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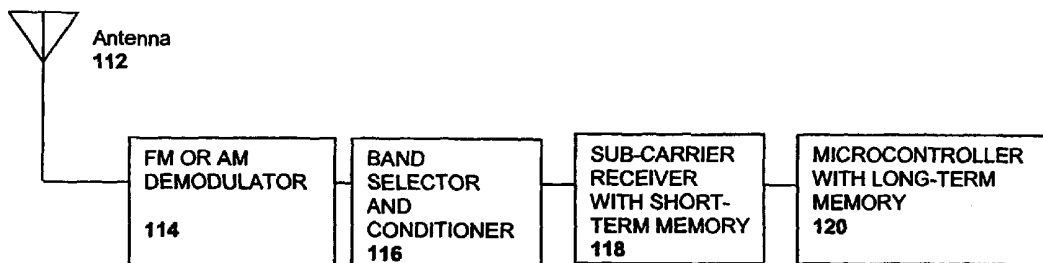
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(54) Title: APPARATUS AND METHOD FOR TRIGGERING MESSAGE INSERTION DURING DIGITAL MUSIC PLAYING



(57) Abstract: An apparatus for inserting messages while a digital audio file is played including a subcarrier receiver with short-term memory (118) and a microcontroller with long-term memory (120) capable of recognizing a trigger code. The microcontroller (120) selectively outputs a message from the memory (118) in response to the trigger code recognized during the playing of a digital audio file. An advertising entity can distribute to targeted recipients the coded digital audio files or audio devices which may include indicia, such as a trademark or logo, indicating the entity. The device may be distributed for free or at a discounted charge with payments from third parties for broadcasting their messages offsetting the cost of the devices.



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## APPARATUS AND METHOD FOR TRIGGERING MESSAGE INSERTION DURING DIGITAL MUSIC PLAYING

## DESCRIPTION

5           The invention concerns a messaging method for use with an audio device capable of playing a digital audio file. Other fields of the invention are the field of messaging and the field of advertising.

## BACKGROUND ART

10           Digital music is generally stored as a file on a hard drive of a computer, a removable storage device (i.e., CD, minidisk, DAT, etc.), the memory of an audio device, or any devices for storing digital files. The music is also generally in a compressed format to reduce the size of the files, resulting in an efficient and flexible way to listen to music. As a result of the efficiency and flexibility of these digital music files, they can be easily downloaded to another device, such as from a CD to a portable audio device or  
15           from a server to client computers and peer to peer computers. The digital music file can be downloaded from popular web sites on the Internet, or it can also be downloaded simply from a CD or any other available storage device that can store these digital music files. The most popular compression format is MPEG Audio Layer 3 ("MP3"). Other compression formats are available, such as A2b, Liquid Audio, Real Audio, and Audible.

20           Because of all the various benefits of these digital music files, they are a popular medium for storing and playing music. They create a large audience of listeners.

          Popular web sites allow the listeners to download the audio files. Potential listeners may also easily sample songs or portions of songs from music web sites to aid a purchase decision.

## DISCLOSURE OF THE INVENTION

With a growing audience, downloadable digital music files can provide significant advertising possibilities and thus serve as an extremely valuable marketing tool. An audio device that can play a digital music file, such as an MP3 file, is also  
5 capable of playing advertising messages. The invention takes advantage of this capability and provides for the delivery of advertising and promotional messages through digital audio players. Messages are triggered by codes inserted in the digital music file by the audio device or the providers of the digital music files. The audio device recognizes these trigger codes to trigger the playing of the promotional messages. The code may  
10 include the message, but it is preferred that it only trigger a message to be played from memory.

A preferred apparatus of the invention includes a memory for storing messages and a controller capable of recognizing a trigger code while a digital audio file is played. The memory may be pre-loaded with messages or the device may receive  
15 messages for storage. The controller selectively outputs a message from the memory in a user understandable format (e.g., audibly) in response to the trigger code recognized during the playing of a digital audio file. Trigger codes may be inserted at any time into digital audio files. As a preferred example, the trigger code insertion is conducted in the message playing apparatus. This provides for message play even when music files are  
20 obtained from an unknown source. The trigger code may be a stop code that initiates the output of the stored messages when the audio device stops playing the digital audio file. An additional preferred feature, which can provide an even more effective advertising delivery, is a messaging receiver that can receive messages to be stored and played in response to a trigger code. With an included receiver, messages stored by the player can  
25 be changed over time or can be made dependent on geographical location of the device.

The messaging playing device and method of the invention further provide a novel method of promotion by messaging. An advertiser or promoter can assist in the distribution of coded digital music files or audio devices with the message playing apparatus as a way of ensuring that the targeted recipients receive the messages. In  
30 addition, an advertiser or promoter partners with an entity (i.e., an organization or

individual) may wish to promote itself, its mission, its products, to a targeted group of people. In this case, the entity can be provided with an audio device in accordance with the invention, and the devices preferably include indicia such as a trademark or logo indicating the entity. The audio devices are distributed to target recipients for no charge or a discounted charge. An event provides a preferred method to gather individuals for distribution of the audio device, which is generally known as a tie-in promotion in the art. The promoter or advertiser then provides message broadcasts to the distributed audio devices for a limited period, after which the messages cease. Music producers or providers might act as promoters, or might join with an advertiser or promoter to sell the promotion service to organizations and individuals. Alternatively, organizations might provide for the audio device costs and for broadcasting of third party messaging in return for payments from third parties.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Other features, objects and advantages of the invention will be apparent to those skilled in the art by reference to the detailed description and the drawings, of which:

FIG. 1 is a block diagram illustrating a preferred system architecture for implementation of the present invention;

FIGs. 2(a) and 2(b) respectively illustrate preferred message structures of longer and shorter message units;

FIG. 3 illustrates preferred music file codes;

FIG. 4 illustrates three preferred coding options for the implementation of the music file codes from FIG. 3;

FIG. 5 is a flowchart illustrating a preferred message playing algorithm using the music file codes in FIG. 3 to implement the present invention;

FIGs. 6(a) and 6(b) respectively illustrate preferred message structures of longer and shorter message units of another preferred embodiment;

FIGs. 7(a) - 7(c) illustrate an example depicting the relationship between the database code and the other codes message structure shown in FIG. 6.

FIG. 8 is a flowchart illustrating a preferred message playing algorithm using the message structure in FIGs. 6(a) and 6(b) to implement the preferred embodiment.

FIG. 9 is a block diagram of a preferred digital sub-carrier messaging receiver module for inclusion in an audio device to implement a preferred digital message reception method of the present invention;

FIG. 10 is a block diagram of a preferred analog sub-carrier messaging receiver module for inclusion in an audio device to implement a preferred analogy message reception method of the present invention;

FIG. 11 is a block diagram of a preferred audio device module arrangement including a subcarrier messaging receiver or pre-loaded message memory module in accordance with a preferred embodiment of the present invention;

FIG. 12 is a flowchart illustrating a preferred digital message receipt and storage process according to the present invention; and

FIG. 13 is a flowchart illustrating a preferred analog message receipt and storage process according to the present invention.

#### BEST MODE OF CARRYING OUT THE INVENTION

The invention concerns the delivery of messaging content to listeners of digital audio devices. Message content is triggered during playback of audio files. The messaging content is preferably advertising or promotional messages that the listener of the audio device hears upon a track end, which is recognized during a playback of the digital audio file. A preferred device of the invention is equipped to receive and store messages for playing in response to codes. Messages may be received by the device from a broadcast or download, or messages may be pre-loaded into the audio device memory. An advertising method of the invention targets particular listeners and supports delivery of message capable playback devices and delivery of message content to such devices.

In a preferred embodiment, the messages are received by the audio device over a commercial radio sub-carrier frequency band. An exemplary band, available in the United States is the Subsidiary Communications Authority, also known as a sub-carrier, sideband, SCA band, or SCA (sub-carrier), which a separate nonbaseband audio or data

signal which is multiplexed onto the carrier (baseband) audio signal over a broadcast FM or AM radio station. Although the sub-carrier band is outside the band of commercial FM or AM transmission bands, radio stations typically dedicate transmission power to one or two sub-carrier channels in addition to their main signal. One important benefit of using the sub-carrier band in the United States is that no Federal Communications Commission ("FCC") authorization, notice, or application of license is required for the broadcast station to transmit a sub-carrier signal. 47 CFR 73.127 (AM stations) and 47 CFR 73.293 (FM stations). As a result, it is an attractive way to deliver messages to message playing apparatuses in equipped audio devices. Aside from using a sub-carrier band for receiving the messages, other ways to receive the messages are available and are all within the scope of the present invention. For example, the advertising messages may be encoded into the digital audio file itself, or the messages can also be transmitted using other wireless communication signals, the bands for which may vary from country to country or by other geographical locations. The message may be pre-loaded in audio playing devices prior to sale or distribution of the devices. The output of the stored messages is initiated by a trigger code that may be inserted by the message playing apparatus or included in the digital audio files obtained by the audio device.

