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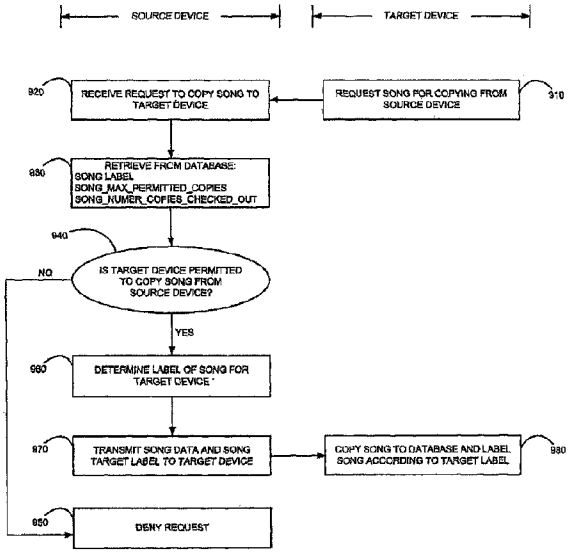

(57) Abrégé/Abstract:
A method is described for managing rights for digital music, including registering music players, from among a plurality of music players, with digital archives that store songs, from among a plurality of digital archives, wherein songs can be copied from digital archives to music players, and from music players to digital archives, permitting a music player to copy a song from a digital archive for which it is registered, permitting a digital archive to copy a song from a music player that is registered with the digital archive, restricting a music player from copying a song from a digital archive for which it is not registered, and restricting a digital archive from copying a song from a music player that is not registered with the digital archive. A system and a computer-readable storage medium are also described.

ABSTRACT

A method is described for managing rights for digital music, including registering music players, from among a plurality of music players, with digital archives that store songs, from among a plurality of digital archives, wherein songs can be copied from digital archives to music players, and from music players to digital archives, permitting a music player to copy a song from a digital archive for which it is registered, permitting a digital archive to copy a song from a music player that is registered with the digital archive, restricting a music player from copying a song from a digital archive for which it is not registered, and restricting a digital archive from copying a song from a music player that is not registered with the digital archive. A system and a computer-readable storage medium are also described.

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METHOD AND SYSTEM FOR MANAGING RIGHTS FOR DIGITAL MUSIC

RELATED APPLICATION

[0001] This application is a divisional of Canadian Patent Application Serial No. 2,573,239 filed July 8, 2005.

FIELD

[0002] Embodiments of the present invention relate to rights management for digital musical recordings.

BACKGROUND

[0003] Copyright law regarding devices that make copies of digital recordings is set forth in 17 U.S.C, Chapter 10, referred to as the "Digital Home Audio Recording Act of 1992." Specifically, this Act requires payment of specific royalties to the Register of Copyrights. Royalty payments for digital audio recording devices are 2% of their transfer price, and royalty

[0005] Consumers are generally aware to some extent of copyright laws concerning digital recordings, but there are no automatic features in place to assist consumers in abiding with them. For example, a consumer who purchases a song on a CD, or through a subscription with an Internet music sharing service such as Napster, generally does not know if he is permitted to make personal copies of the song for himself, on one or more of his computers, or on one or more CDs, or on one or more MP3 players.

[0006] It would be beneficial if a system was in place to advise consumers whether or not a song may be copied for specific uses, and, if so, how many copies are permitted, and, if not, how to obtain the necessary copyright permission.

SUMMARY OF THE DESCRIPTION

[0007] The present invention concerns a configurable method and system for managing copyright privileges when a digital song is copied from one digital audio device to another.

[0008] In a general setting, digital songs are (i) acquired from external sources, including, inter alia, Internet music services such as iTunes® and Napster®, CDs and other recording media, music kiosks and broadcast music stations such as cable and satellite stations; and thereafter (ii) copied between digital audio recorders and digital audio players. Transfer of songs may be likened in some respects to a virtual water distribution system with nodes and conduits, wherein the nodes store water and the conduits transmit water from one node to another. External nodes represent music

sources such as record stores, kiosks and Internet music services; and internal nodes represent audio recorders and players.

[0009] Within this paradigm of water distribution, digital rights management concerns controlling valves that restrict the flow of water within the pipes.

[0010] For an embodiment of the present invention,

- digital audio devices are registered with one another; and
- songs stored within recorders and players are labeled as being Purchased, Recorded or Try & Buy.

[0011] Preferably, digital audio players are registered with either zero or one digital audio recorder. In other words, a digital player cannot be registered with more than one recorder, but one digital recorder can have multiple digital players registered therewith.

[0012] Preferably, the label of a song is used to identify copyrights associated therewith. The Try & Buy label is used for promotional or trial versions of songs, and generally include an expiration event, upon occurrence of which the song "evaporates;" i.e., can no longer be played in its entirety.

[0013] For an embodiment of the present invention, copyright management is achieved by (i) restricting a song from being copied from a source device to a target device; and (ii) specifying the way a song is labeled within a target device when the song is copied from a source device to the target device -- based on the source device, the target device, the

label of the song in the source device, and based on whether or not the source and target device are commonly registered.

[0014] Further, for an alternate embodiment of the present invention, copyright management may restrict the number of copies permitted to be made for a song resident on a source device. For example, when a recorder is used to copy songs to a plurality of players, up to three copies of a song may be permitted.

[0015] Thus, embodiments of the present invention enable audio device manufacturers to configure a flexible logic for digital rights management in accordance with legal requirements in their respective locales. Various such configurations are described in the detailed description hereinbelow.

[0016] In distinction from embodiments of the present invention, prior art digital rights managers do not include the fundamental feature of adapting labels from source label to target label when a song is copied from a source device to a target device. One such prior art digital rights manager is Microsoft Corporation's Windows Media Rights Manager, which implements digital rights by encrypting audio files using keys, and packaging the files with key IDs. In order to play the audio files, a user obtains a license, which contains a key to decrypt the file.

[0017] Another such prior art digital rights manager is Apple Corporation's iTunes rights manager, which registers iPod music players with computers, so that an iPod cannot download a digital song from a computer that it is not registered with.

[0018] There is thus provided in accordance with an embodiment of the present invention a method for managing rights for digital music, including registering music players, from among a plurality of music players, with digital archives that store songs, from among a plurality of digital archives, wherein songs can be copied from digital archives to music players, and from music players to digital archives, permitting a music player to copy a song from a digital archive for which it is registered, permitting a digital archive to copy a song from a music player that is registered with the digital archive, restricting a music player from copying a song from a digital archive for which it is not registered, and restricting a digital archive from copying a song from a music player that is not registered with the digital archive.

[0019] There is additionally provided in accordance with an embodiment of the present invention a method for managing rights for digital music, including maintaining, by a digital archive of songs, for a song stored in the digital archive, a maximum number of permitted copies of the song, tracking, within the digital archive, for the song, a count of music players that copied the song from the digital archive, permitting a music player to copy the song from the digital archive if the count for the song has not reached the maximum number of permitted copies for the song, and restricting a music player from copying the song from the digital archive if the count for the song has reached the maximum number of permitted copies for the song.

[0020] There is moreover provided in accordance with an embodiment of the present invention a method for managing rights for digital music, including registering groups of digital audio devices from among a plurality

of digital audio devices with one another, the digital audio devices being able to store digital songs and to copy digital songs from one to another, labeling digital songs stored within digital audio devices according to copyright privileges, determining whether or not a song may be copied from a source digital audio device to a target digital audio device, and prescribing the label of a song within the target digital audio device when the song is copied from the source digital audio device to the target digital audio device, wherein the determining and the prescribing are based on the source digital audio device, the target digital audio device and the label of the song within the source digital audio device, and also based on whether or not the source and target digital audio devices are registered with one another.

[0021] There is further provided in accordance with an embodiment of the present invention a computer-readable storage medium storing program code for causing a device to perform the steps of registering music players, from among a plurality of music players, with digital archives that store songs, from among a plurality of digital archives, wherein songs can be copied from digital archives to music players, and from music players to digital archives, permitting a music player to copy a song from a digital archive for which it is registered, permitting a digital archive to copy a song from a music player that is registered with the digital archive, restricting a music player from copying a song from a digital archive for which it is not registered, and restricting a digital archive from copying a song from a music player that is not registered with the digital archive.

[0022] There is yet further provided in accordance with an embodiment of the present invention a computer-readable storage medium storing program code for causing a device to perform the steps of maintaining, by a digital archive of songs, for a song stored in the digital archive, a maximum number of permitted copies of the song, tracking, within the digital archive, for the song, a count of music players that copied the song from the digital archive, permitting a music player to copy the song from the digital archive if the count for the song has not reached the maximum number of permitted copies for the song, and restricting a music player from copying the song from the digital archive if the count for the song has reached the maximum number of permitted copies for the song.

[0023] There is additionally provided in accordance with an embodiment of the present invention a computer-readable storage medium storing program code for causing a device to perform the steps of registering groups of digital audio devices from among a plurality of digital audio devices with one another, the digital audio devices being able to store digital songs and to copy digital songs from one to another, labeling digital songs stored within digital audio devices according to copyright privileges, determining whether or not a song may be copied from a source digital audio device to a target digital audio device, and prescribing the label of a song within the target digital audio device when the song is copied from the source digital audio device to the target digital audio device, wherein the determining and the prescribing are based on the source digital audio device, the target digital audio device and the label of the song within the

source digital audio device, and also based on whether or not the source and target digital audio devices are registered with one another.

