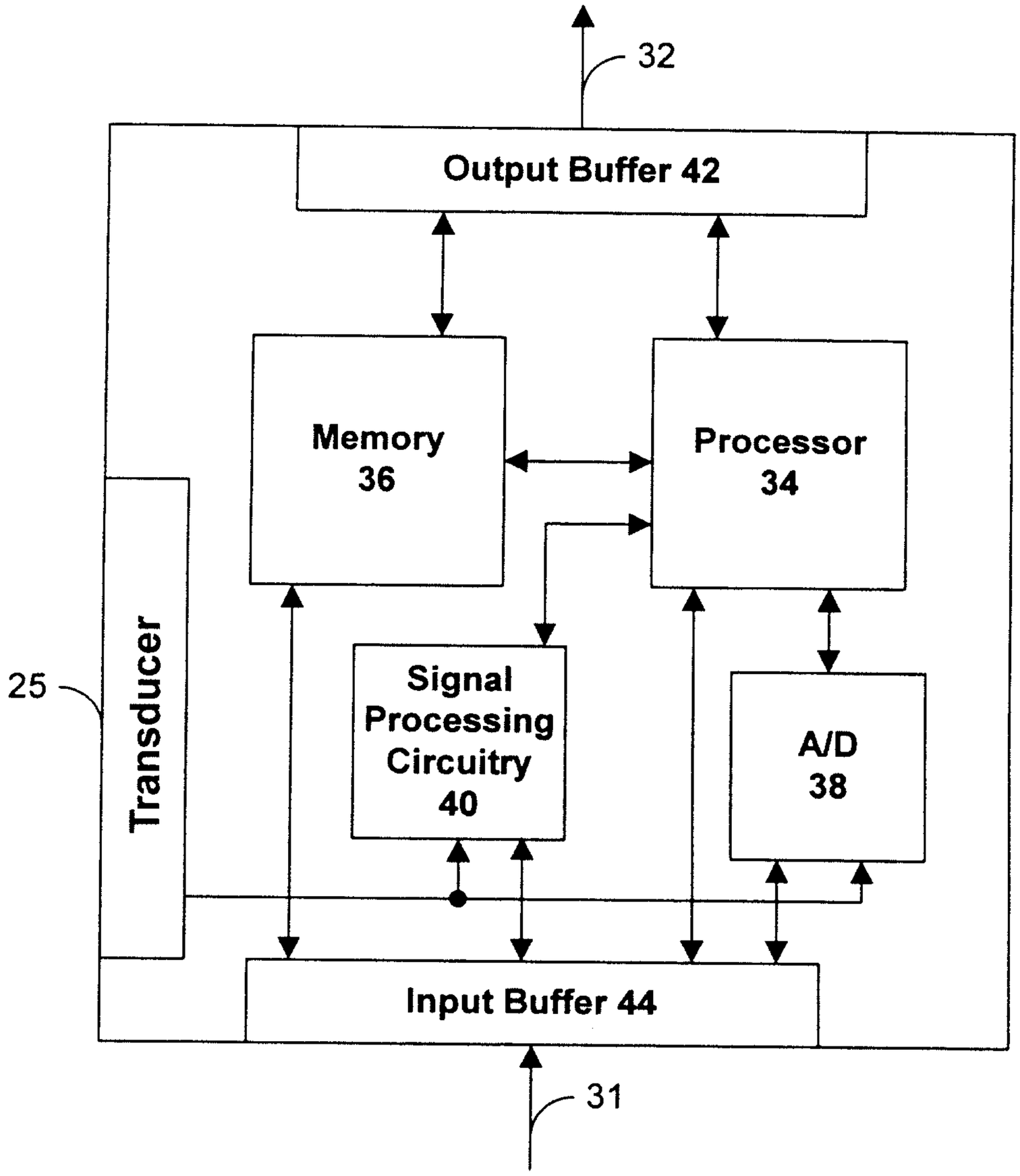

32
Output Buffer 42
Memory
36
Processor
34
Signal
Processing
Circuitry
40
A/D
38
25
Transducer
Input Buffer 44
31

FIG. 2

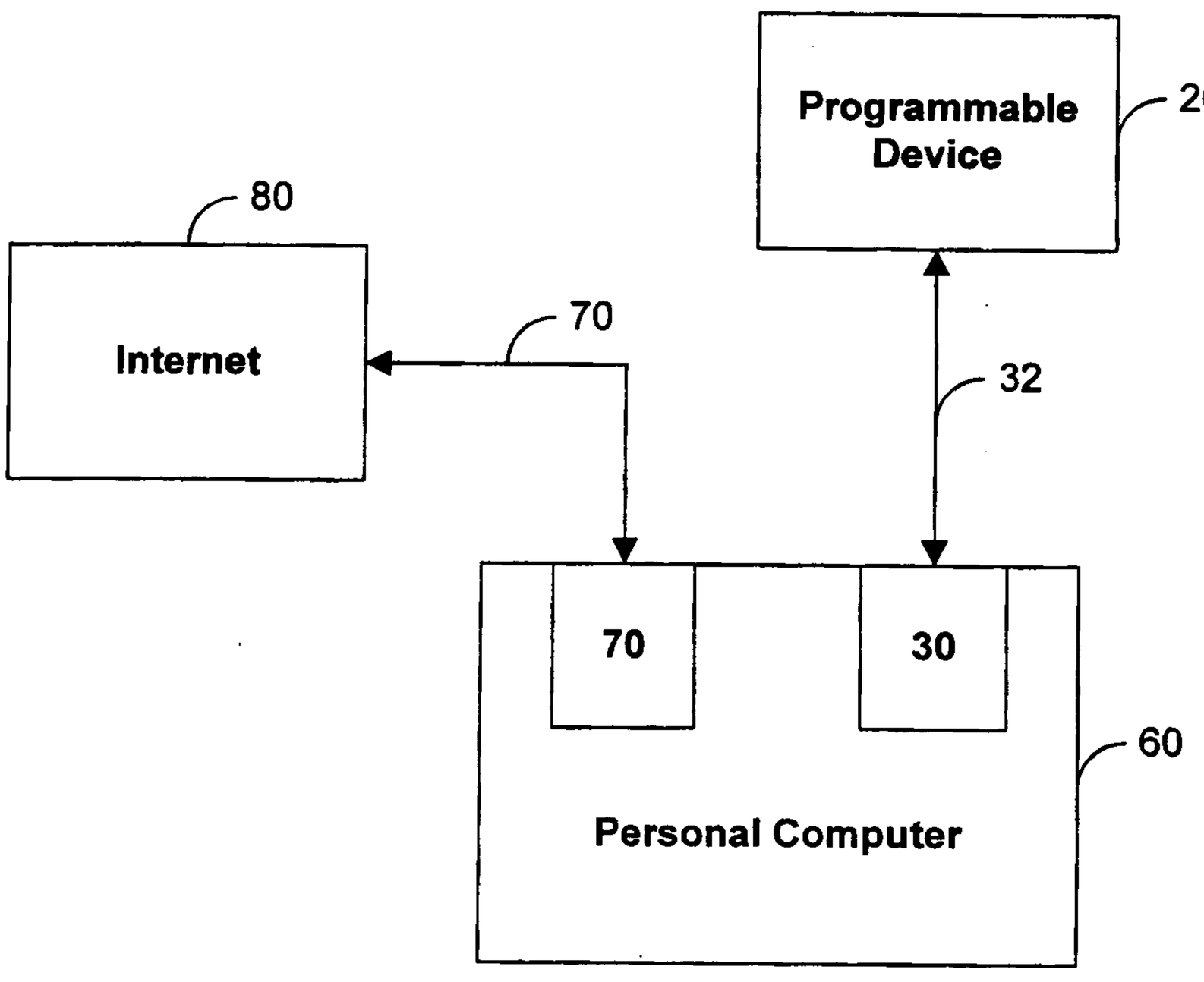

Programmable Device
20
80
Internet
70
32
70