Referring now to FIG. 1, an overall preferred system architecture to implement message playing and delivery according to the present invention is shown. Digital music files are stored onto a digital storage medium, such as a CD, minidisk or DAT (block 10). The digital music files are preferably used in a compressed format in the present invention to make efficient use of memory for storing messages. Typically, one digital music file holds one track of music of an album.

In FIG. 1, a provider of music files compresses and encodes the digital music files and makes the files available on Internet for downloading (block 12). The encoding includes trigger codes to trigger message play. Alternatively, a user device, e.g. computer or the audio device itself, compresses and encodes the digital music file (block 14). In another preferred variation, standard codes within the digital files, e.g., a track end code, can be treated as trigger codes. Compressing and encoding may also be separated such that, for example, an audio device encodes message codes into files which

were compressed by a provider or another, perhaps unknown or illicit source. From either source or another source, the digital music file may be downloaded and saved to a listener's computer (block 16), which may be then transferred to a portable digital audio player (block 18). Depending on the audio device used to play these digital audio files, a  
5 separate computer may not be required to receive a download.

An audio device capable of playing these digital music files with the present invention implemented will be referred to as an Updatable Message Enabled digital audio Player ("UMEP"). As shown in FIG. 1, the advertising and promotional messages are recorded, which are then encoded and prepared for transferring onto the  
10 UMEP or the digital music files (block 20). Preferably, the messages can be sent or broadcasted to the UMEP (block 22) through, for example, a wireless transmission (block 24). It is contemplated that the UMEP can also be pre-loaded with the messages. Regardless of where the messages came from, the digital music files must have trigger codes that trigger the play of the messages from memory. Trigger codes may also include  
15 the message but this is a less flexible and powerful message delivery method.

Turning now to FIGs. 2 and 3, trigger codes in the message and the digital music file are shown in their preferred embodiments. FIG. 2 shows the message structure generally indicated as 26 for two message units 28, or more specifically, an example of a longer message 30 in FIG. 2(a) and a shorter message 32 in FIG 2(b). The basic message  
20 structure 26 starts with a start code 34, followed by a message block 36, and then ending with a end code 38. However, it should be understood that the name and the number of the codes may vary. The kinds and numbers of codes needed with the present invention may depend on the standard codes encoded by the providers of the digital music files. As mentioned above, a preferred embodiment of the present invention utilizes standard codes  
25 existing in music files to trigger the messages. However, the present invention also contemplates inserting trigger codes into a version of a digital music file stored in the UMEP as an implementation. The kind of codes and the number of codes needed for a specific implementation will depend upon the timing and frequency desired for message playback.

The start code 34 defines the start of the message, and an end code 38 defines the end of the message. Finally, the message block 36 is the actual message the listener hears. Although the messages are preferably advertising or promotional in nature, any type of messages can be sent and are within the scope of the present invention. It is contemplated that the messages, for example, may include samples of music, travel and traffic information, news, and hazard warnings. When message content is delivered by a broadcast, such as the preferred subcarrier broadcast, the broadcast area can be limited geographically so that UMEP devices in a particular geographic area receive different message content. Similar variance of message content can be based upon time of day or the channel upon which a particular UMEP receives messages.

Next in FIGs. 3 and 4, the preferred music file codes to be encoded in a digital music file are shown and generally indicated as 40. Four preferred codes for the digital music file are shown as an example, but the codes can be varied according to need and are within the scope of the present invention. As an example, there is a stop code 42 that indicates the end of the track or a break during a play session of the digital music file. Then, a second code called message-exist code 44 that indicates whether a message should be played at all during a particular break. Only two possible choices are allowed for the message-exist code, which are either a "Yes" or a "No". Furthermore, either a "Yes" or a "No" must be indicated, and both are not allowed at the same time. The message-exist code is not needed for the implementations of the present invention, however, it is added to randomize when the messages should be played after each break.

The next code is the message-number code 46, which indicates how many messages will be played at this particular break. Again, the message-number code does not have to be included for the implementation of the invention. However, like the message-exist code, it is added to help randomize the message playing process. Although the value of 1 through 4 are shown as an example, any reasonable range of values may also be assigned and are within the scope of the invention. As a result of the random assignment of the value for the message-exist code 44 and the message-number code 46, the message play is different for each particular break. The codes can be encoded so that they are randomly assigned any value with the given range at a particular break. If the



messages are randomly given and played, it is less likely that the listener will be able to skip advertising messages during a play session. After the message-exist code 44 and message-number 46 have been executed, the resume code 48 is then used to restart or to end the break of the play session. As mentioned previously, the codes in the music file  
5 may change depending on the prior message structure shown in FIG. 2. Similarly, depending on the implementation of the present invention, the codes in the music file can also be independent of the message codes.

Three options implementing these music file codes 40 are shown in FIG. 4 as a preferred example. "Option 1" embeds all the codes (i.e., stop code, message-exist  
10 code, message-number code, and resume code) into the digital audio file immediately after file compression, which is generally done by either a user device or a music file provider. "Option 3" does not embed the codes needed for the present invention in the digital audio file. Rather, all the coding to the file is added by the UMEP. Yet another option is to do a combination of option 1 and option 3, which is indicated as "option 2" in  
15 FIG. 4. In option 2, only the stop code and resume code are embedded into the digital audio file, and the message-exist code and the message-number code are added by the UMEP.

Option 2 is the most preferred implementation of the present invention for several reasons. First, randomness is lost through option 1 since the listener will know  
20 after each track whether the messages will be played and, if so, how many. Second, "option 1" assumes that the digital music files will not be available without the codes, which fails to account for illicit provided music. Lastly, option 3 requires moving the digital music file into the random access memory in order to embed the message codes to secure randomness of these message codes. The implementation of option 2, on the other  
25 hand, requires only that the message-number and message exist codes to be stored in the random access memory of the UMEP in each particular break session.

FIG. 5 shows a preferred embodiment of the message playing algorithm using the music file codes in FIG. 3. The randomness of the message-exist code 44 and the message-number code 46 is illustrated in FIG. 4. The algorithm starts with the audio  
30 device playing the digital music file (block 50), then a stop code at the end of the track is

recognized by the message playing apparatus (block 52), which triggers the message-exist code to be read (block 54). If the message-exist code designates a "no" (block 54), the message playing apparatus allows the resume code to be executed (block 56) to continue playing the next track (block 58). Otherwise, the message-number code is read (block 5 60), which has a value of 1 through 4 as an example. A random number generator or algorithm in the encoding software will determine the values of the message-exist code and the message-number code at each particular break.

When a message is assigned to be played by the message-exist code (block 54), the number of messages designed by the message-number is retrieved and played one 10 at a time (block 62). For example, if the message-number code has a value of "4", the first message is retrieved from memory and played to the listener (block 64) followed by the second message being retrieved from memory and played to the listener (block 66). Then, the third message (block 68) and the fourth message (block 70) are also consecutively played. When the number of messages designated by the message-number 15 code have been played, the resume code is read (block 56) and the next track is played (block 58).

An alternative way to determine the type of messages to be played is to link the type of messages to the content of the music file. Typical compressed music files include an indication of song title, artist or the like. This provides an opportunity to base 20 the message played upon the type of music. For example, if the music file belongs to a certain music category, the message structure can be set up to play a specific message for each music category. This way, the choice of messages played can match more closely with the listener's taste as it is reflected by the music category, which adds an additional and powerful dimension in the customization of advertisements to listeners. In FIG. 6, an 25 alternate preferred message structure generally indicated as 72 for two message units 74, or more specifically, an example of a longer message 76 in FIG. 6(a) and a shorter message 78 in FIG. 6(b). The basic message structure 72 includes a start code 80, a message block 82, a database code 84, and end code 86. The database code is used to place messages into categories.