[0024] There is moreover provided in accordance with an embodiment of the present invention a system for managing rights for digital music, comprising a plurality of digital archives that store songs, a plurality of music players at least some of which are registered with digital archives, wherein songs can be copied from digital archives to music players, and from music players to digital archives, and a rights manager housed within a digital archive permitting a music player to copy a song from the digital archive if the music player is registered with the digital archive, permitting the digital archive to copy a song from a music player if the music player is registered with the digital archive, restricting a music player from copying a song from the digital archive if the music player is not registered with the digital archive, and restricting the digital archive from copying a song from a music player if the music player is not registered with the digital archive.

[0025] There is further provided in accordance with an embodiment of the present invention a system for managing rights for digital music, including a digital archive of songs including a database manager for maintaining a maximum number of permitted copies of a song, for a song stored within the digital archive, and for tracking a count of music players that copied the song from the digital archive, and a rights manager for permitting a music player to copy the song from the digital archive if the count for the song has not reached the maximum number of permitted copies for the song, and for restricting a music player from copying the song

from the digital archive if the count for the song has reached the maximum number of permitted copies for the song.

[0026] A system is described for managing rights for digital music, including a plurality of audio devices, each being able to store digital songs and to copy digital songs from one to another, wherein groups of the digital audio devices are registered with one another. A database manager is provided for labeling digital songs stored within digital audio devices according to copyright privileges, for determining whether or not a song may be copied from a source digital audio device to a target digital audio device, and for prescribing the label of a song within the target digital audio device when the song is copied from the source digital audio device to the target digital audio device. Said determining and said prescribing are based on the source digital audio device, the target digital audio device and the label of the song within the source digital audio device, and also based on whether or not the source and target digital audio devices are registered with one another.

[0026a] According to an aspect of the present invention, there is provided a processor-based method for digital rights management for a copyright digital work that is copied from device to device from among a plurality of devices, some of which are primary devices and some of which are secondary devices, and wherein a secondary device may be registered with a primary device, and wherein a copy of the digital work may encapsulate digital rights management (DRM) data that serves to determine one of at least two levels of access, namely, permit full access to the digital work, or permit limited access to the digital work, comprising: downloading to a first device a copy of the digital work with DRM data indicating full access; receiving a request for a copy of the digital work at said first device from another device and: responding to said request by providing a copy of the digital work with: (i) DRM data indicating full access if said other device is registered with said first device and (ii) DRM data indicating limited access if said other device is not registered with said first device; wherein said DRM data does not include an auxiliary DRM wrapper; and

wherein said copies of said digital work do not include data pertaining to fulfiller(s); and wherein said limited access continues to permit access to only a portion of the work after: a fixed time period and/or a fixed number of access events.

[0026b] According to another aspect of the present invention, there is provided a system for digital rights management for a copyright digital work that is copied from device to device from among a plurality of devices, some of which are primary devices and some of which are secondary devices, and wherein a secondary device may be registered with a primary device, and wherein a copy of the digital work may encapsulate digital rights management (DRM) data that serves to determine one of at least two levels of access, namely, permit full access to the digital work, or permit limited access to the digital work, comprising: a processor within each device for controlling operation of the device; a memory within each device for storing instructions that are executable by said device processor; a digital rights manager within each device comprising instructions stored within said memory of device which, when executed by said processor of device, cause said processor to respond to a request for a copy of the digital work stored on the device with: (i) DRM data indicating full access if a device from which said request originated is registered with said device on which the digital rights manager resides; and (ii) DRM data indicating limited access if said device from which said request originated is not registered with said device on which the digital rights manager resides and wherein said DRM data does not include an auxiliary DRM wrapper; and wherein said copies of said digital work do not include data pertaining to fulfiller(s); and wherein said limited access continues to permit access to only a portion of the work after: a fixed time period and/or a fixed number of access events.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027] The present invention will be more fully understood and appreciated from the following detailed description, taken in conjunction with the drawings in which:

[0028] FIG. 1 is a front view of a digital archive, referred to as a "Nest", in accordance with an embodiment of the present invention;

[0029] FIG. 2 is a side view of a music player, referred to as an "Egg", in accordance with an embodiment of the present invention;

[0030] FIG. 3 is bottom view of the music player of FIG. 2, in accordance with an embodiment of the present invention;

[0031] FIG. 4 is an illustration of a user interface for copying songs from the digital archive of FIG. 1 into the music player of FIG. 2, in accordance with an embodiment of the present invention;

[0032] FIG. 5 is a simplified flowchart of a method for "checking-out" songs from the digital archive of FIG. 1 to the music player of FIG. 2, in accordance with an embodiment of the present invention;

[0033] FIG. 6 is a simplified flowchart of a method for "checking-in" songs from the music player of FIG. 2 to the digital archive of FIG. 1, in accordance with an embodiment of the present invention;

[0034] FIG. 7 is a simplified flowchart of a method for tracking the number of times the same song is broadcast while the digital archive of FIG 1 is recording music, in accordance with an embodiment of the present invention;

[0035] FIG. 8 is a simplified block diagram of a digital rights management system, in accordance with an embodiment of the present invention; and

[0036] FIG. 9 is a simplified flow chart for a digital rights management system, in accordance with an embodiment of the present invention.

DETAILED DESCRIPTION

[0037] Digital music players are proliferating as standalone consumer electronic devices, such as MP3 players, as bundled components within portable devices such as personal data assistants (PDAs) and cell-phones, and as home network appliances. Listeners typically build up their own

personal libraries of digital songs, which are stored on memory units such as hard disk drives and removable memory cards. Digital songs are typically acquired through the Internet via subscription services and peer-to-peer exchanges, or by converting songs from a compact disc (CD) and importing them into an MP3 library. Acquiring digital music files may infringe copyrights, unless the files are validly obtained through a service that pays royalties to the recording industry.

[0038] Digital songs typically include audio data and auxiliary data, referred to as meta-data, used to index the songs within the listener's library. For example, within MP3 files meta-data is accessed through an ID3Tag; WMA files embed meta-data within the files, and also within the filenames themselves. By indexing the songs, a listener can search his library and access individual songs therein. Typically audio players provide a user interface through which users view meta-data.

[0039] Barring copyright issues, building up a digital music library requires a lot of time and work. Typically, a listener first searches the Internet for one or more songs of interest, then identifies locations of the songs, and then downloads them into a database associated with a media player. Songs are typically stored as digital files, formatted in compliance with a standard format, such as MP3 or WMA. Once the songs are downloaded, the listener typically uses software such as Windows Media player or Winamp to play the songs on a computer, or alternatively he copies the songs onto a hardware device, such as an iPod™ or MP3 player, that plays the songs.

[0040] A shortcoming in the world of digital music is the great effort required to build custom music libraries at home. Often individuals spend nights on end downloading their favorite songs and building their own personal music libraries. An alternative is to either purchase libraries that have been prepared by others, but often someone else's library does not match a listener's taste and the listener prefers to collect his own favorite songs.

[0041] A popular source for a listener to hear his favorite songs is on music stations. Cable, satellite broadcast, and the Internet provide music channels for almost every genre of music – classical music, rock and roll, jazz, music of the 80's, etc. A listener can enjoy music according to his taste by subscribing to such broadcast services.

[0042] Embodiments of the present invention enable a listener to automatically copy and import songs that are broadcast from a music station into his digital music library, along with the songs' meta-data required for indexing his library. Using embodiments of the present invention a listener, with practically no effort, can automatically build up a large digital music library with tens of thousands of his choice of songs, all properly indexed for search and retrieval. Moreover, an additional feature of embodiments of the present invention enables the listener to select which songs from among those broadcast on the music stations are to be imported into his library, based on one or more of criteria including inter alia genre, song title, artist, album and length of song.

[0043] Copying songs that are broadcast from a music station is akin to copying television programs onto a VCR. Copyright law permits a consumer to copy television programs broadcast to his home onto his VCR. The technology for automatically copying songs, however, is more complex since raw audio recording from a music station does not provide the meta-data necessary to identify such songs and incorporate them into a digital music library. Moreover, each song has to be separated out from other songs, because songs are played sequentially on the music station, generally without breaks in between.

[0044] Embodiments of the present invention concern a method and system for automatically building digital music libraries from music channels broadcast through cable and satellite stations. For one embodiment of the present invention, broadcast songs are recorded into a digital music library, along with meta-data necessary for indexing and accessing each individual song, and for display while the songs are being played. Using embodiments of the present invention, the digital music library generated from the broadcast music serves as a large library of individual songs, with full search and access capability.

[0045] Embodiments of the present invention provide a system that enables the listener to automatically digitally record each broadcast song into a digital music library, and automatically index each song according to genre, song title, artist and album title, as described hereinbelow. Additionally, embodiments of the present invention enable the listener to filter songs to be automatically recorded, by specifying inter alia a genre,

song tile or artist, instead of recording all of the broadcast songs. The listener need not be present while the system of embodiments of the present invention is in operation. It may thus be appreciated that embodiments of the present invention enable automatic generation of large libraries of songs.

[0046] An embodiment of the invention comprises a programmable device, referred to herein as a "Nest," that can interface with computers, with MP3 players and other digital music players, and with other electronic devices that include MP3 players or other digital music players therewithin, including, inter alia, cell phones, PDAs, home network appliances and Internet appliances. In a first embodiment, the Nest is coupled to a satellite / cable receiver; in a second embodiment, the Nest is coupled to a television; in a third embodiment, the Nest is coupled to various external components via a USB and a Firewire connection.