30
60
Personal Computer

FIG. 3

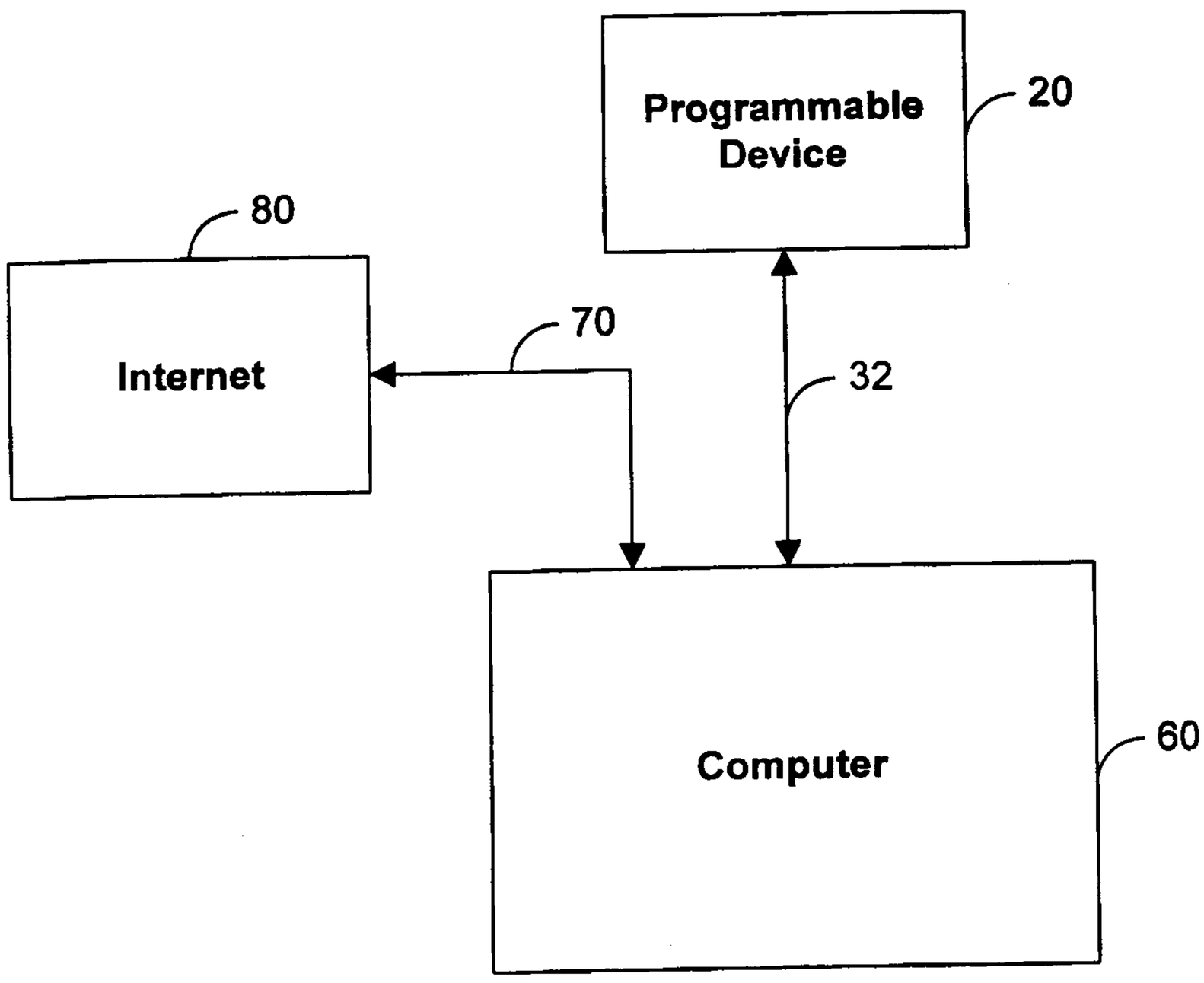


FIG. 4A

200

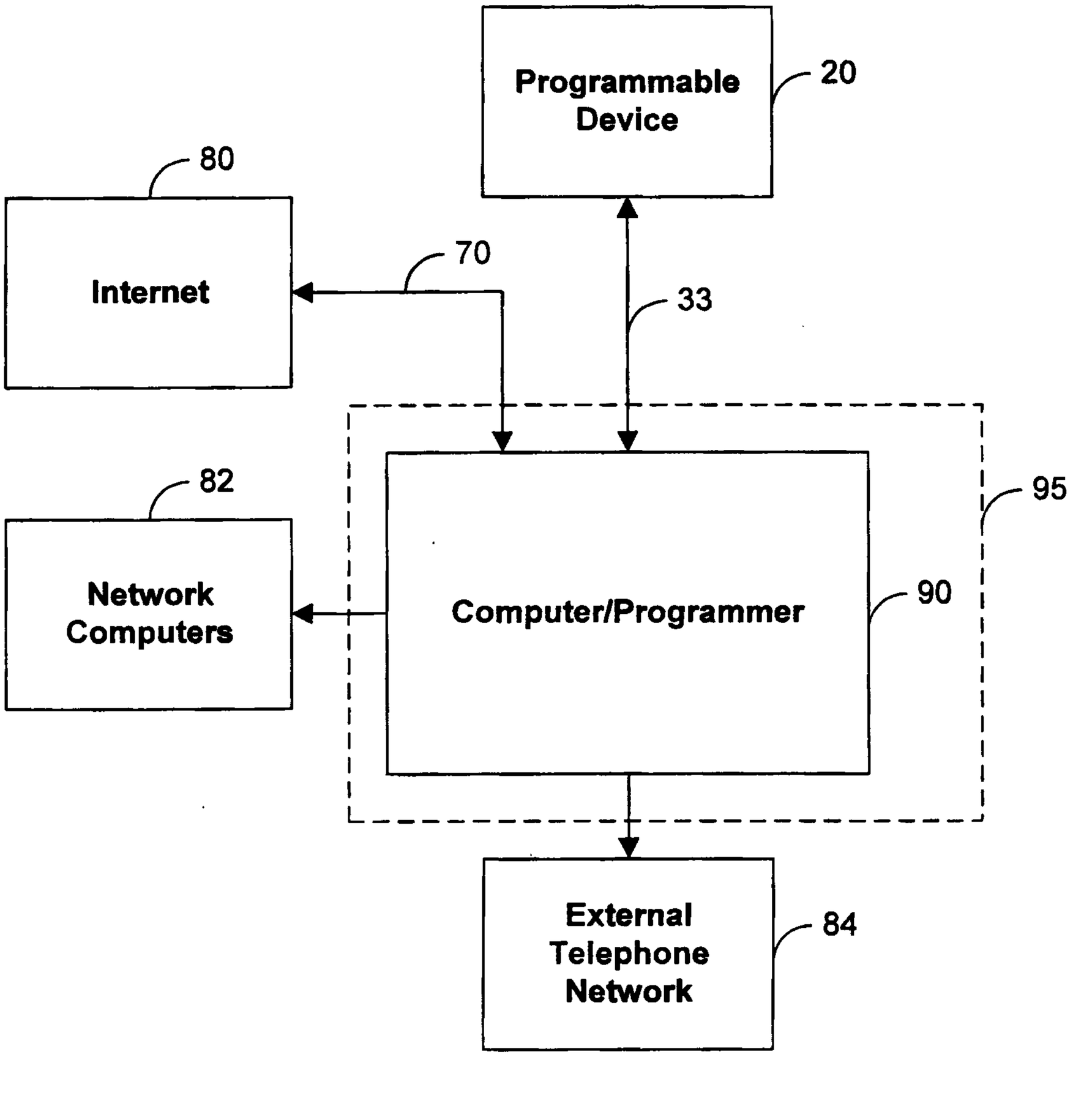

Programmable Device
20
80
Internet
70
33
82
Network Computers
95
Computer/Programmer
90
External Telephone Network
84