FIGs. 7(a) - 7(c) show an example of how the database code relates to the other codes in the message structure shown in FIG. 6. Three track identifications 88 coupled with a database code 84 are shown as an example in FIG. 7(a). For each track identification 88, a message database code 84 is assigned to that specific track in the music file. Then, a database code key 90 can be designated to the database code 84 with specific instructions 92 to play only certain messages (shown in FIGs. 7(a) and 7(b)). In practice, as shown in FIG. 7(c), the message block 82 now contains the message according to the predefined instruction 92 given by the database code key 90 in the database code 84. As previously defined, the start code 80 and end code 86 defines the beginning and the end of the message respectively, and the message block 82 is the actual message the listener hears.

As a result, the message block 82 and the database code 84 are located between the start code 80 and the end code 86. With the use of the database codes 84 and the database code keys 90 with their predefined instructions 92, the present invention is able to customize the messages to the taste and interests of the listeners. This kind of customization ability can be extremely valuable in the context of advertising, since one of the main goals in advertising is to target specific groups. Again, the names, kinds and numbers of the codes can vary. Such variations are within the scope of the present invention.

Turning now to FIG. 8, the preferred message playing algorithm using the message structure in FIGs. 6(a) and 6(b) is shown. Although FIG. 8 shows a disc being loaded into the audio device (block 94), it is contemplated that any storage medium for digital music files (e.g., a hard drive of a personal computer) can be implemented with the preferred embodiment. A controller in the UMEP reads the track identification 88 from the digital music file (block 96) when a play message is triggered. It then compares the track identification 88 to the database codes 84 (block 98). If a database code 84 cannot match the track identification 88 (block 100), the messages stored in the memory of the device are played without regard to the database code (block 102). On the other hand, if a database code 84 is found for the track identification 88 (block 100), the memory is checked for storage of the appropriate messages designated by the database code (block

104). The appropriate messages will be played (block 108) if they are found stored in the memory (block 106). Otherwise, the messages that are stored in the memory are played without regard to the database code 84 (block 110).

An alternate embodiment for content based messaging uses different types of trigger codes. This works where a music provider encodes trigger codes into a music file. Thus, there might be different trigger codes for country and classical music, and the trigger code itself would be matched to a message type code that correlates to the database code in the message structure.

Referring now to FIG. 9, the basic components of a preferred digital sub-carrier receiver system for incorporation into an audio device are shown in FIG. 1. Sub-carrier message broadcasts impinge upon an antenna 112, and the signals are demodulated by an appropriate demodulator 114, which may be AM or FM. The signal from the demodulator is sent to circuitry to a channel selector and conditioner 116, which selects the sub-carrier message channel and prepares the signal (e.g., amplifies) for decoding by a receiver 118. Preferably, the receiver 118 includes a small amount of short term memory to temporarily store decoded messages. Such short term storage permits a CPU or controller board 120 to manage its long term memory in the event that a newly received message would cause a memory overflow. A newly decoded message, after any required long term memory management, is sent to the controller 120 for storage in its long term memory, which serves as a message memory from which a message is output in response to a predetermined audio device operation. An analog receiver is shown in FIG. 10 and is identical to the digital receiver of FIG. 9, except that the analog receiver includes a digitizer 122 to convert decoded messages into digital form for storage and display.

The channel selector 116 in either the FIG. 1 or 2 embodiments is preferably selectable so that an audio device including the sub-carrier messaging receiver may receive messages at different frequencies and modulations. This feature can be used to support different types of messaging contents on separate channels that can be selected by a listener, selectively controlled by the receiver controller 120 without user input, or set at the time of manufacture, or set by dealers or technicians. The band selector may

scan frequencies, may be directed to a frequency by a received control signal, or it may be set by a switch or other type of selector.

As mentioned previously, the preferred embodiment for the message playing device is using a subcarrier frequency to receive the messages. FIG. 11 depicts a preferred module arrangement of the audio device incorporating the subcarrier receiver for meeting this objective and is generally indicated as 124. In FIG. 11, an antenna 112 (also see FIGs. 6 and 7) feeds a sub-carrier receiver module or a pre-loaded message memory module 126 constructed in accordance with the general principles discussed earlier and is mounted on the main circuit board generally indicated as 128. The sub-carrier receiver module is used when the messages are transmitted to the UMEP over the sub-carrier receiver. Alternatively, the pre-loaded message memory module is used when the messages are pre-loaded before distribution of the UMEP. Regardless of how the messages are transferred and where they are placed, the preferred UMEP system should remain very similar to the system shown in FIG. 11.

A digital audio player module 130 that is typically known in the art is connected to the sub-carrier receiver module/pre-loaded message memory module 126. The sub-carrier receiver module/pre-loaded message memory module 126 and the digital audio player module 130 share a common power supply 132 and communicate with an interface 134 to an audio synthesizer 136, a user interface 138, and a display 140. The audio synthesizer 136, in turn, is connected to an audio output 142.

Preferred steps for implementing digital sub-carrier messaging receipt in a message playing apparatus including a messaging receiver according to FIG. 12. The incorporation of the message playing apparatus into an audio device, for example according to FIG. 11, is illustrated in FIG. 12. In FIG. 12, messages are transmitted via a message broadcast to the subcarrier receiver module 126, or alternatively as previously provided, the message can also be transferred to the pre-loaded message memory module 126 in the case where the messages are pre-loaded onto the UMEP before distribution (block 144). After the messages are received by either one of the modules 126, it is then processed in the memory of the module (block 146).

The messages are stored temporarily in short term memory (block 148), while long term memory is checked to determine if storage space is available for the newly received messages (block 150). If no room is available (block 150), the oldest message in long term memory is deleted (block 152). The memory is checked again  
5 (block 150), and the deleting and checking processes are repeated until room is made available for the newly arrived message. Once room is available, the newly arrived message is stored into long term memory (block 156). Storage, for example, is managed as a first-in-first-out (FIFO) queue. The memory management of FIG. 4 and FIG. 6 is generally based upon FIFO management, but other schemes might be supported,  
10 including priority schemes based upon the message content. A combined analog and digital sub-carrier message receiving method is shown in FIG. 13 and will support both analog and digital message receipt. The FIG. 13 method is identical to the FIG. 12 method but includes additional steps for determining if a newly received message is digital (block 154) and, if not, digitizing the message (block 156). Other arrangements  
15 may be more acceptable or practicable. For example, in the case of the pre-loaded messages, it may not be necessary to check available space in the long term memory. In this case, the module may preferably make an indication once the long term memory reaches its full capacity. These other arrangements are within the scope of the present invention.

20 The output (playing) of messages that have been received and stored in memory is responsive to a trigger code, which can be located in the digital music file or in the audio device as previously explained. Regardless of where the trigger code is located, a preferred example of the trigger code is a stop or pause operation, or previously referred to as a stop code. When the audio device stops or pauses playing the digital  
25 audio file as a result of reaching a track end or the listener stopping the audio device, a message, such as an advertising message, is output to the listener from long term memory.

Artisans will appreciate that the invention provides an effective way to provide advertising messages, promotional messages and other types of messaging  
30 contents to an audio device for playing digital music files. Short messages in an audible

form will reach a wide range of listeners of these digital music files. The timing of message output can be selected to correspond to an audio device operation when the listener is known to be paying attention, such as the time when the music reaches a track end and stops playing.

5           The messaging playing device and method of the invention further provide a novel method of promotion by messaging. An advertiser or promoter can assist in the distribution of coded digital music files or audio devices with the message playing apparatus as a way of ensuring that the targeted recipients receive the messages. In addition, an advertiser or promoter partners with an entity (i.e., an organization of  
10 individual) may wish to promote itself, its mission, its products, to a targeted group of people. In this case, the entity can be provided with an audio device in accordance with the invention, and the handsets preferably include indicia such as a trademark or logo indicating the entity. The audio devices are distributed to target persons for no charge or a discounted charge. An event provides a preferred method to gather individuals for  
15 distribution of the audio device, which is generally known as a tie-in promotion in the art. The promoter or advertiser then provides message broadcasts to the distributed audio devices for a limited period, after which the messages cease. Music producers or providers might act as promoters, or might join with an advertiser or promoter to sell the promotion service to organizations and individuals. Alternatively, organizations might  
20 provide for the audio device costs and for broadcasting of third party messaging in return for payments from third parties.

While various embodiments of the present invention have been shown and described, it should be understood that other modifications, substitutions and alternatives are apparent to one of ordinary skill in the art. Such modifications, substitutions and  
25 alternatives can be made without departing from the spirit and scope of the invention, which should be determined from the appended claims.

Various features of the invention are set forth in the appended claims.