[0047] In all embodiments, the memory storing the digital music library can be either a large hard disk situated within the Nest itself, or one or more smaller removable memory units such as compact disks and memory cards, or a combination of hard disk and removable memory. The advantage of a large hard disk is that the listener's music library is consolidated into a single library that can be searched and accessed in its entirety. The advantage of removable memory units, such as compact disks, is that the listener can insert the disks into portable players such as MP3 players. Assuming that 40 songs on average require 128 MB of data and include one and a half hour's worth of listening, a large 80 GB hard disk can hold a library of

approximately 25,600 songs; and a 640 MB compact disk can hold approximately 200 songs, or about 7½ hours worth of listening.

[0048] Reference is now made to FIG. 1, which is a front view of a Nest 100, in accordance with an embodiment of the present invention. Nest 100 is shown with its front panel open. On the left side of the front panel are female left and right analog audio-in connectors 110 and 120, and female analog video-in connector 130, preferably used for connecting auxiliary audio and video devices, such as a CD player, in order to add content into the Nest. On the right side of the front panel are female USB sockets 140 and 150, preferably used for connecting foreign MP3 players to the Nest; a female Ethernet connector 160, preferably for connecting the Nest to a computer network; and a mini-jack socket 170, preferably used to provide analog stereo audio-out for headphones.

[0049] For an embodiment of the present invention, a Nest includes one or more exchange ports 180, also referred to herein as "cradles," through which one or more hand-held digital music players, referred to herein as "Eggs," can be connected to the Nest, for loading songs from a digital music library stored on the Nest thereto. Such exchange ports may be circular or oval ports into which Eggs in the shape of film canisters are inserted. Eggs may be "charged up" with songs while they are plugged into the cradles of the Nest.

[0050] Reference is now made to FIG. 2, which is a side view of an Egg 200, in accordance with an embodiment of the present invention. Egg 200 is shown with a panel 210 that displays meta-data for a song currently being

played. As can be seen in FIG. 2, the meta-data includes a title ("Blowing in the Wind"), an author ("Bob Dylan") and an album ("Bob Dylan's Greatest Hits").

[0051] Reference is now made to FIG. 3, which is a bottom view of the Egg 200 of FIG. 2, in accordance with an embodiment of the present invention. The bottom of the Egg includes a female audio/video connector 210, preferably for transferring analog audio and analog video between the Egg and a Nest; and a female USB connector 220, preferably for transferring digital data between the Egg and a Nest, between the Egg and a "filling station" kiosk, and between the Egg and another Egg. Corresponding to connectors 210 and 220, the cradles of the Nest contain male analog audio-video connectors and male USB connectors (not shown in FIG. 1).

[0052] A typical usage scenario for a Nest and Egg is as follows. A listener sets his cable or satellite receiver box to a specific music channel, preferably from a commercial-free radio station such as The Music Choice®, and activates the Nest to capture songs from the music channel. The Nest automatically creates a digital music library and imports the broadcast songs therein. Thereafter, the listener plugs an Egg into a cradle of the Nest, and downloads selected songs from the music library onto the Egg. If the Nest is connected to the listener's speaker system, then the listener may also pipe music from the Nest into speakers in various rooms. If the Nest is connected to a home network, the listener may stream audio to a computer that is authorized to work with the Nest.

[0053] Preferably, in addition to a Nest being able to download songs to the Egg when the Egg is connected to the Nest, the Nest is also able to remove songs stored in the Egg. Thus, if the Egg storage is full, the Nest can remove songs from the Egg, in order for the Egg to download a new set of songs.

[0054] Eggs of embodiments of the present invention may receive digital music from other sources, in addition to the Nest. Thus the Eggs may be compatible with kiosks, such as music kiosks located in music distribution stores, used for listening to songs prior to purchase and for subsequent purchase. Preferably, when an Egg is connected to a Nest, the digital music received from other devices and stored within the Egg can be archived on the Nest.

[0055] An Egg may receive control commands through its USB connector. Specifically,

- when connected to a Nest, the Nest may issue control commands to the Egg, such as a command to advance to the next song; and
- when connected to a docking station, such as a docking station for the Egg in a room of a house, the docking station may receive infrared commands issued by a user, and translate them into control commands to the Egg over the USB connector.

[0056] Reference is now made to FIG. 4, which is an illustration of a graphical user interface (GUI) for copying songs from the Nest of FIG. 1 into the Egg of FIG. 2, in accordance with an embodiment of the present invention. The GUI shown in FIG. 4 is preferably displayed on a television

or other display device connected to the Nest, and interacted with through use of a remote control device, such as an infrared control unit. As such, the GUI of FIG. 4 is intended for navigation with simple directional buttons and a select button.

[0057] The GUI shown in FIG. 4 is used to organize a digital music library and create playlists -- i.e., sequences of songs for playing from the Nest -- or for copying to an Egg for playback from the Egg.

Copyright Management

[0058] In an enhanced embodiment of the present invention incorporates digital rights management. In accordance with an embodiment of the present invention, an Egg is registered with at most one Nest, and only Eggs registered with a Nest have the right to check-out non-promotional songs therefrom, as described hereinbelow. Typically, a Nest will have multiple Eggs registered with the Nest.

[0059] In accordance with an embodiment of the present invention, a song within a Nest or an Egg is labeled as "Purchased", "Recorded" or "Try & Buy". A "Purchased" song is one that is paid for by a consumer. Purchased songs include, inter alia, songs purchased through an Internet service such as iTunes® or Napster®, songs purchased through a kiosk, and songs copied and converted ("ripped") to a format such as MP3 from a CD that is purchased. "Recorded" songs include songs recorded for a consumer from a cable or satellite music station. "Try & Buy" songs are promotional or trial versions of songs that are provided to a consumer for

free, and eventually expire. If the consumer wishes to continue to listen to such songs, he must obtain a Purchased or Recorded version of the song.

[0060] Expiration of a Try & Buy song may occur, inter alia, after a fixed time period, such as thirty days, or after a fixed number of playbacks of the song. Upon expiration, a Try & Buy song may cease to play altogether, or may play only a down-sampled version of the song or a header of the song, or may instead play a message explaining how to purchase the song, or otherwise enable purchase of the song.

[0061] Preferably, the label of a Try & Buy song includes a URL or other such identifier for one or more web sites that serve as a clearinghouse through which the song can be purchased.

[0062] In accordance with an embodiment of the present invention, the Nest includes a list of songs that are already contained within the Nest and songs that are not already contained within the Nest. For example, whenever a song from a specific album by a specific artist is contained within the Nest, the list includes other songs from the same album or other songs by the same artist. Songs that have been recorded within the Nest are labeled as Recorded. Other songs, not contained within the Nest, can preferably be downloaded to the Nest as trial Try & Buy versions, upon request by a consumer. After listening to a Try & Buy version of a song, the consumer may purchase the song using the Nest, and the purchased song is then labeled as Purchased. Such labeling of a song as Recorded, Purchased or Try & Buy serves to identify the copyrights associated with the song.

[0063] Preferably, when a song is copied from one device to another device where the two devices are registered with one another, such as from a Nest to an Egg that is registered with the Nest, or from an Egg to a Nest that the Egg is registered with, the label of the song is maintained; i.e., the label of the song on the target device is set to the label of the song on the source device. For example, if a Try & Buy song is copied from a Nest to an Egg that is registered with the Nest, and then to another Egg that is also registered with the same Nest, then the song is labeled as Try & Buy on the two Eggs. Similarly, if an Egg is used to purchase a song from a kiosk and the song is subsequently copied to a Nest that the Egg is registered with, then the song is labeled as Purchased on the Egg and on the Nest.

[0064] Preferably, when a song is copied from one device to another device where the two devices are not registered with one another, such as from a Nest to an Egg or from an Egg to a Nest, where the Egg is not registered with the Nest, then regardless of the label of the song on the source device, the song is labeled as Try & Buy on the target device.

[0065] Table I summarizes the copyright labeling of a song on a target device.

Table I: Copyright Label of Song on Target Device with One Embodiment

Source Device --> Target Device	Source Label --> Target Label
Nest --> Egg registered with the Nest OR	Purchased --> Purchased
Egg registered with Nest --> Nest OR	Recorded --> Recorded
Egg --> Egg, both Eggs registered with the same Nest	Try & Buy --> Try & Buy
Nest --> Egg not registered with the Nest OR	Purchased --> Try & Buy
Egg not registered with Nest --> Nest OR	Recorded --> Try & Buy
Egg --> Egg, Eggs registered with the different Nests	Try & Buy --> Try & Buy
Cable / satellite broadcast --> Nest	--> Recorded
CD or other recording media (optical, magnetic, etc.) --> Nest CD or other recording media (optical, magnetic, etc.) --> Egg Internet music service (iTunes®, Napster®) --> Nest Music kiosk --> Egg	--> Purchased

[0066] The logic of table I assumes that any two devices can determine whether or not they are commonly registered. This capability can be achieved, for example, if the registration information is built into a Nest and an Egg at the time of manufacture.

[0067] In addition to the logic of Table I, the label of a song within a Nest of an Egg is changed from Try & Buy to Purchased if a user purchases the song from a clearinghouse, using the Nest or the Egg, respectively.

[0068] In a first alternative embodiment of the present invention, the Nest can directly determine whether an Egg is registered with it, but an Egg

cannot directly determine whether it is registered with a Nest, or whether it and another Egg are registered to the same Nest. This occurs, for example, if an Egg has the capability of registering itself with any one of a plurality of Nests after it is manufactured. In this latter case, the logic of Table I is modified so that whenever a song is copied from a source Egg to a target Egg, the song is labeled as Try & Buy in the target Egg. Accordingly, the copyright labeling of a song on a target device follows Table II.