FIG. 4B

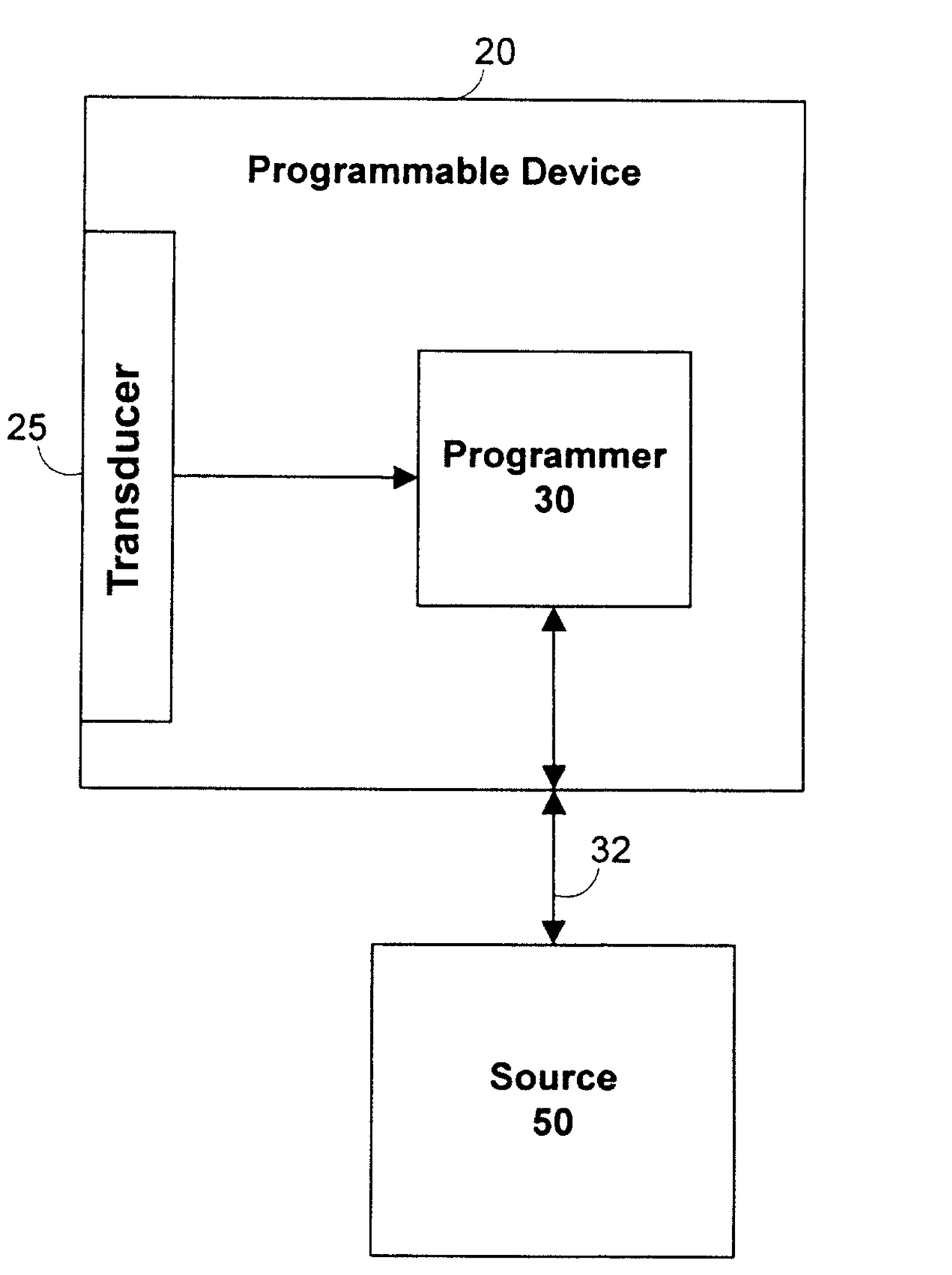

300
20
Programmable Device
25
Transducer
Programmer
30
32
Source
50

FIG. 5

400

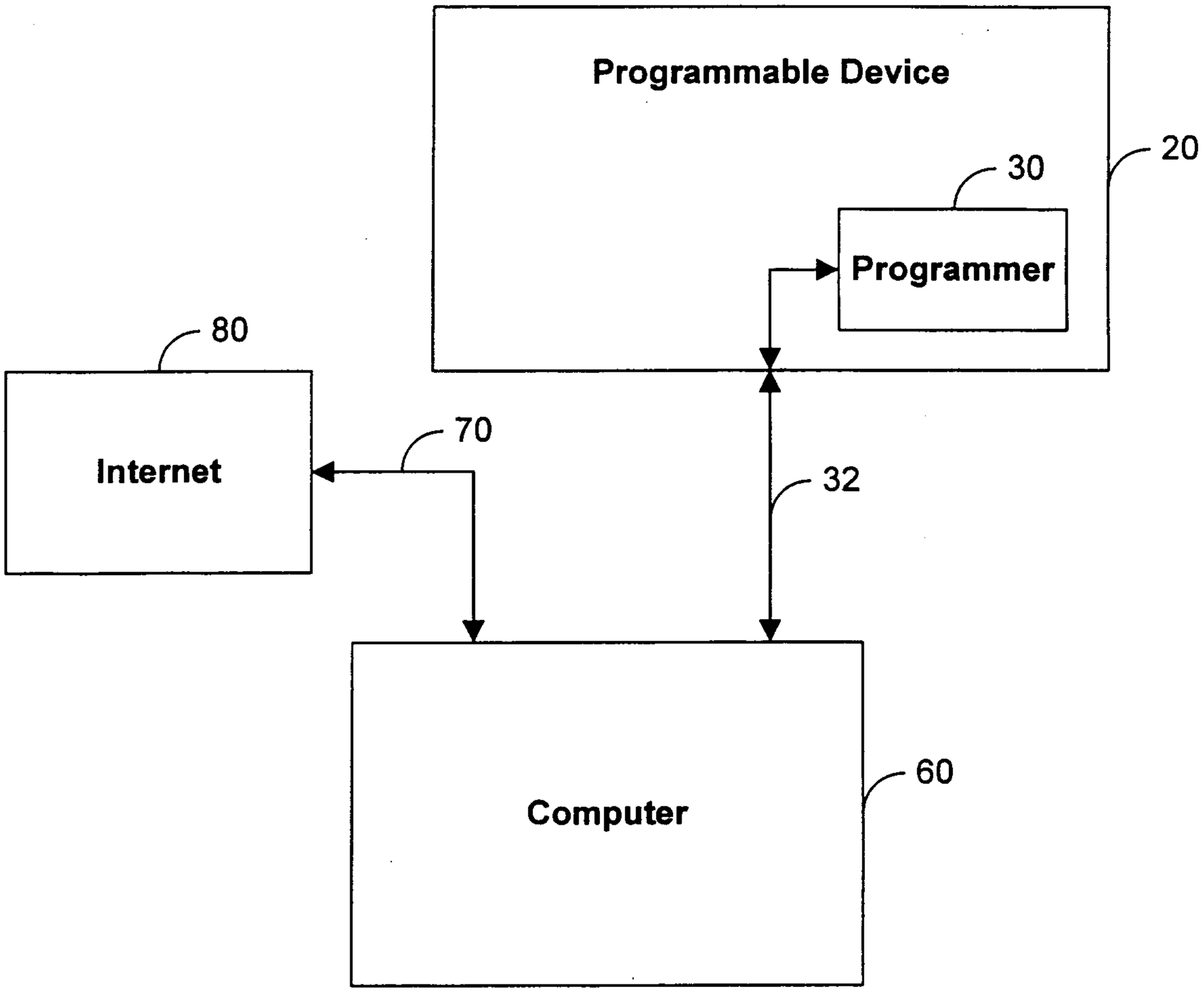

Programmable Device
20
30
Programmer
80
Internet
70
32
Computer
60

FIG. 6

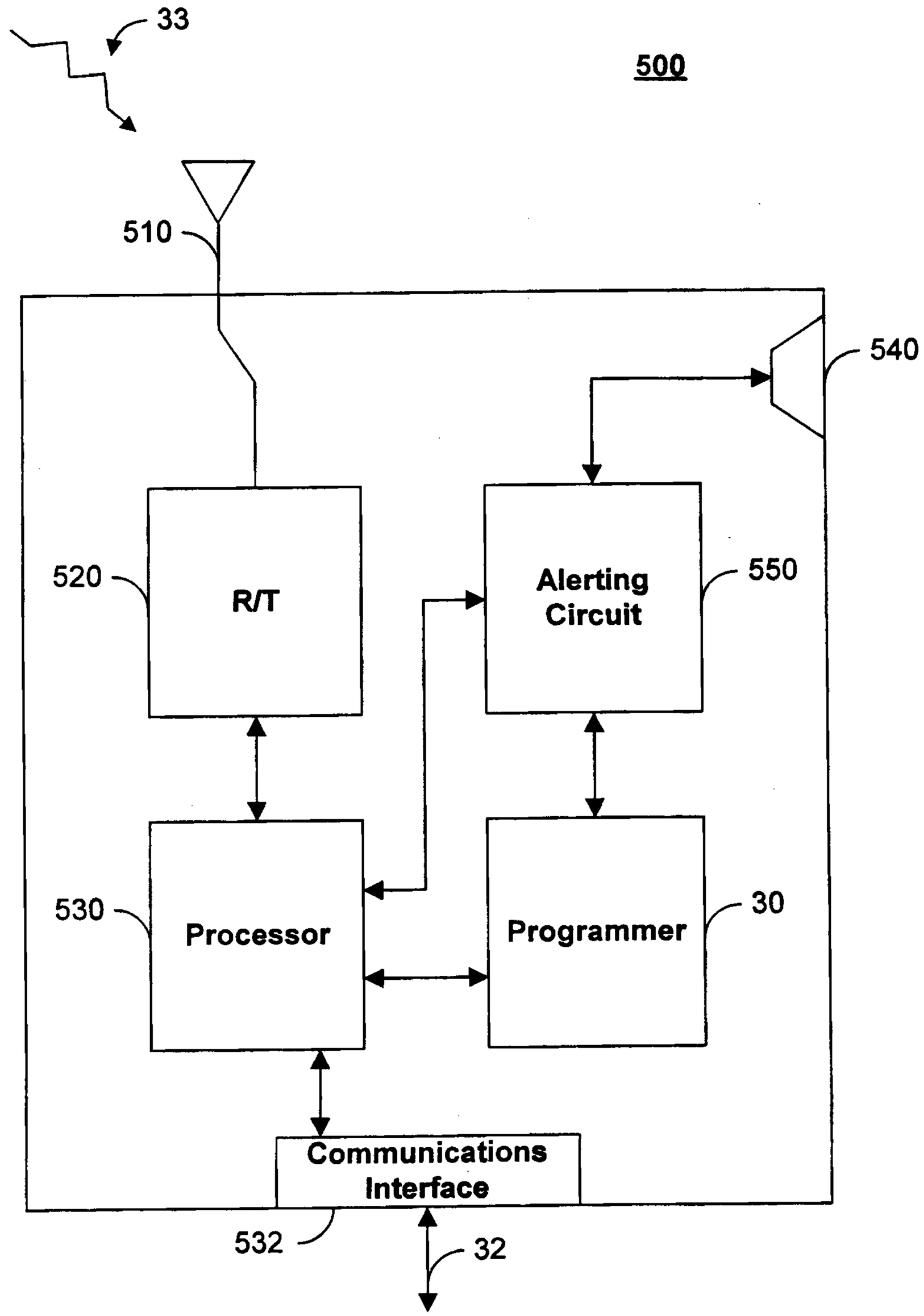

33