## CLAIMS:

1. In an audio device capable of playing a digital audio file, a message playing apparatus comprising:

a memory (118, 120) for storing messages; and

5 a controller (120) capable of recognizing a trigger code in a digital audio file during playing of a digital audio file, the controller selectively outputting a message from said memory in a user understandable format in response to a trigger code recognized during playing of a digital audio file.

2. The apparatus according to claim 1, wherein a trigger code includes:

10 a stop code for stopping the digital audio device from playing the digital audio file;

a message-exist code for randomizing the selection of the messages from being outputted from memory by said output device;

15 a message-number code for setting the number of messages to be outputted from memory by said output device; and

a resume code for resuming the digital audio device to playing the digital audio file.

3. The apparatus according to claim 1, wherein said trigger code includes:

20 a message-exist code for randomizing the selection of the messages from being outputted from memory by said output device; and

a message-number code for setting the number of messages to be outputted from memory by said output device.

25 4. The apparatus according to claim 3, wherein said digital audio file includes:

a stop code for stopping the digital audio device from playing the digital audio file; and



a resume code for resuming the digital audio device to playing the digital audio file.

5. The apparatus according to claim 1, wherein said controller delays message play until a track end is recognized during playback of a digital audio file.

5 6. The apparatus according to claim 1, wherein the digital audio file has at least one music track.

7. The apparatus according to claim 6, wherein said music track has a track identification.

8. The apparatus according to claim 7, wherein said track identification  
10 is used to select predefined messages for output.

9. The apparatus according to claim 8, wherein said track identification is matched up with an assigned database code for selecting predefined messages for output when said controller recognizes a trigger code in the digital audio file.

10. The apparatus according to claim 1, further comprising a receiver  
15 (114), the receiver receiving and decoding messages for storage in said memory.

11. The apparatus according to claim 10, wherein said memory includes a short term memory (118) for initially storing a newly received message and a long term memory (120) for saving messages after said controller determines whether messages should be deleted from said short term memory to accommodate a newly received  
20 message.

12. The apparatus according to claim 11, wherein said controller converts newly received message to a digital format if the message is in an analog format, prior to the message being stored in said short term memory.

13. The apparatus according to claim 10, wherein said receiver is a subcarrier receiver and receives messages broadcast at a subcarrier frequency when the apparatus is within a broadcast area.

14. The apparatus according to claim 10, wherein said receiver is a digital television receiver and receives messages broadcast at a digital television frequency when the apparatus is within a broadcast area.

15. The apparatus according to claim 10, wherein said memory is preloaded with messages.

16. A method for outputting received messages on an audio device capable of playing a digital audio file, said method comprising steps of:  
recognizing a trigger code embedded in a digital audio file during a play operation of the audio device for playing the digital audio file; and  
selectively outputting messages from memory in a user understandable format in response to a trigger code.

17. The method according to claim 16, further comprising steps of:  
receiving a message via a wireless message broadcast; and  
storing the message into memory for later output by said step of selectively outputting.

18. In an audio device capable of playing a digital audio file, a message playing apparatus comprising:  
a memory (118, 120) for storing messages;  
an encoder (120) capable of embedding a trigger code temporarily into the digital audio file for playing messages; and  
a controller (120) capable of recognizing said trigger code during playing of a digital audio file, the controller selectively outputting a message from said memory in a user understandable format in response to a trigger code recognized during playing of a digital audio file.

19. A method for delivering messaging content to listeners of audio devices capable of playing digital audio files, the method comprising steps of:

encoding digital audio files with trigger codes for triggering selective message play;

5 distributing digital audio files including trigger codes; and  
distributing message content to digital audio devices.

20. The method according to claim 19, wherein said step of distributing message content comprises broadcasting message content over a broadcast area.

10 21. The method according to claim 19, wherein prior to said step of distributing message content comprises preloading message content into said digital audio devices.

22. The method according to claim 19, wherein said step of distributing digital audio files comprises providing downloadable digital audio files on an Internet web site.

15 23. A method for promoting advertisements or messages to listeners of downloadable digital music, said method comprising:

distributing audio devices to targeted persons, the audio devices being capable of playing digital audio files, being capable of storing messages, and being capable of playing messages in response to trigger codes embedded in digital audio files;

20 and

accepting payment from an entity for said distributing of audio devices and broadcasting messages.

24. The method according to claim 23 further comprising the step of attaching displays on said audio devices.

25. The method according to claim 24, wherein said displays comprise at least one of the group comprising logos, names, trademarks, advertisements, and promotional displays.

26. The method according to claim 23, wherein said messages includes  
5 at least one or the group comprising samples of music, promotional messages, advertisements, trademarks, and names.