Table II: Copyright Label of Song on Target Device with First Alternate Embodiment

Source Device --> Target Device	Source Label --> Target Label
Nest --> Egg registered with the Nest OR Egg registered with Nest --> Nest	Purchased --> Purchased
	Recorded --> Recorded
	Try & Buy --> Try & Buy
Nest --> Egg not registered with the Nest OR Egg not registered with Nest --> Nest OR Egg --> Egg	Purchased --> Try & Buy
	Recorded --> Try & Buy
	Try & Buy --> Try & Buy
Cable / satellite broadcast --> Nest	--> Recorded
CD or other recording media (optical, magnetic, etc.) --> Nest CD or other recording media (optical, magnetic, etc.) --> Egg Internet music service (iTunes®, Napster®) --> Nest Music kiosk --> Egg	--> Purchased

[0069] In this first alternative embodiment, an egg that is registered with a first Nest may be re-registered with a second Nest. In such case, the Egg is no longer registered with the first Nest. Preferably, there is a limit to the number of times an Egg can be re-registered, and after an Egg re-registers itself a maximum number of times, it is blocked from further re-registration.

[0070] In a second alternative embodiment of the present invention, the distinction between Purchased and Recorded songs is ignored, and both are identified as "Owned" songs. In this second alternative embodiment, the copyright labeling of a song on a target device follows Table III.

Table III: Copyright Label of Song on Target Device with Second Alternate Embodiment

Source Device --> Target Device	Source Label --> Target Label
Nest --> Egg registered with the Nest OR Egg registered with Nest --> Nest OR	Owned --> Owned
Egg --> Egg, both Eggs registered with the same Nest	Try & Buy --> Try & Buy
Nest --> Egg not registered with the Nest OR Egg not registered with Nest --> Nest OR	Owned --> Try & Buy
Egg --> Egg, Eggs registered with the different Nests	Try & Buy --> Try & Buy
Cable / satellite broadcast --> Nest	--> Owned
CD or other recording media (optical, magnetic, etc.) --> Nest CD or other recording media (optical, magnetic, etc.) --> Egg Internet music service (iTunes®, Napster®) --> Nest Music kiosk --> Egg	--> Owned

[0071] In yet a third alternative embodiment of the present invention, copying of songs from a Nest to multiple Eggs, each of which is registered with the Nest, is restricted. This third alternative embodiment has a more elaborate logic than the other embodiments. In order to best describe this logic, the terms "checking-out" and "checking-in" of songs are used as follows. When an Egg is connected to a Nest in order to download songs from the Nest to the Egg, this is referred to herein as "checking-out" of

songs. When an Egg is connected to a Nest in order to remove songs stored in the Egg, this is referred to herein as "checking-in" of songs.

[0072] Often the same song can be broadcast multiple times from a cable or satellite music station, while the Nest is operational to record the broadcast songs. For an embodiment of the present invention, the Nest stores a count for each Recorded song, which is incremented when the Nest encounters a broadcast song that has already been recorded onto the Nest archive. Such count thus corresponds to the total number of times the Recorded song has been broadcast while the Nest was recording, and is denoted henceforth as max_permitted_copies. For example, if a Recorded song is re-played five times on the Music Channel while the Nest is recording from the Music Channel, then max_permitted_copies = 5 for such song.

[0073] The max_permitted_copies count for a Recorded song is used to restrict the number of different Eggs that the Nest allows to check-out the song. For example, if max_permitted_copies = 5 for a Recorded song, then at most five different Eggs can check-out the song from the Nest. That is, for each Recorded song in its archive, the Nest stores a count for each song, which is incremented when an Egg checks-out the song. Such count corresponds to the number of Eggs that have checked-out the song, and is denoted henceforth as number_copies_checked_out. For example, if three Eggs have checked-out the same Recorded song from the Nest, then number_copies_checked_out = 3 for such song.

[0074] In accordance with an embodiment of the present invention, when an Egg checks-in a Recorded song with the Nest, thereby removing the song from the Egg, the number_copies_checked_out count is decremented. For example, if number_copies_checked_out = 3 for a Recorded song and an Egg that checked-out the song subsequently checks-in the song, then number_copies_checked_out is decremented to 2 for such song.

[0075] Reference is now made to, FIG. 5 which is a simplified flowchart of a method for tracking the number of times the same song is broadcast while the Nest 100 of FIG 1 is recording music, in accordance with an embodiment of the present invention. At operation 510 the Nest identifies a song being broadcast from a cable or satellite station that is currently being recorded by the Nest. At operation 520 the Nest determines whether or not the song is already stored within the Nest's digital archive. If so, then at operation 530 the Nest increments max_permitted_copies by one. Otherwise, at operation 540 the Nest initializes max_permitted_copies = 1 for the song, and number_copies_checked_out = 0 for the song. At operation 550 the Nest stores the Recorded song and its meta-data within the Nest's digital archive.

[0076] Reference is now made to FIG. 6, which is a simplified flowchart of a method for "checking-out" Recorded songs from the Nest of FIG. 1 to the Egg of FIG. 2, in accordance with an embodiment of the present invention. At operation 610 an Egg that is connected to a cradle in a Nest requests to copy a Recorded song from the Nest to the Egg. At operation 620 the Nest determines whether or not the Egg is registered with the Nest.

If so, then at operation 630 the Nest determines whether number_copies_checked_out is less than max_permitted_copies for the requested song. If so, then at operation 640 the Nest increments number_copies_checked_out for the song by one, and at operation 650 the Nest permits the Egg to copy the song from the Nest to the Egg.

[0077] If, at operation 620 the Nest determines that the Egg is not registered with the Nest, or if, at operation 630, the Nest determines that number_copies_checked_out is equal to max_permitted_copies, then the Egg's request for the Recorded song is denied at operation 660. Alternatively, the Recorded song may be copied onto the Egg as a trial version, and labeled Try & Buy.

[0078] Reference is now made to FIG. 7, which is a simplified flowchart of a method for "checking-in" Recorded songs from the Egg of FIG. 2 to the Nest of FIG. 1, in accordance with an embodiment of the present invention. At operation 710 an Egg connected to a cradle in a Nest requests to check-in a Recorded song. At operation 720 the Nest determines whether or not the Egg is registered with the Nest. If so, then at operation 730 the Nest determines whether or not the song already resides within the Nest's digital archive. If so, then at operation 740 the Nest decrements number_copies_checked_out for the song by one, and at operation 750 the Nest instructs the Egg to erase the song from the Egg.

[0079] If at operation 720 the Nest determines that the Egg is not registered with the Nest, then the Egg's request to check-in the song is denied at operation 760. Alternatively, the song may be copied onto the

Nest as a trial version, and labeled Try & Buy. If at operation 730 the Nest determines that the song does not currently reside within its digital archive, then this indicates that the Egg obtained the song from another source, such as from a kiosk. As such, at operation 770 the Nest initializes max_permitted_copies = 1 for the song, and number_copies_checked_out = 0 for the song. At operation 780 the Nest copies the song and its meta-data from the Egg into the Nest's digital archive.

[0080] Preferably, when a Recorded song is copied from a first Egg to a second Egg in this embodiment, the song is labeled as Try & Buy on the second Egg, even if the first and second Egg are both registered to the same Nest.

[0081] Purchased songs may also be restricted for copying to multiple Eggs with similar logic, by setting max_permitted_copies = 1.

[0082] In general, it may now be appreciated by those skilled in the art that embodiments of the present invention support a general digital rights configuration, by means of rules that specify whether or not a song residing on a source device has requisite permission for copying to a target device and, if so, how the song should be labeled when copied to the target device. Such rules may be embodied within functions

mayBeCopied(srcDeviceType, trgtDeviceType, isRegistered, srcDeviceLabel),

trgtLabel(srcDeviceType, trgtDeviceType, isRegistered, srcLabel), where srcDeviceType and trgtDeviceType are device specific parameters:

srcDeviceType indicates the type of the source device in which the

digital song resides, including inter alia Nest and Egg; and

trgtDeviceType indicates the type of the target device onto which the

digital song is to be copied, including inter alia Nest and Egg;

where isRegistered is specific to a pair of devices:

isRegistered indicates whether or not the source device and target device are commonly registered;

where srcLabel and trgtLabel are both song and device specific parameters:

srcLabel indicates the label of the song on the source device, including

inter alia Recorded, Purchased and Try & Buy or, alternatively, Owned and Try & Buy; and

trgtLabel indicates the label of the song on the target device, including

inter alia Recorded, Purchased and Try & Buy or, alternatively, Owned and Try & Buy; and

where:

mayBeCopied indicates whether or not the song may be copied from

the source device to the target device.

[0083] More generally, as described hereinabove, the functions

mayBeCopied() and trgtLabel() may have additional parameters max_permitted_copies and number_copies_checked_out, where max_permitted_copies and number_copies_checked_out are both song and device specific parameters:

max_permitted_copies indicates the maximum number of copies of the

song that are permitted from the device; and

number_copies_checked_out indicates the current number of copies

of the song that have been made from the device.

[0084] It may be appreciated by those skilled in the art that alternatively the functions mayBeCopied() and trgtLabel() may be embodied as tables or other data structures.

[0085] Reference is now made to FIG. 8, which is a simplified block diagram of a digital rights management system in accordance with an embodiment of the present invention. Shown in FIG. 8 is a source device 805 including a database manager 810 and a rights manager 815. Database manager 810 preferably controls a database 820 that stores digital songs and meta-data associated therewith. Preferably, the meta-data includes a label for each song, indicating whether the song is Purchased, Recorded or Try & Buy, as described hereinabove. Optionally, the meta-data may also include max_permitted_copies and number_copies_checked_out for one or more songs. The songs, their

labels, and their max_permitted_copies and number_copies_checked_out parameters are accessible through database manager 810.