500
510
540
520
R/T
Alerting Circuit
550
530
Processor
Programmer
30
Communications Interface
532
32

FIG. 7

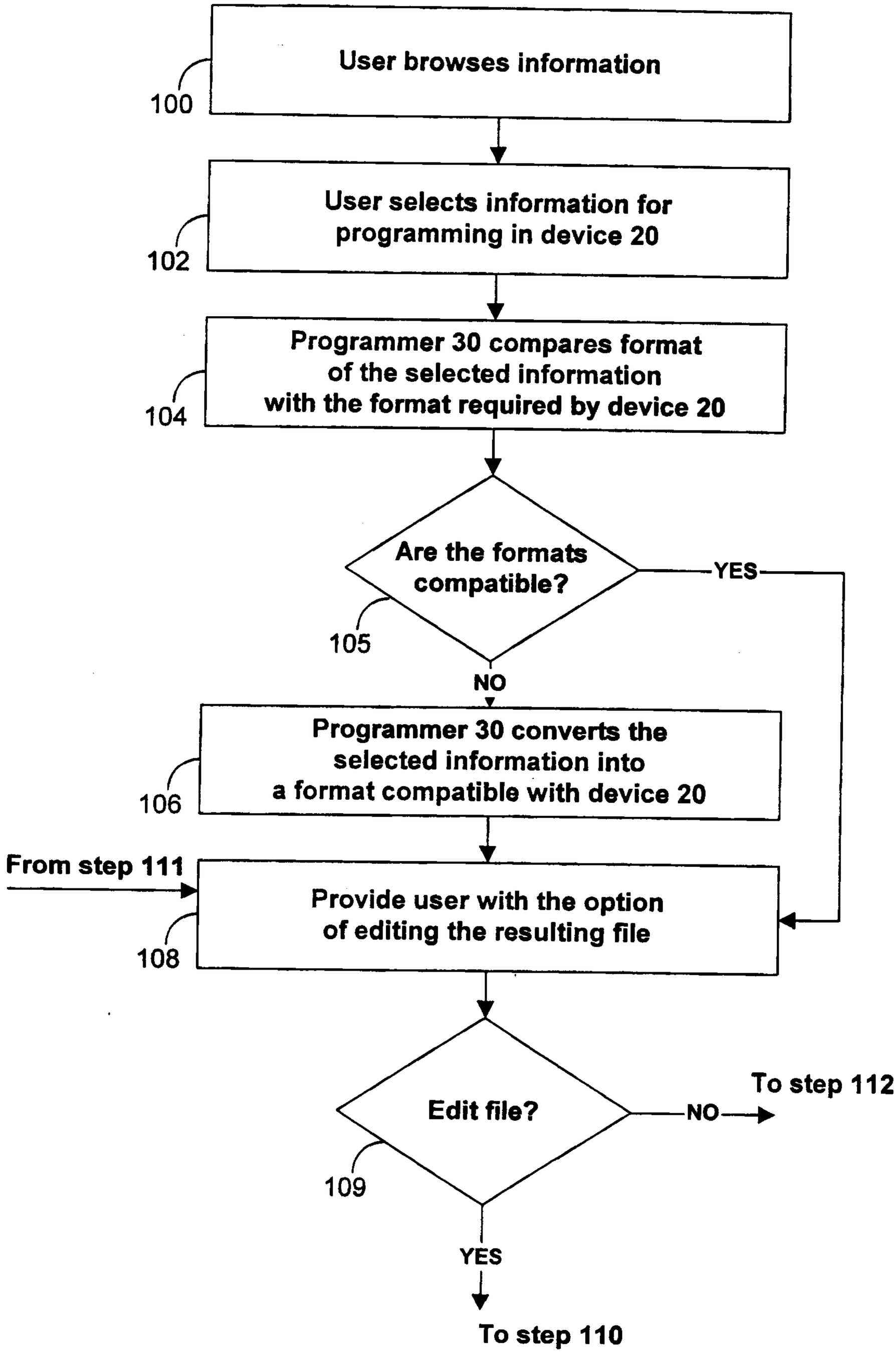

User browses information
100
User selects information for programming in device 20
102
Programmer 30 compares format of the selected information with the format required by device 20
104
Are the formats compatible?
105
YES
NO
Programmer 30 converts the selected information into a format compatible with device 20
106
From step 111
Provide user with the option of editing the resulting file
108
Edit file?
109
NO
To step 112
YES
To step 110