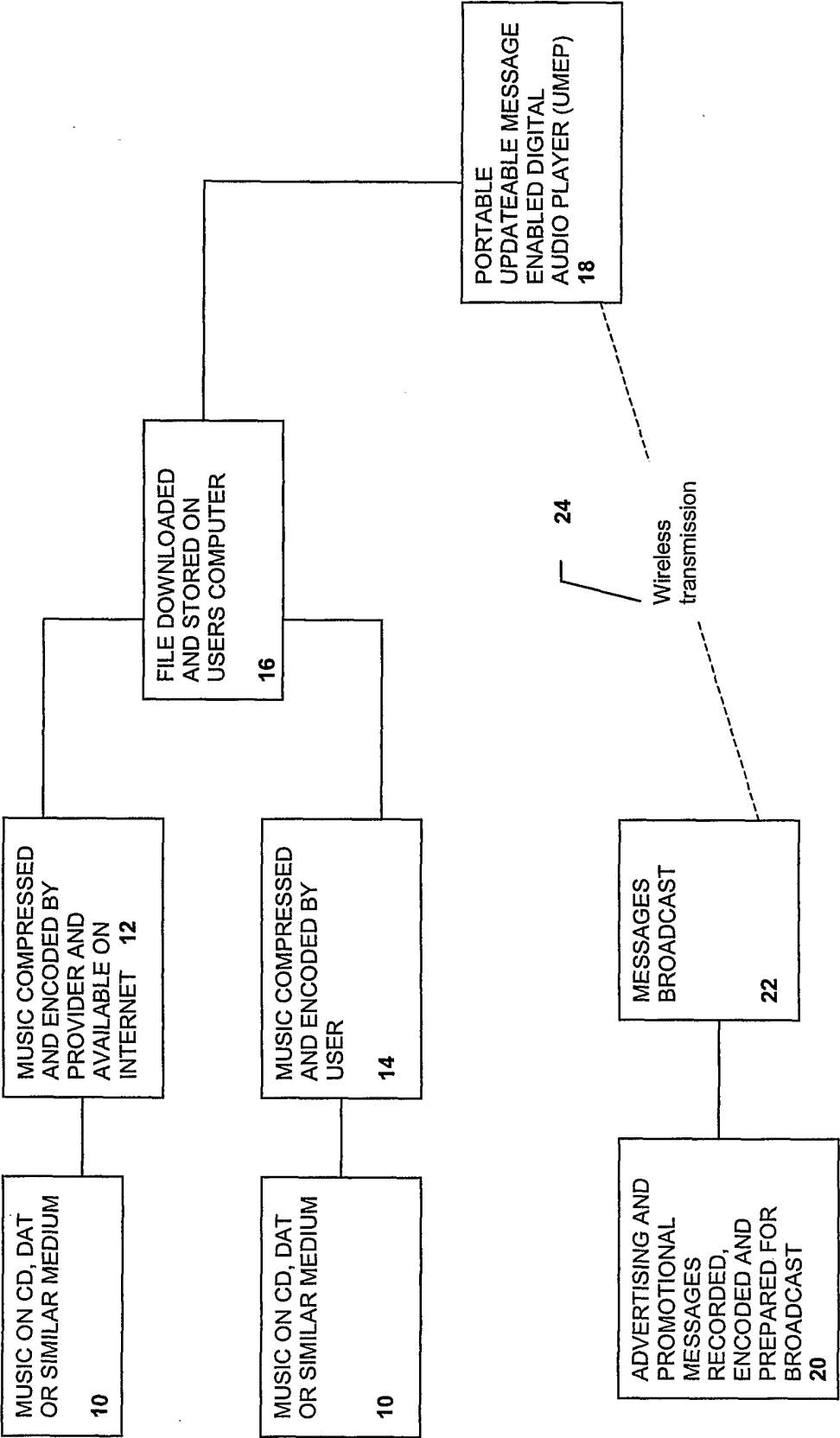


FIG. 1

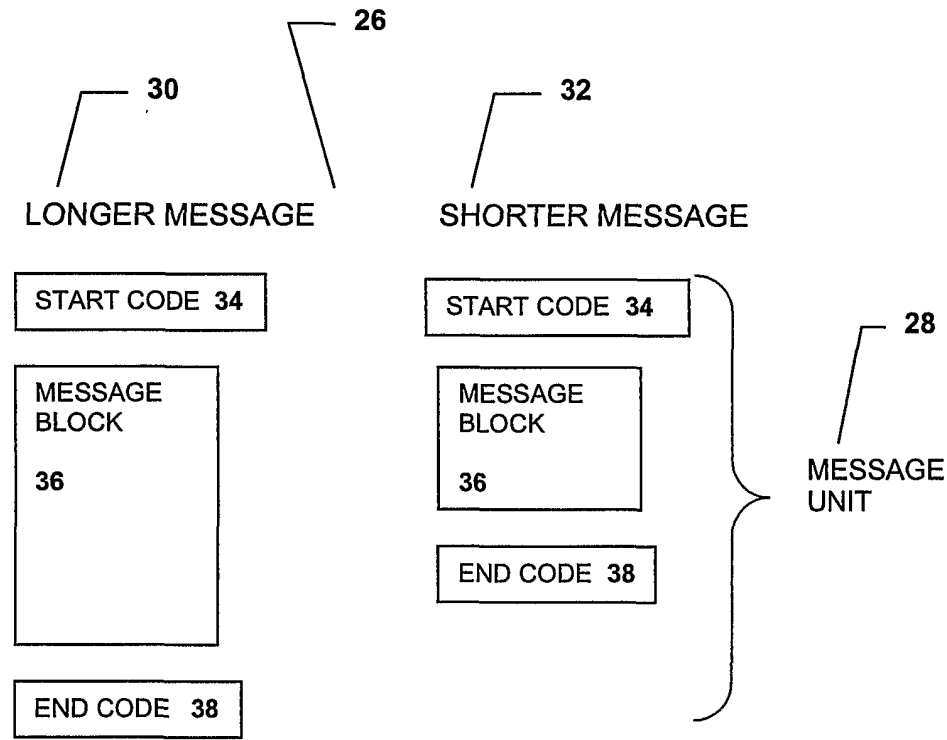


FIG. 2 (A)

FIG. 2 (B)

FIG. 2

40  
↓

	<u>CODE</u>	<u>CONDITION</u>	<u>MEANING</u>
42	STOP	STOP	INDICATES END OF TRACK AND BREAKS MUSIC
44	MESSAGE-EXIT	YES, NO	INDICATES IF MESSAGE WILL BE PLAYED AT BREAK
46	MESSAGE-NO.	1, 2, 3, 4	INDICATES HOW MANY MESSAGES WILL BE PLAYED AT BREAK
48	RESUME	RESUME	ENDS BREAK AND RESTARTS MUSIC

FIG. 3

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	<u>OPTION 1</u>	<u>OPTION 2</u>	<u>OPTION 3</u>
PROVIDER CODING	ALL CODES	STOP, RESUME	NONE
USER CODING	ALL CODES	STOP, RESUME	NONE
UMEP CODING	NONE	MESSAGE-EXIST, MESSAGE-NO.	ALL CODES

**FIG. 4**



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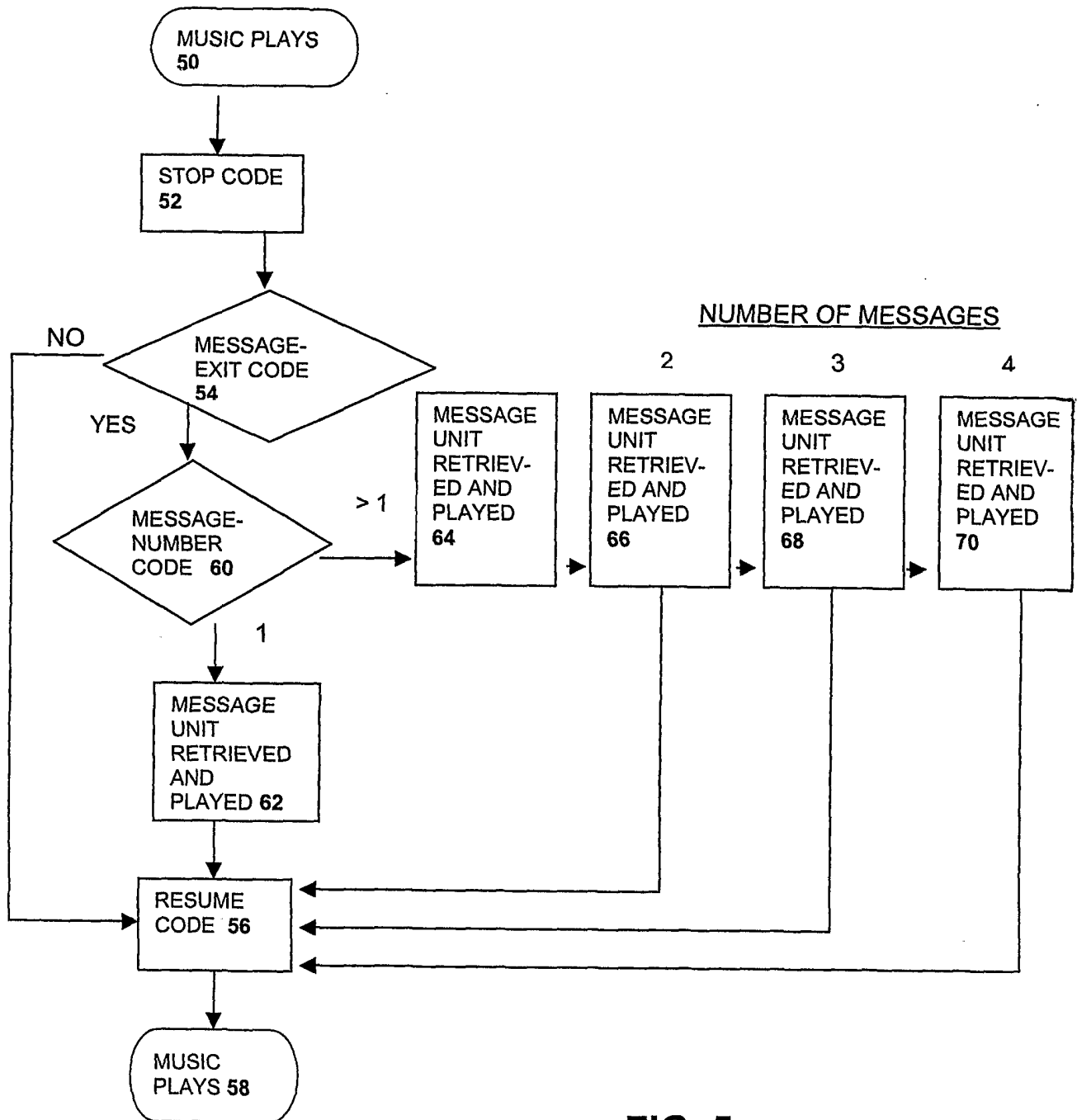