[0086] It may be appreciated by those skilled in the art that digital songs and their meta-data may be stored in one or more database tables, within database 820, that can be joined. Alternatively, the binary song data may be stored in memory locations outside of database 820, and pointed to by address entries in database 820. It may also be appreciated that database 820 may instead be structured as a plurality of databases.

[0087] Also shown in FIG. 8 is a target device 825, including its own database manager 830, rights manager 835, and database 840.

[0088] Rights manager 815 determines whether or not a song resident on source device 810 may be copied to a specified target device, such as target device 825. If copying of the song is permitted, then rights manager 815 further determines a label to be used for the song on the target device, referred to as the target label. In accordance with an embodiment of the present invention, rights manager 815 bases its determination on (i) the type of source device 805, (ii) the type of target device 825, (iii) the label of the song on source device 805, and (iv) the max_permitted_copies and number_copies_checked_out parameters for the song on source device 805. Rights manager 815 preferably implements functions such as mayBeCopied() and trgtLabel() described hereinabove.

[0089] After rights manager 815 determines the target label, it transmits the song and the target label to target device 825. Target device 825

preferably adds the song to its database 840 and labels the song in database 840 according to the target label.

[0090] Also shown in FIG. 8 is a clearinghouse 845 for purchasing songs. Source device 805 and target device 825 may purchase songs directly from clearinghouse 845. For songs not currently resident on source device 805 or target device 825, clearinghouse 845 preferably sends the songs to the device that purchases them. For songs currently resident on source device 805 or target device 825 labeled Try & Buy, clearinghouse 845 preferably sends an authorization to source database manager 810 or target database manager 830 to change the label of the songs from Try & Buy to Purchased. Clearinghouse 845 preferably includes a transaction processor 850, which enables a user to purchase rights to songs and verifies the user's payment. Upon completion of a user's purchase of a song by transaction processor 850, clearinghouse 845 sends the songs to the user's device, or sends an authorization to the user's device to change the label of the song, as appropriate.

[0091] In accordance with an embodiment of the present invention, clearinghouse 845 also freely distributes Try & Buy versions of songs, which can be converted to Purchased versions at a later date, if a user so desires.

[0092] Preferably, clearinghouse 845 is administered by an entity that has distribution privileges for the songs it sells, such as a cable or satellite company.

[0093] Reference is now made to FIG. 9, which is a simplified flow chart for a digital rights management system, in accordance with an embodiment

of the present invention. As can be seen, FIG. 9 is divided into two columns, the leftmost column indicating operations performed by a source audio device, such as source device 805 (FIG. 8) and the rightmost column indicating operations performed by a target audio device, such as target device 825.

[0094] At operation 910 the target device requests a song to be copied from the source device. At operation 920 the source device receives the request and identifies the target device. In particular, the source device determines the type of the target device, and whether or not the source and target device are registered with one another.

[0095] At operation 930 the source device determines the label for the requested song, and the max_permitted_copies and number_copies_checked_out parameters for the requested song. Preferably, this information is contained within a source device database, such as database 820 (FIG. 8). At operation 940 the source device determines whether or not the target device has permission to copy the song. Preferably such determination is made by a rights manager within the source device, such as rights manager 815. If it is determined at operation 940 that the target device does not have permission to copy the song from the source device, then at operation 950 source device denies the copy request. Otherwise, if it is determined at operation 940 that the target device does have permission to copy the song from the source device, then at operation 960 the source device determines how to label the song within

the target device. Preferably, such determination is also made by a rights manager, such as rights manager 815.

[0096] At operation 970 the source device transmits the requested song and its label to the target device, and at operation 980 the target device copies the requested song to its database, and labels the requested song accordingly.

[0097] In reading the above description, persons skilled in the art will realize that there are many apparent variations that can be applied to the methods and systems described. Thus, the configurable logic described hereinabove for songs and audio devices is applicable as well to movies and video devices, and to other types of media and media devices.

[0098] Transfer of songs from source devices to target devices, and from clearinghouses to devices, may be performed in batches of songs, such as entire albums, as well as for single songs. In addition, devices may be "hot-synched" to one another. For example, an Egg may be hot-synched to a Nest, using wired or wireless communication, so that the Nest is updated periodically with the songs in the Egg.

[0099] In the foregoing specification, the invention has been described with reference to specific exemplary embodiments thereof. It will, however, be evident that various modifications and changes may be made to the specific exemplary embodiments without departing from the scope of the invention as set forth in the appended claims. Accordingly, the specification and drawings are to be regarded in an illustrative rather than a restrictive sense.

CLAIMS:

1. A processor-based method for digital rights management for a copyright digital work that is copied from device to device from among a plurality of devices, some of which are primary devices and some of which are secondary devices, and wherein a secondary device may be registered with a primary device, and wherein a copy of the digital work may encapsulate digital rights management (DRM) data that serves to determine one of at least two levels of access, namely, permit full access to the digital work, or permit limited access to the digital work, comprising:

downloading to a first device a copy of the digital work with DRM data indicating full access;

receiving a request for a copy of the digital work at said first device from another device and:

responding to said request by providing a copy of the digital work with:

(i) DRM data indicating full access if said other device is registered with said first device and

(ii) DRM data indicating limited access if said other device is not registered with said first device;

wherein said DRM data does not include an auxiliary DRM wrapper; and

wherein said copies of said digital work do not include data pertaining to fulfiller(s); and

wherein said limited access continues to permit access to only a portion of the work after:

a fixed time period and/or

a fixed number of access events.

2. A processor based method according to claim 1, comprising receiving a request for a copy of the digital work at said other device from an additional device and:

responding to said request by providing a copy of the digital work with :

(i) DRM data indicating full access if said additional device is registered with said first device and

(ii) DRM data indicating limited access if said additional device is not registered with said first device.

3. A processor based method according to claim 1, comprising:

modifying said DRM data indicating limited access to DRM data indicating full access in response to purchase of said copy of said digital work by a device.

4. A system for digital rights management for a copyright digital work that is copied from device to device from among a plurality of devices, some of which are primary devices and some of which are secondary devices, and wherein a secondary device may be registered with a primary device, and wherein a copy of the digital work may encapsulate digital rights management (DRM) data that serves to determine one of at least two levels of access, namely, permit full access to the digital work, or permit limited access to the digital work, comprising:

a processor within each device for controlling operation of the device;

a memory within each device for storing instructions that are executable by said device processor;

a digital rights manager within each device, comprising instructions stored within said memory of device which, when executed by said processor of device, cause said processor to

respond to a request for a copy of the digital work stored on the device with :

(i) DRM data indicating full access if a device from which said request originated is registered with said device on which the digital rights manager resides and

(ii) DRM data indicating limited access if said device from which said request originated is not registered with said device on which the digital rights manager resides and

wherein said DRM data does not include an auxiliary DRM wrapper; and

wherein said copies of said digital work do not include data pertaining to fulfiller(s); and

wherein said limited access continues to permit access to only a portion of the work after:

a fixed time period and/or

a fixed number of access events.

5. A system according to claim 4, wherein said digital rights manager is configured to modify said DRM data indicating limited access to DRM data indicating full access in response to purchase of said copy of said digital work by a device.

6. The system of claim 4 wherein said digital rights manager adds DRM data to newly created copies of digital works which are clear of DRM data.

7. The system of claim 4 comprising one or more personal computers (PCs).

8. The system of claim 4 comprising one or more kiosks that distribute copies of digital works and having a digital rights manager within the kiosk comprising instructions stored in a memory of the kiosk(s) which, when executed by a processor

of the kiosk, cause the processor to set DRM data in each copy distributed by the kiosk to full access.