FIG. 8

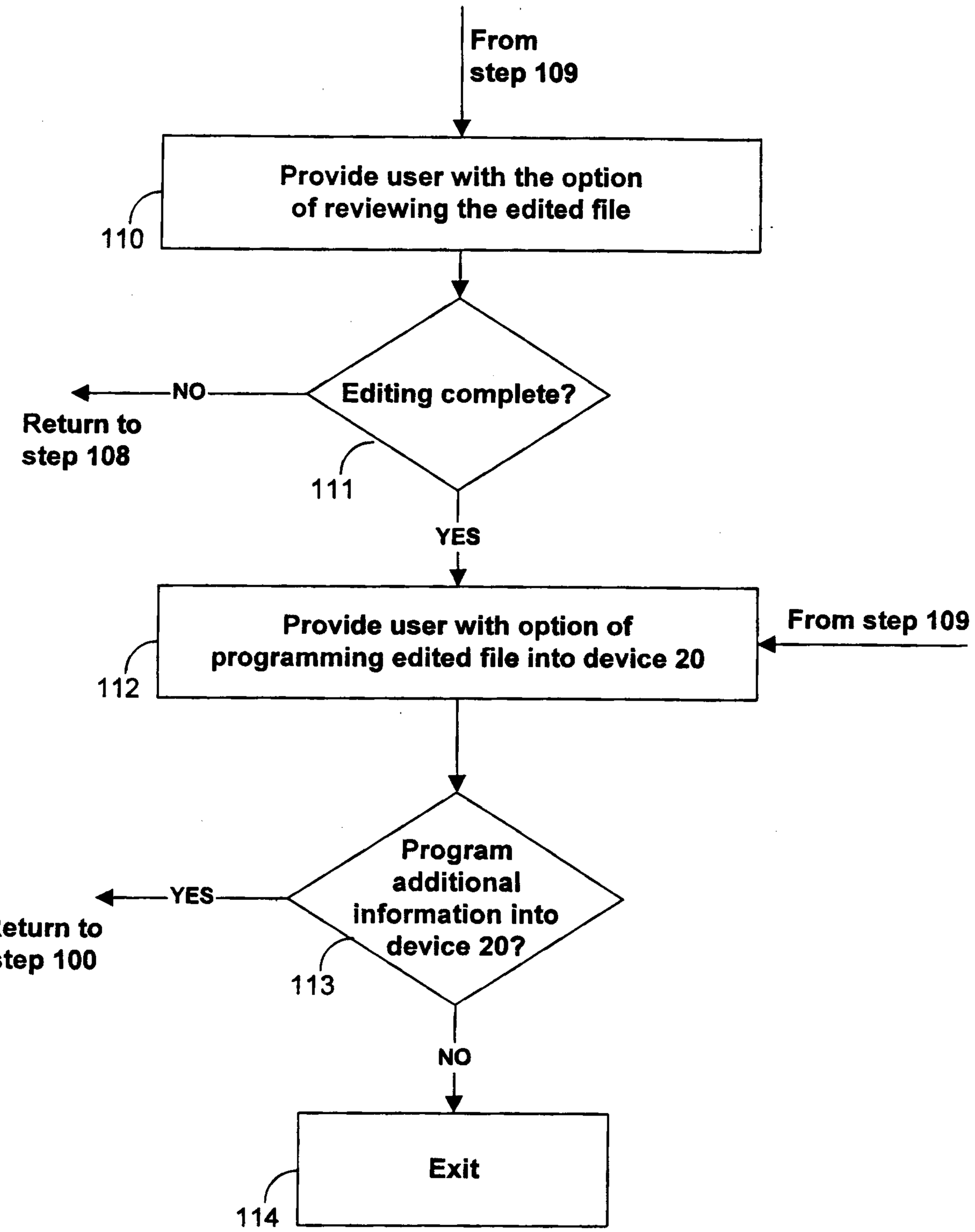

From step 109
Provide user with the option of reviewing the edited file
110
Editing complete?
NO
Return to step 108
111
YES
Provide user with option of programming edited file into device 20
From step 109
112
Program additional information into device 20?
YES
Return to step 100
113
NO
Exit
114