FIG. 5

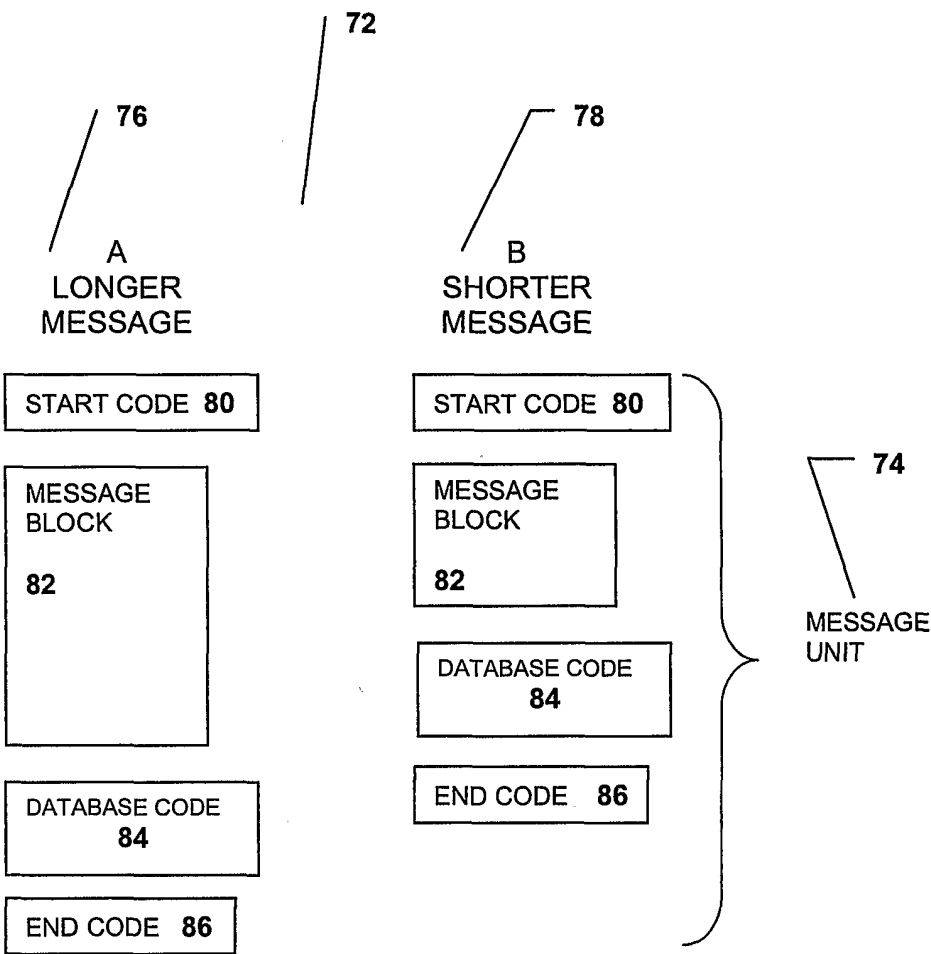


FIG. 6(A)

FIG. 6(B)

FIG. 6

BOX DEPICTS DATABASE STRUCTURE

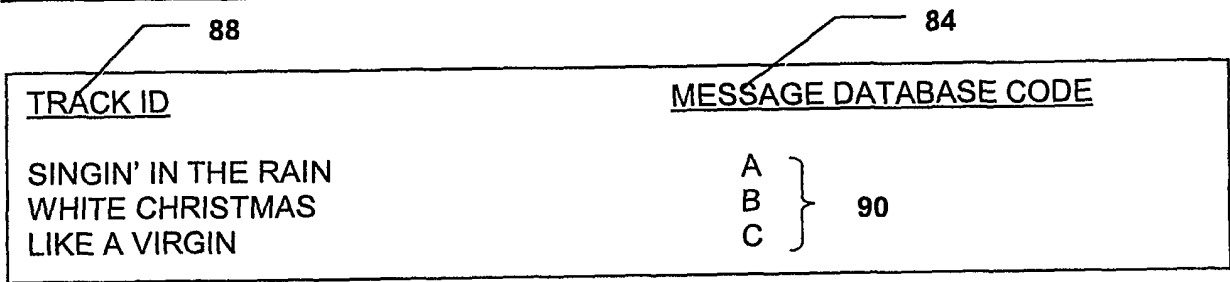


FIG. 7(A)

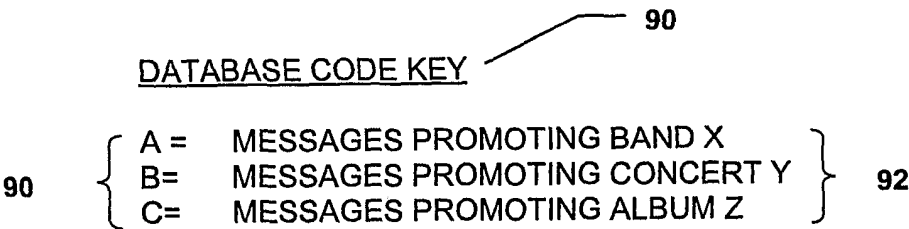


FIG. 7(B)

MESSAGE STRUCTURE

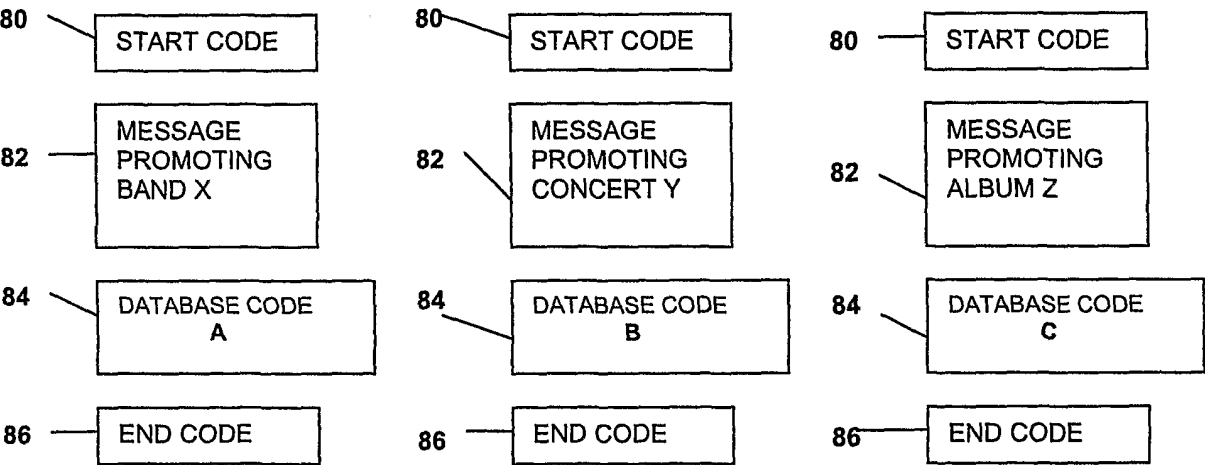


FIG. 7(C)

FIG. 7

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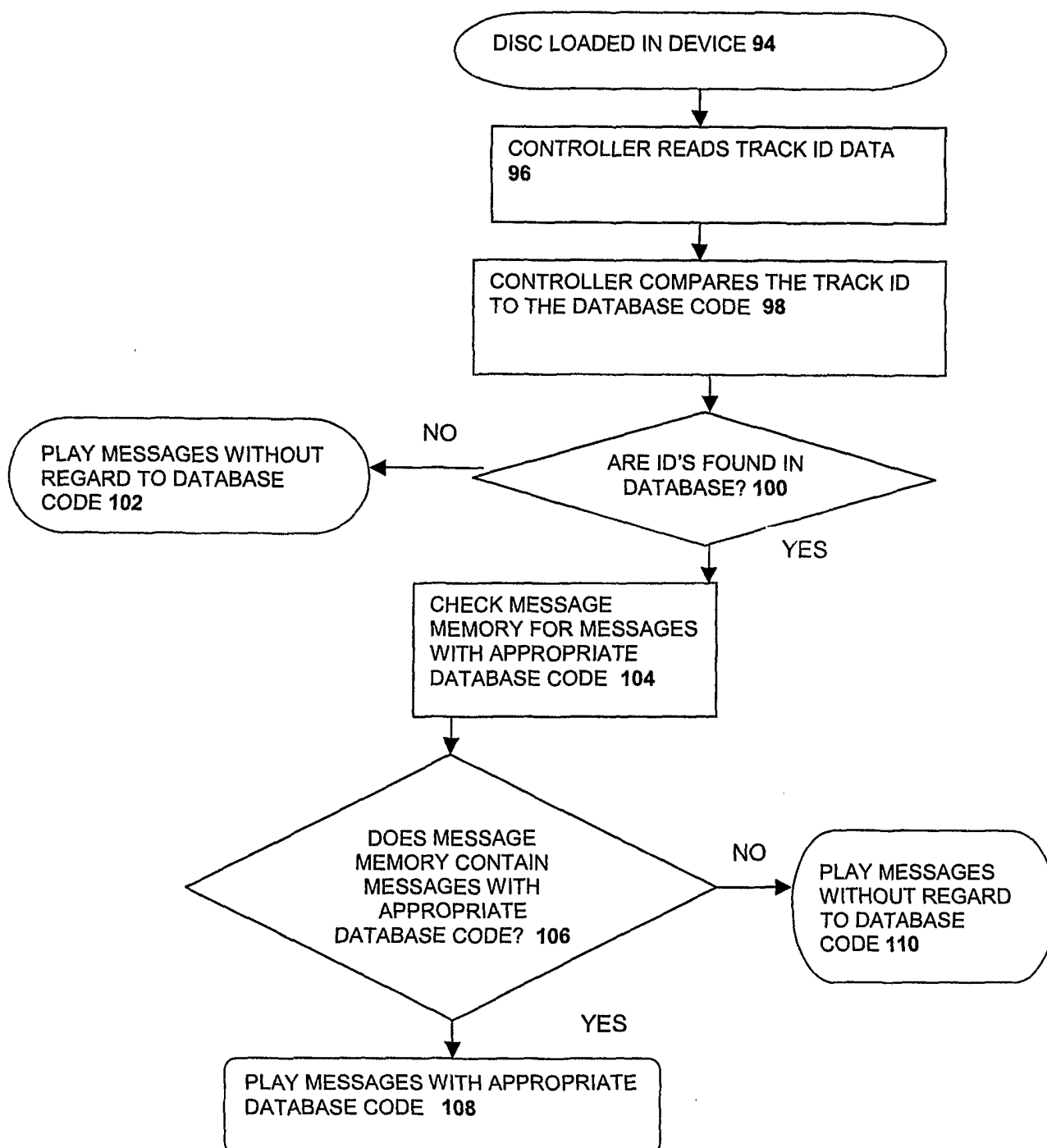