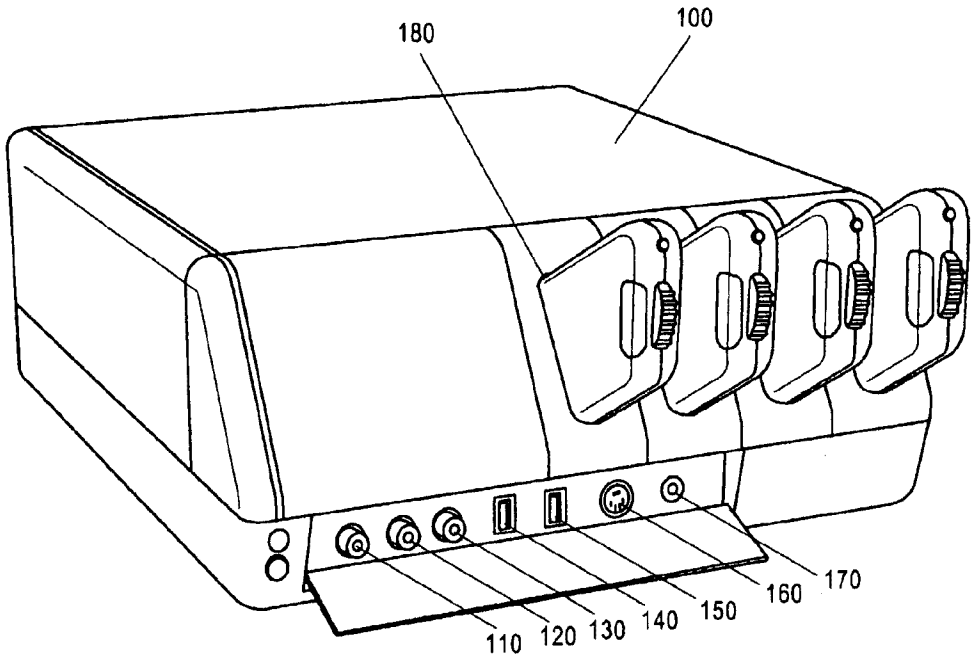


FIG. 1

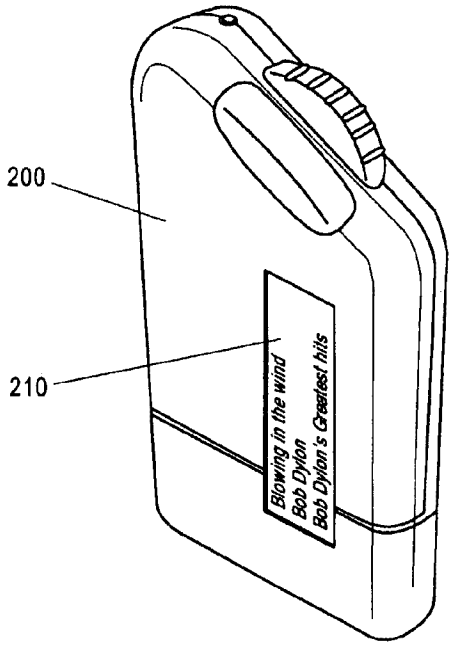

200
210
Blowing in the wind
Bob Dylon
Bob Dylon's Greatest hits

FIG. 2

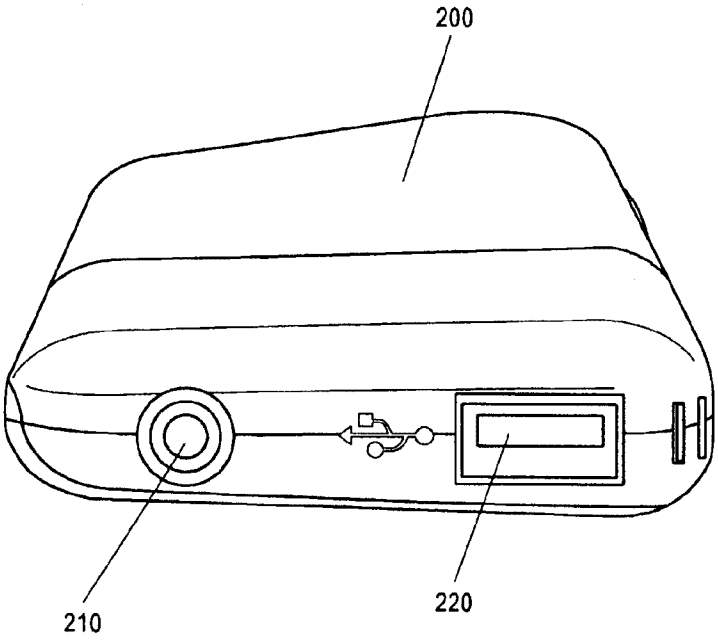


FIG. 3

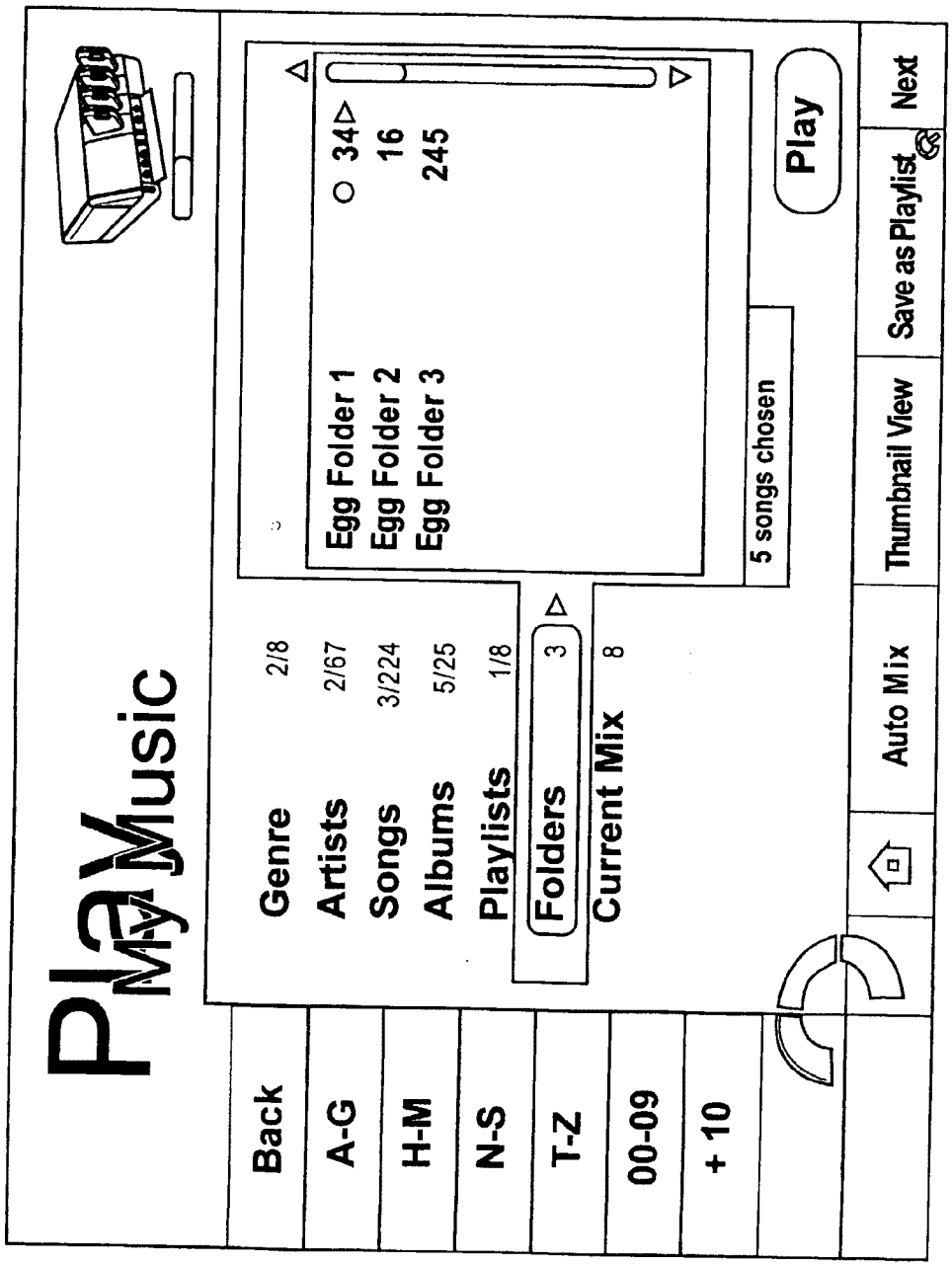

PlayMyMusic
Genre 2/8
Artists 2/67
Songs 3/224
Albums 5/25
Playlists 1/8
Folders 3
Current Mix 8
Egg Folder 1
Egg Folder 2
Egg Folder 3
34
16
245
5 songs chosen
Play
Back
A-G
H-M
N-S
T-Z
00-09
+ 10
Auto Mix
Thumbnail View
Save as Playlist
Next

FIG. 4

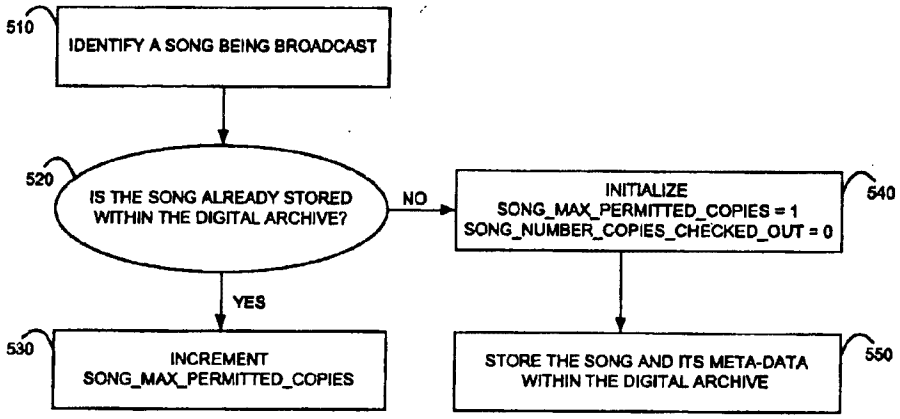

510
IDENTIFY A SONG BEING BROADCAST
520
IS THE SONG ALREADY STORED WITHIN THE DIGITAL ARCHIVE?
NO
YES
540
INITIALIZE
SONG_MAX_PERMITTED_COPIES = 1
SONG_NUMBER_COPIES_CHECKED_OUT = 0
530
INCREMENT
SONG_MAX_PERMITTED_COPIES
550
STORE THE SONG AND ITS META-DATA WITHIN THE DIGITAL ARCHIVE