FIG. 9

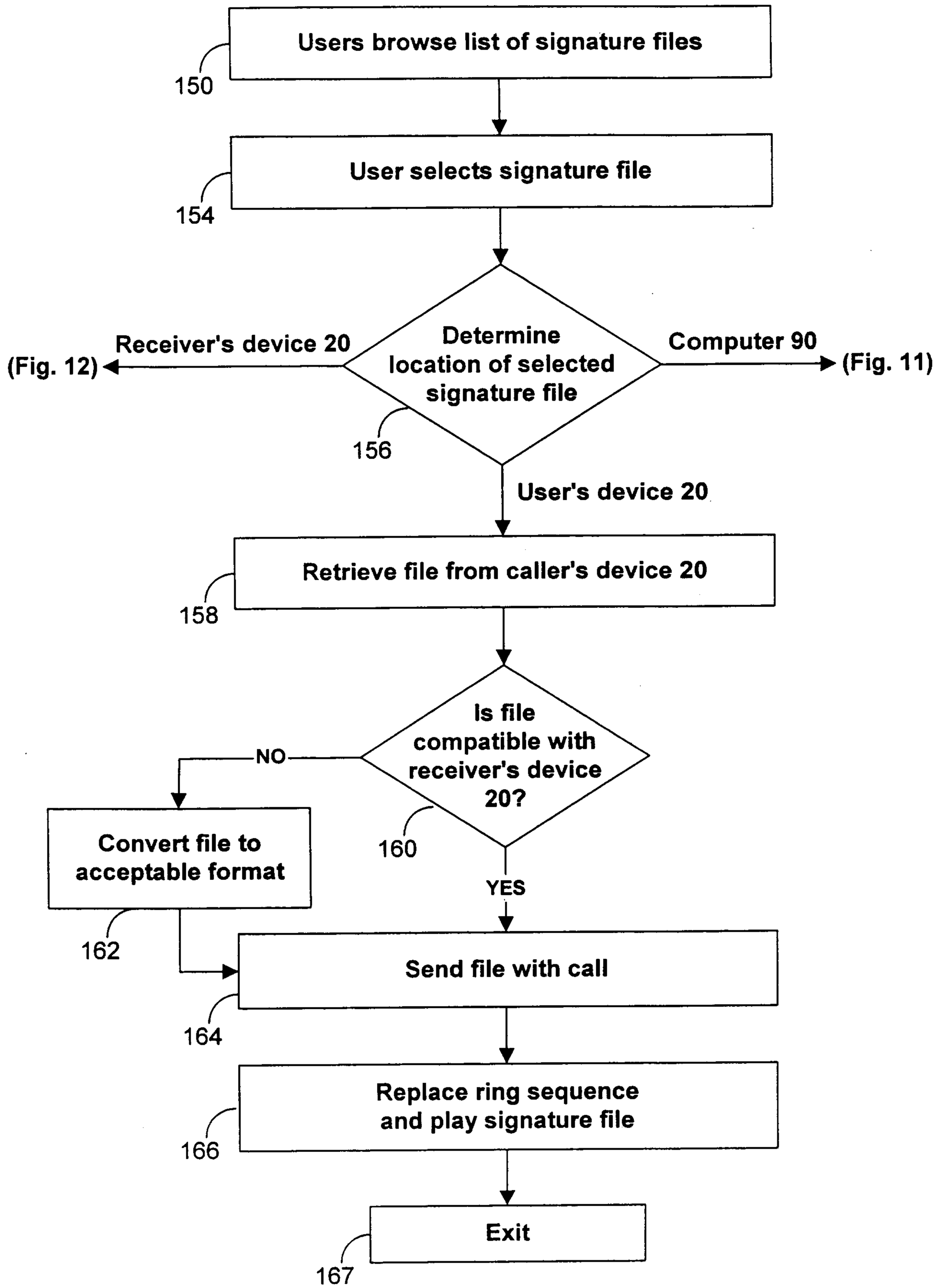

Users browse list of signature files
150
User selects signature file
154
Determine location of selected signature file
156
Receiver's device 20
(Fig. 12)
Computer 90
(Fig. 11)
User's device 20
Retrieve file from caller's device 20
158
Is file compatible with receiver's device 20?
160
NO
YES
Convert file to acceptable format
162
Send file with call
164
Replace ring sequence and play signature file
166
Exit
167

FIG. 10

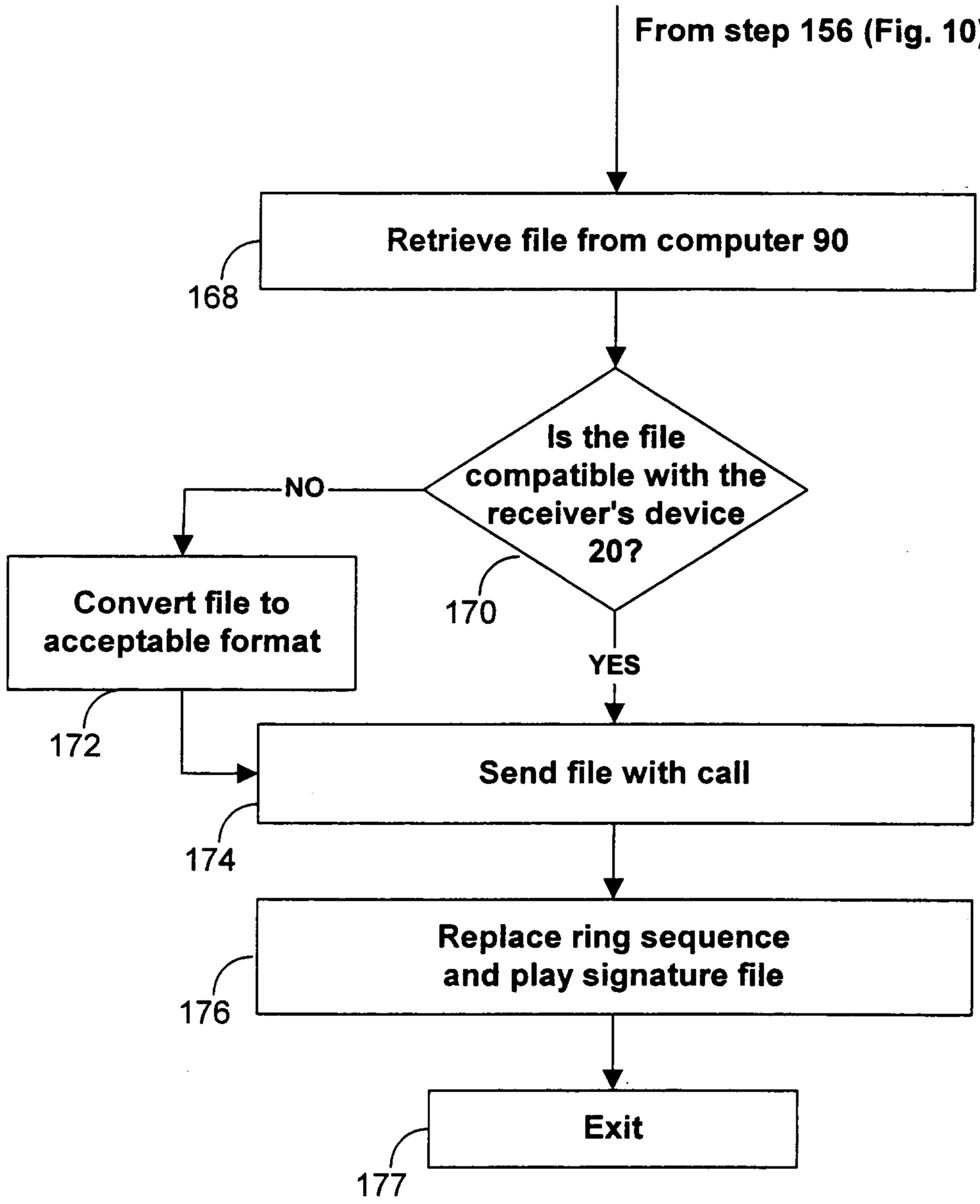

From step 156 (Fig. 10)
Retrieve file from computer 90
168
Is the file compatible with the receiver's device 20?
170
NO
YES
Convert file to acceptable format
172
Send file with call
174
Replace ring sequence and play signature file
176
Exit
177