FIG. 8

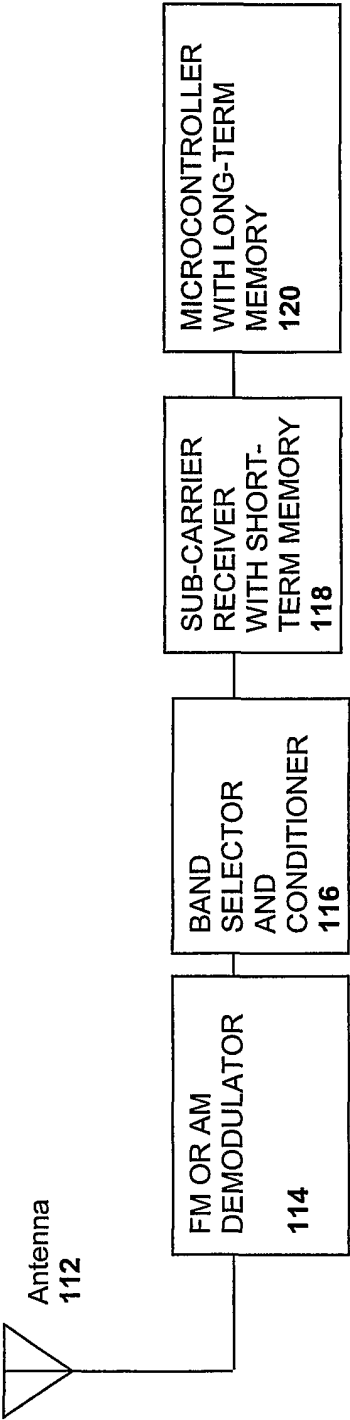


FIG. 9

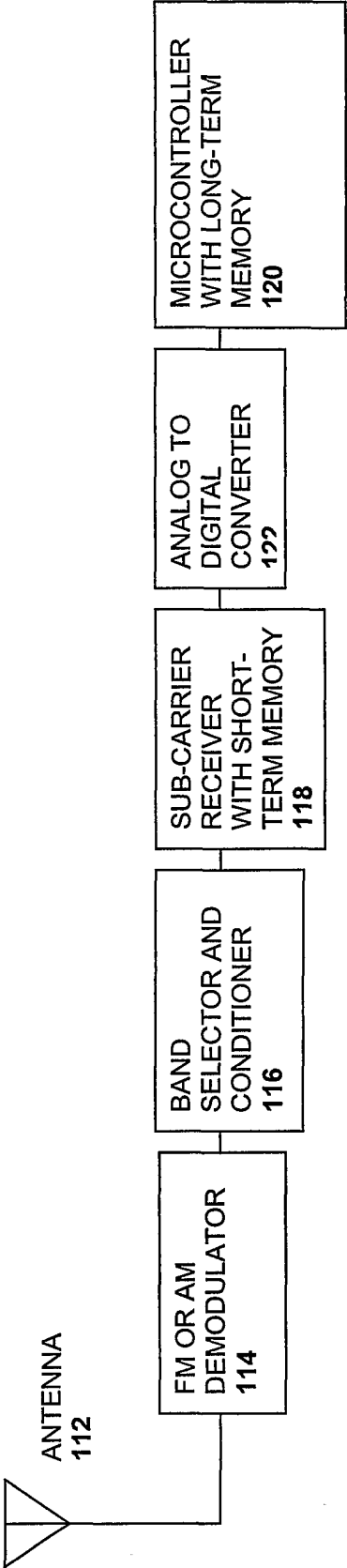


FIG. 10

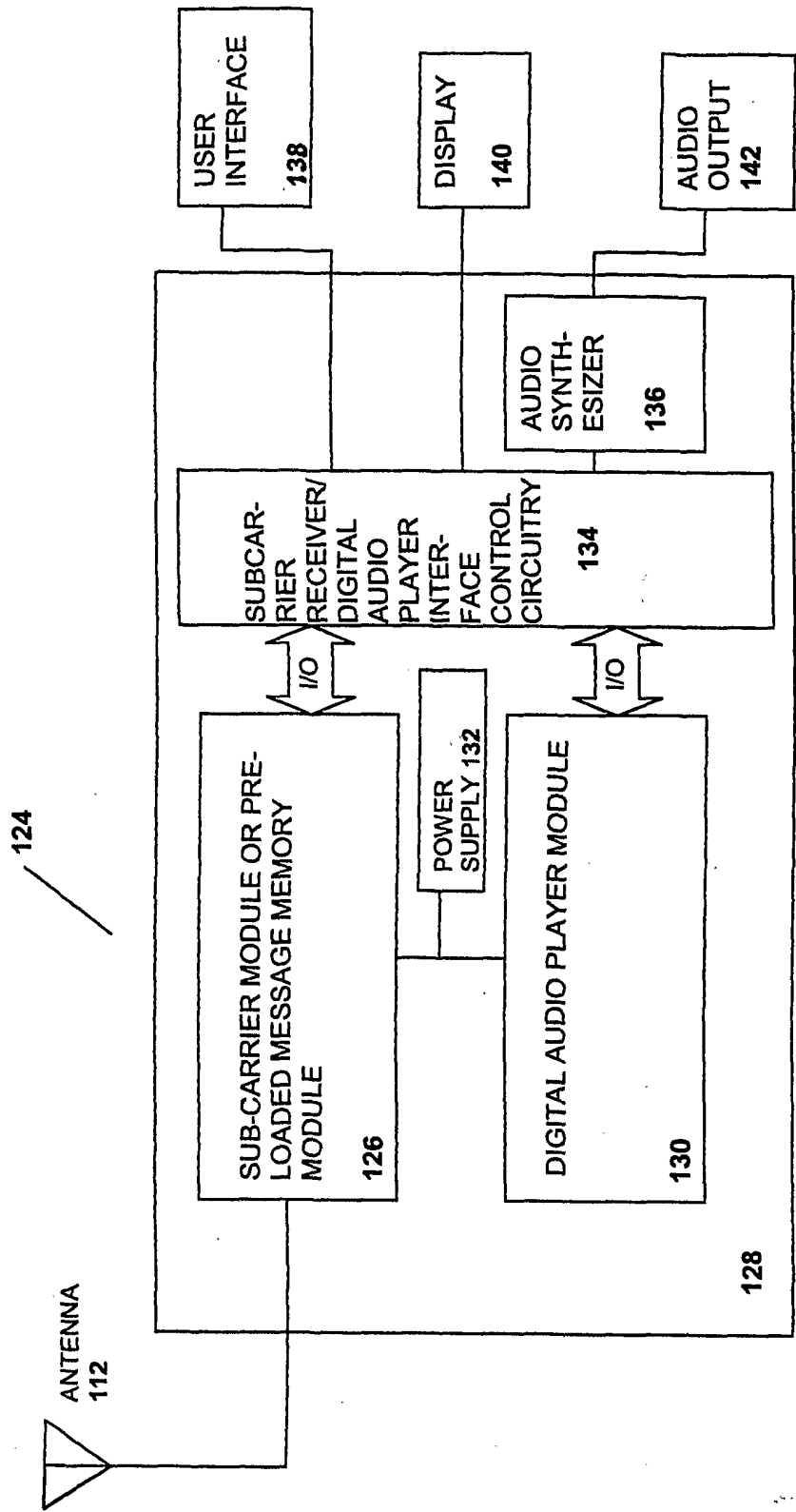


FIG. 11

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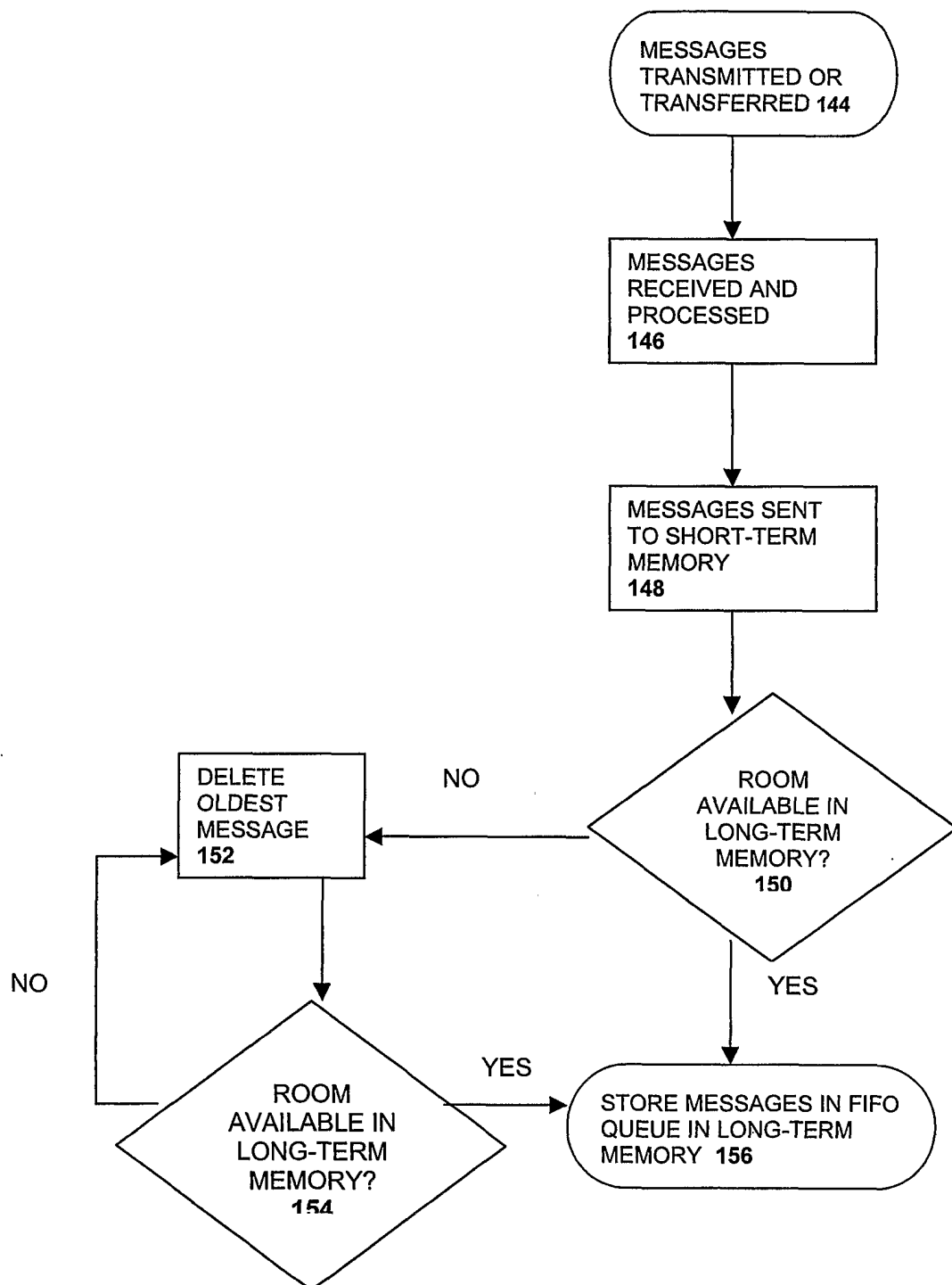


FIG. 12



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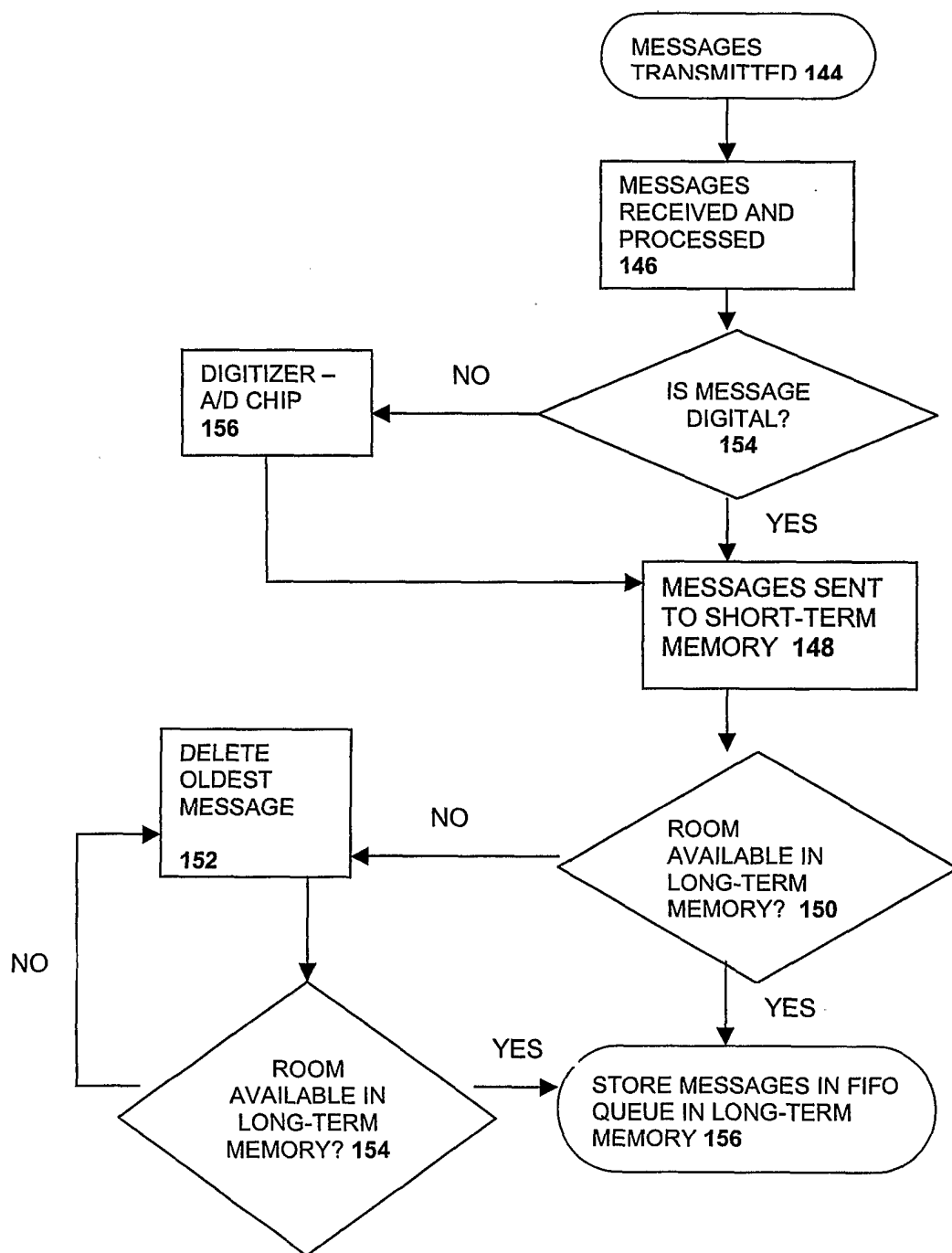


FIG. 13

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US01/40693

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : H04H 5/00; H04B 3/00

US CL : 381/1, 4, 7, 77

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

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 381/1, 4, 7, 77

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

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

EAST (USPAT, US PGPUB, EPO, JPO, DERWENT, IBM TBD)

search terms: audio, device, trigger, subcarrier, advertisement

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,404,566 A (WEHRMEYER) 04 April 1995, col 2, lines 12-67 and col 4, line 54 - col 6, line 57.	1-26
Y	US 6,011,537 A (SLOTZNICK) 04 January 2000, col 7, lines 36-60; col 11, lines 25-29; col 12, lines 34-49; and col 13, lines 21-31.	1-26
A	US 3,882,538 A (LOWE) 06 May 1975, col 1, line 43 - col 2, line 30.	1-26
A, P	US 6,772,127 B1 (GOLDEN et al) 07 August 2001, col 2, line 7 - col 3, line 24.	1-26



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

07 SEPTEMBER 2001

Date of mailing of the international search report

19 OCT 2001

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