FIG. 5

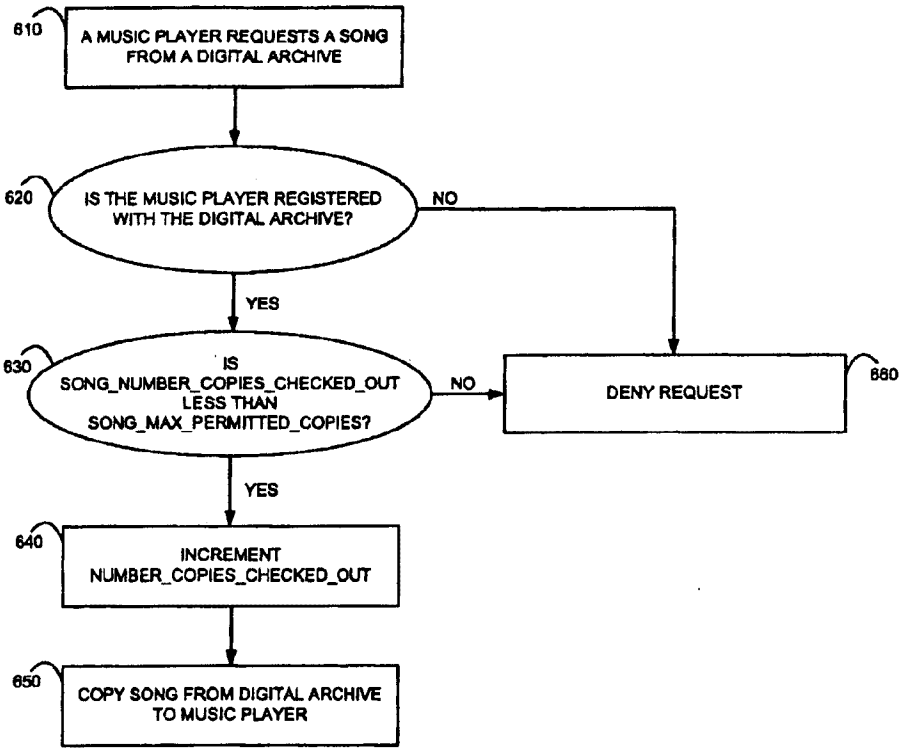

610
A MUSIC PLAYER REQUESTS A SONG FROM A DIGITAL ARCHIVE
620
IS THE MUSIC PLAYER REGISTERED WITH THE DIGITAL ARCHIVE?
NO
YES
630
IS SONG_NUMBER_COPIES_CHECKED_OUT LESS THAN SONG_MAX_PERMITTED_COPIES?
NO
DENY REQUEST
660
YES
640
INCREMENT NUMBER_COPIES_CHECKED_OUT
650
COPY SONG FROM DIGITAL ARCHIVE TO MUSIC PLAYER

FIG. 6

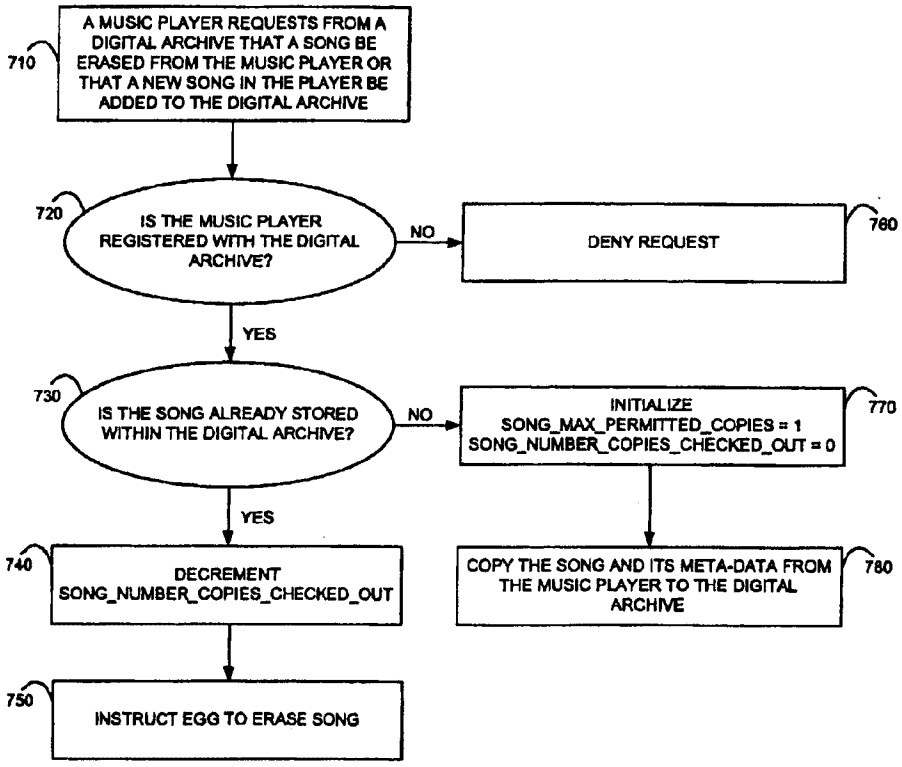

A MUSIC PLAYER REQUESTS FROM A DIGITAL ARCHIVE THAT A SONG BE ERASED FROM THE MUSIC PLAYER OR THAT A NEW SONG IN THE PLAYER BE ADDED TO THE DIGITAL ARCHIVE
710
IS THE MUSIC PLAYER REGISTERED WITH THE DIGITAL ARCHIVE?
720
NO
DENY REQUEST
760
YES
IS THE SONG ALREADY STORED WITHIN THE DIGITAL ARCHIVE?
730
NO
INITIALIZE SONG_MAX_PERMITTED_COPIES = 1 SONG_NUMBER_COPIES_CHECKED_OUT = 0
770
YES
DECREMENT SONG_NUMBER_COPIES_CHECKED_OUT
740
COPY THE SONG AND ITS META-DATA FROM THE MUSIC PLAYER TO THE DIGITAL ARCHIVE
780
INSTRUCT EGG TO ERASE SONG
750

FIG. 7

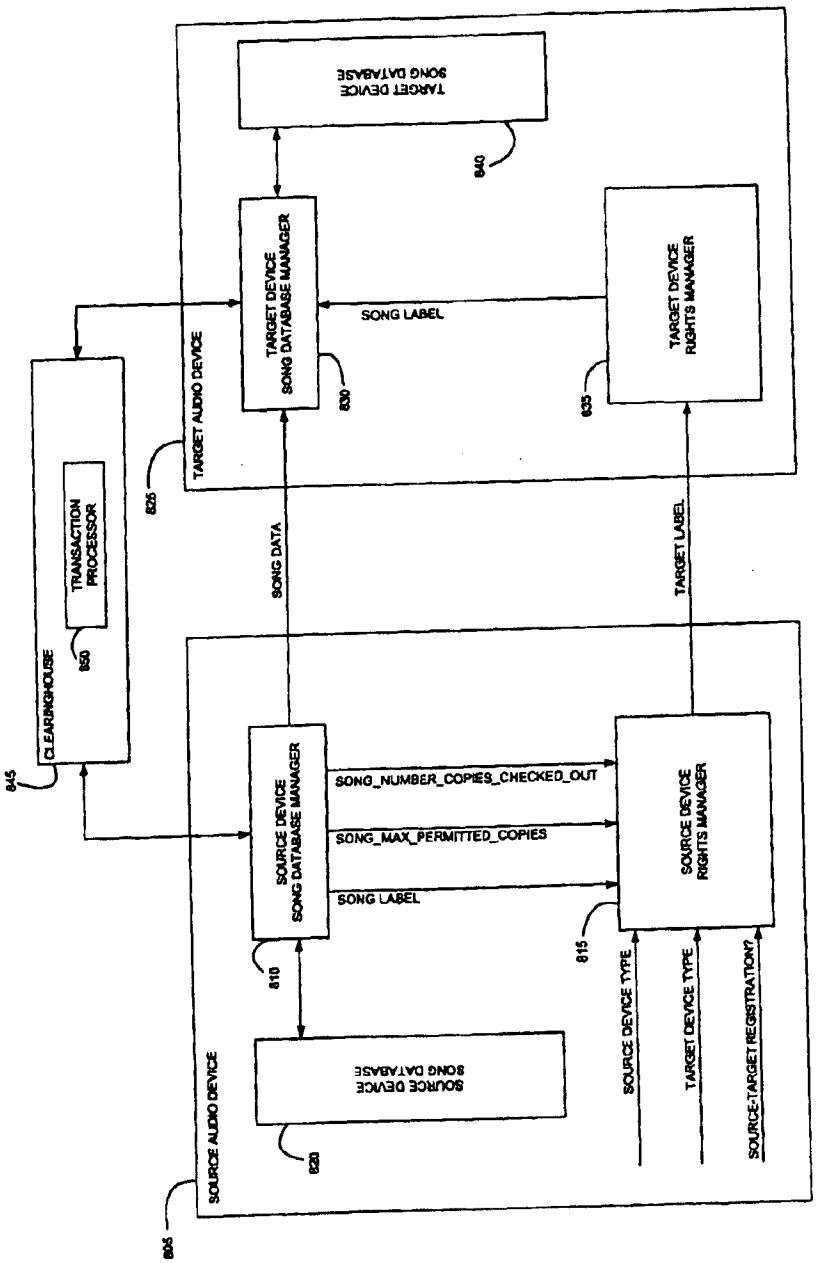

TARGET DEVICE SONG DATABASE
840
TARGET DEVICE SONG DATABASE MANAGER
830
TARGET DEVICE RIGHTS MANAGER
835
SONG LABEL
TARGET AUDIO DEVICE
825
TRANSACTION PROCESSOR
850
CLEARINGHOUSE
845
SONG DATA
TARGET LABEL
SOURCE DEVICE SONG DATABASE MANAGER
SONG_NUMBER_COPIES_CHECKED_OUT
SONG_MAX_PERMITTED_COPIES
SONG LABEL
SOURCE DEVICE RIGHTS MANAGER
810
815
SOURCE DEVICE SONG DATABASE
820
SOURCE DEVICE TYPE
TARGET DEVICE TYPE
SOURCE-TARGET REGISTRATION?
SOURCE AUDIO DEVICE
805