FIG. 11

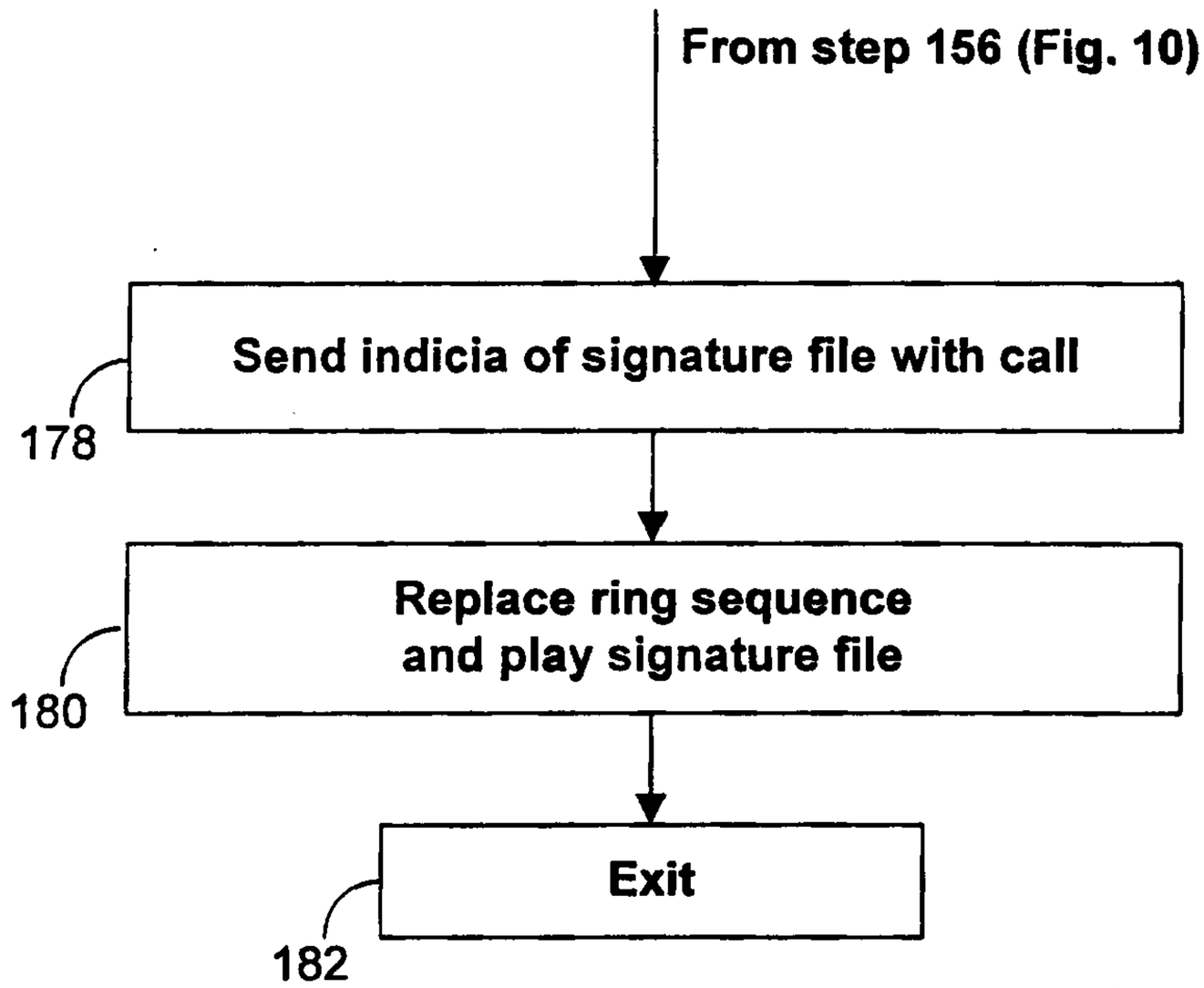
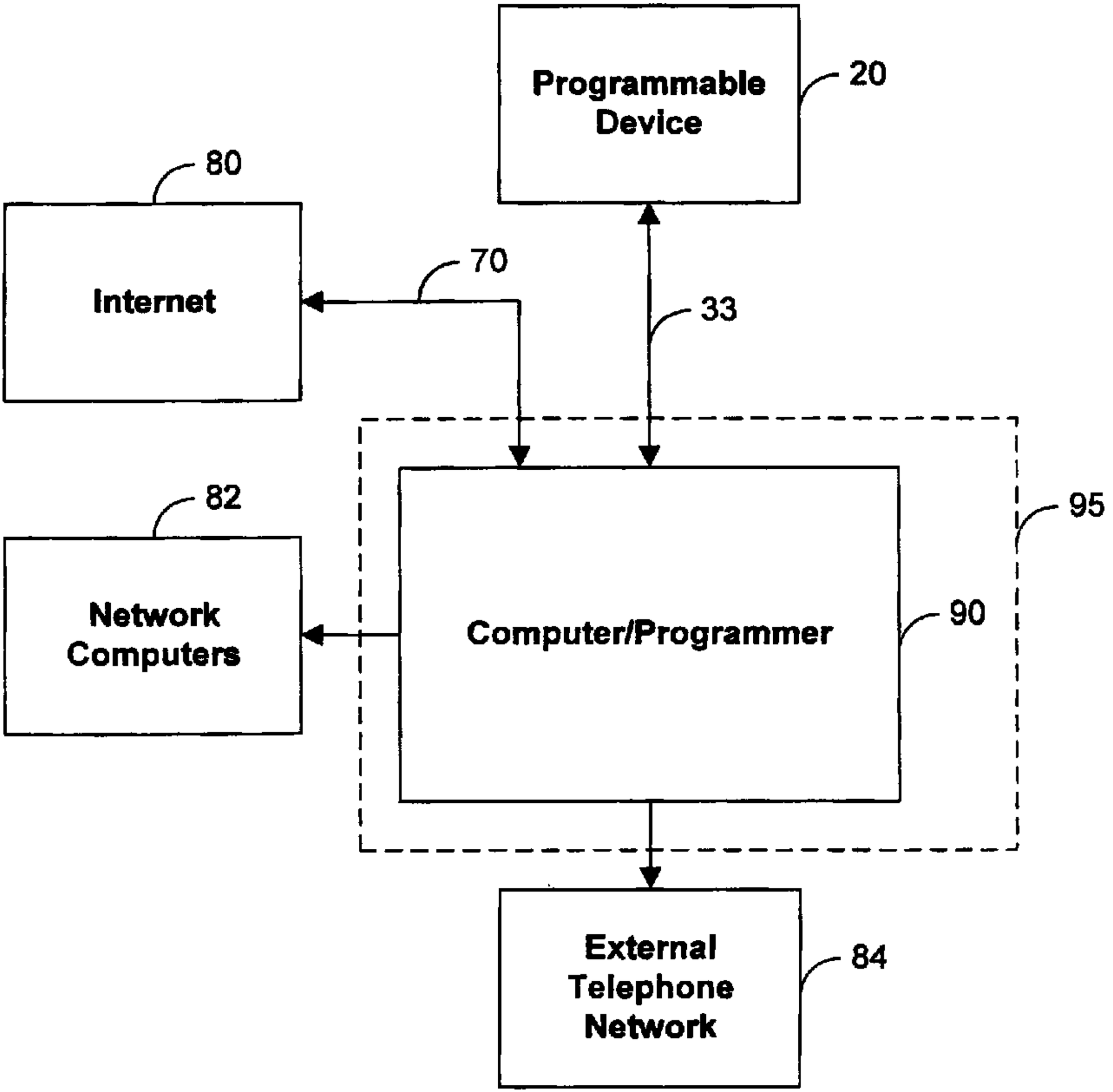

From step 156 (Fig. 10)
Send indicia of signature file with call
178
Replace ring sequence and play signature file
180
Exit
182

FIG. 12


Programmable Device
20
80
Internet
70
33
82
Network Computers
Computer/Programmer
90
95
External Telephone Network
84