FIG. 8

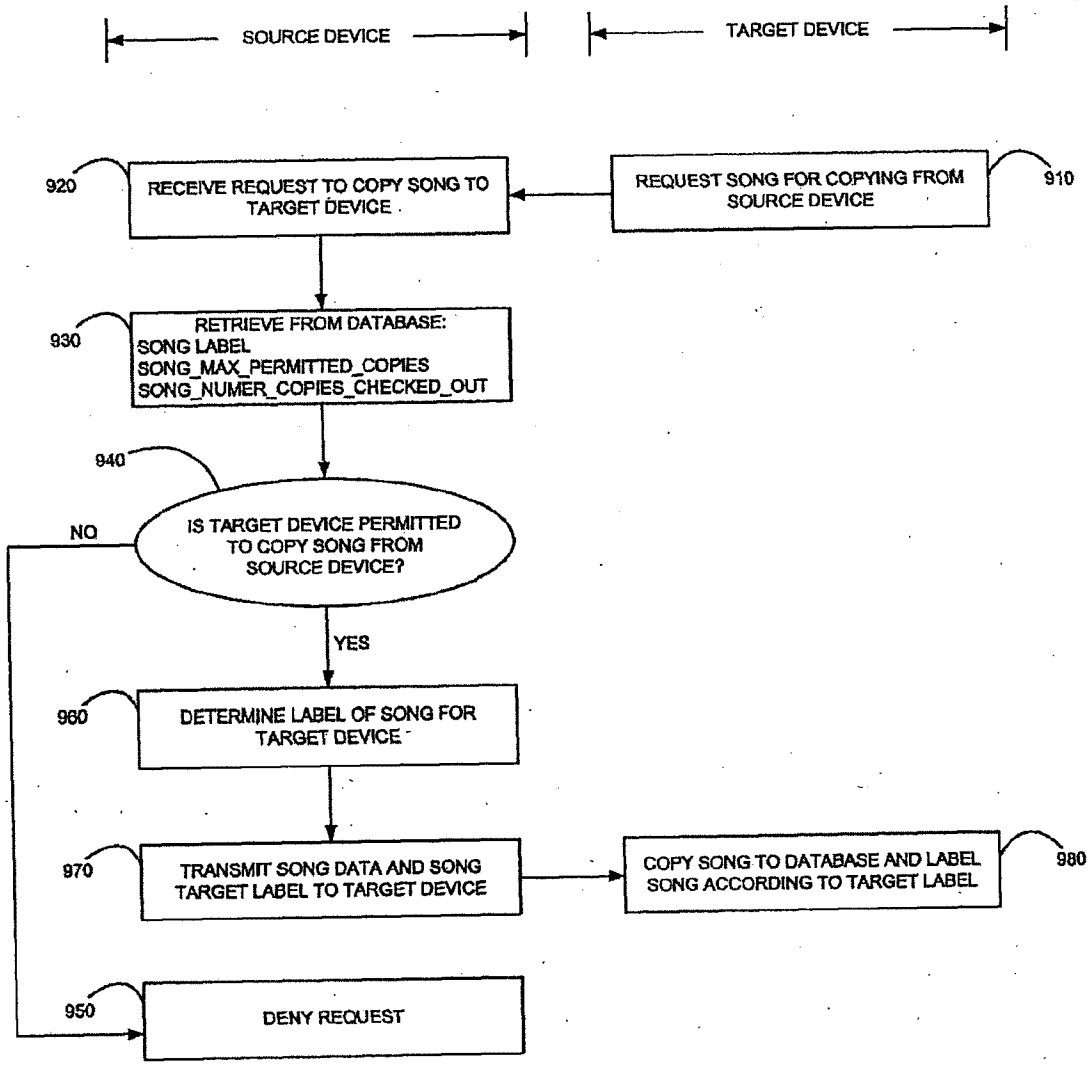
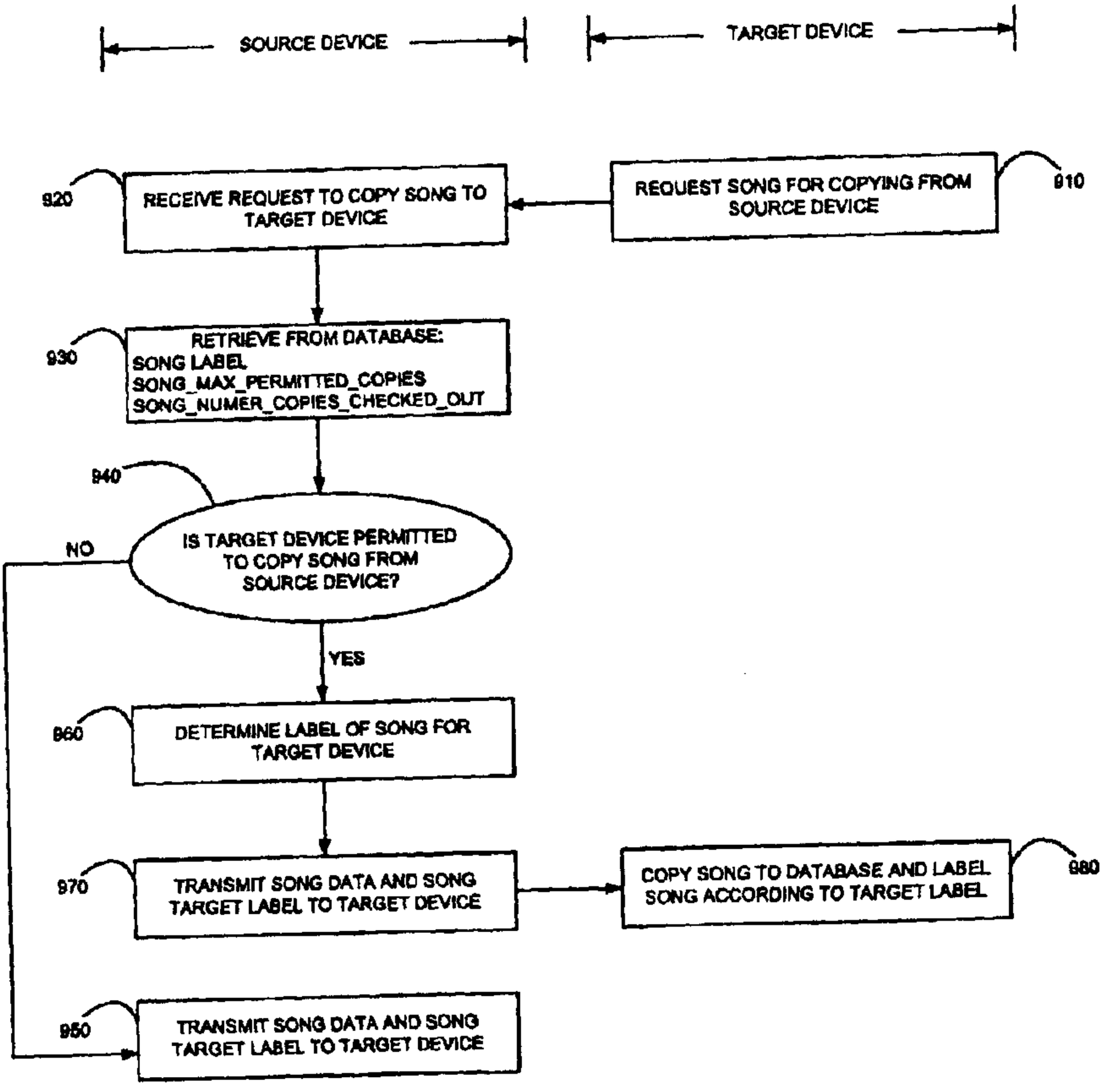

SOURCE DEVICE
TARGET DEVICE
920
RECEIVE REQUEST TO COPY SONG TO TARGET DEVICE
REQUEST SONG FOR COPYING FROM SOURCE DEVICE
910
930
RETRIEVE FROM DATABASE:
SONG LABEL
SONG_MAX_PERMITTED_COPIES
SONG_NUMER_COPIES_CHECKED_OUT
940
NO
IS TARGET DEVICE PERMITTED TO COPY SONG FROM SOURCE DEVICE?
YES
960
DETERMINE LABEL OF SONG FOR TARGET DEVICE
970
TRANSMIT SONG DATA AND SONG TARGET LABEL TO TARGET DEVICE
COPY SONG TO DATABASE AND LABEL SONG ACCORDING TO TARGET LABEL
980
950
DENY REQUEST

FIG. 9


SOURCE DEVICE
TARGET DEVICE
910
REQUEST SONG FOR COPYING FROM SOURCE DEVICE
920
RECEIVE REQUEST TO COPY SONG TO TARGET DEVICE
930
RETRIEVE FROM DATABASE:
SONG LABEL
SONG_MAX_PERMITTED_COPIES
SONG_NUMER_COPIES_CHECKED_OUT
940
IS TARGET DEVICE PERMITTED TO COPY SONG FROM SOURCE DEVICE?
NO
YES
960
DETERMINE LABEL OF SONG FOR TARGET DEVICE
970
TRANSMIT SONG DATA AND SONG TARGET LABEL TO TARGET DEVICE
980
COPY SONG TO DATABASE AND LABEL SONG ACCORDING TO TARGET LABEL
950
TRANSMIT SONG DATA AND SONG TARGET LABEL TO TARGET DEVICE