



US007205471B2

(12) **United States Patent**
Looney et al.

(10) **Patent No.:** **US 7,205,471 B2**
(45) **Date of Patent:** **Apr. 17, 2007**

(54) **MEDIA ORGANIZER AND ENTERTAINMENT CENTER**

(56) **References Cited**

U.S. PATENT DOCUMENTS

(75) Inventors: **Brian M. Looney**, Lexington, MA (US); **Evan Lampros**, Bridgewater, MA (US); **Howard Hull**, Attleboro, MA (US)

(73) Assignee: **Looney Productions, LLC**, Lexington, MA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **11/123,462**

(22) Filed: **May 6, 2005**

(65) **Prior Publication Data**

US 2005/0201254 A1 Sep. 15, 2005

Related U.S. Application Data

(63) Continuation of application No. 09/951,040, filed on Sep. 12, 2001, now Pat. No. 6,953,886, which is a continuation-in-part of application No. 09/855,858, filed on May 15, 2001, now abandoned, which is a continuation of application No. 09/419,559, filed on Oct. 18, 1999, now Pat. No. 6,232,539, which is a continuation of application No. 09/098,843, filed on Jun. 17, 1998, now Pat. No. 5,969,283.

(51) **Int. Cl.**

G10H 7/00 (2006.01)

G10H 1/18 (2006.01)

G10H 1/00 (2006.01)

G10H 1/38 (2006.01)

(52) **U.S. Cl.** **84/615**; 84/612; 369/30.08

(58) **Field of Classification Search** 84/615, 84/653, 601, 602, 609-614, 633-640, 477 R, 84/478, DIG. 6; 434/307 R, 307 A; 380/30, 380/49, 50, 53, 269; 705/52, 57; 369/30.09, 369/30.08

See application file for complete search history.

(Continued)

Primary Examiner—Jeffrey W Donels

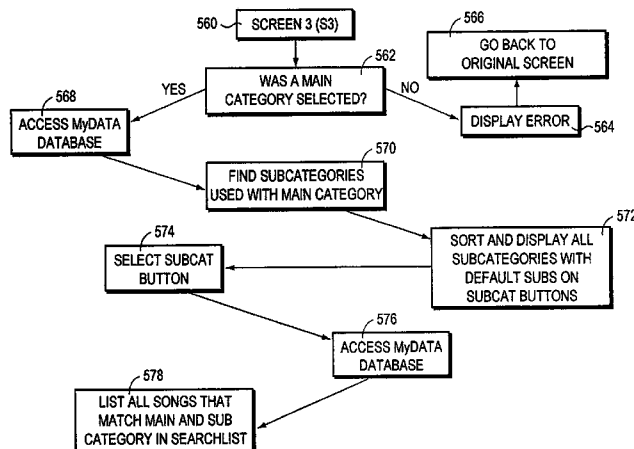
(74) *Attorney, Agent, or Firm*—Cesari and McKenna, LLP

(57)

ABSTRACT

A media organizer and entertainment center includes an importer for importing individual media/data selections and automatically assigning each selection at least one associated category flag pursuant to predetermined or user defined criteria. The center also includes a storage device for storing compressed data corresponding to the plurality of individual media/data selections and the associated category flags and a retriever for retrieving selections from the storage device based upon user selection of one or more of the associated category flags, and a data decompressor that translates the compressed data into playable digital or audio media data. With the center, playable digital or audio media data can be advantageously transported, organized, played or recorded through or on a variety of products or devices.

49 Claims, 64 Drawing Sheets



U.S. PATENT DOCUMENTS

5,557,541 A	9/1996	Schulhof et al.	5,959,945 A	9/1999	Kleiman	
5,592,511 A	1/1997	Schoen et al.	6,243,725 B1	6/2001	Hempleman et al.	
5,633,839 A	5/1997	Alexander et al.	6,292,440 B1	9/2001	Lee	
5,734,119 A	3/1998	France et al.	6,763,345 B1	7/2004	Hemplemant et al.	
5,739,451 A	4/1998	Winsky et al.	6,813,711 B1	11/2004	Dimenstein	
5,740,134 A	4/1998	Peterson	6,933,433 B1 *	8/2005	Porteus et al.	84/615
5,781,889 A	7/1998	Martin et al.	6,993,532 B1 *	1/2006	Platt et al.	707/102
5,864,868 A	1/1999	Contois	7,022,905 B1 *	4/2006	Hinman et al.	84/609
5,882,262 A	3/1999	Ballhorn	2002/0037083 A1 *	3/2002	Weare et al.	381/58

* cited by examiner

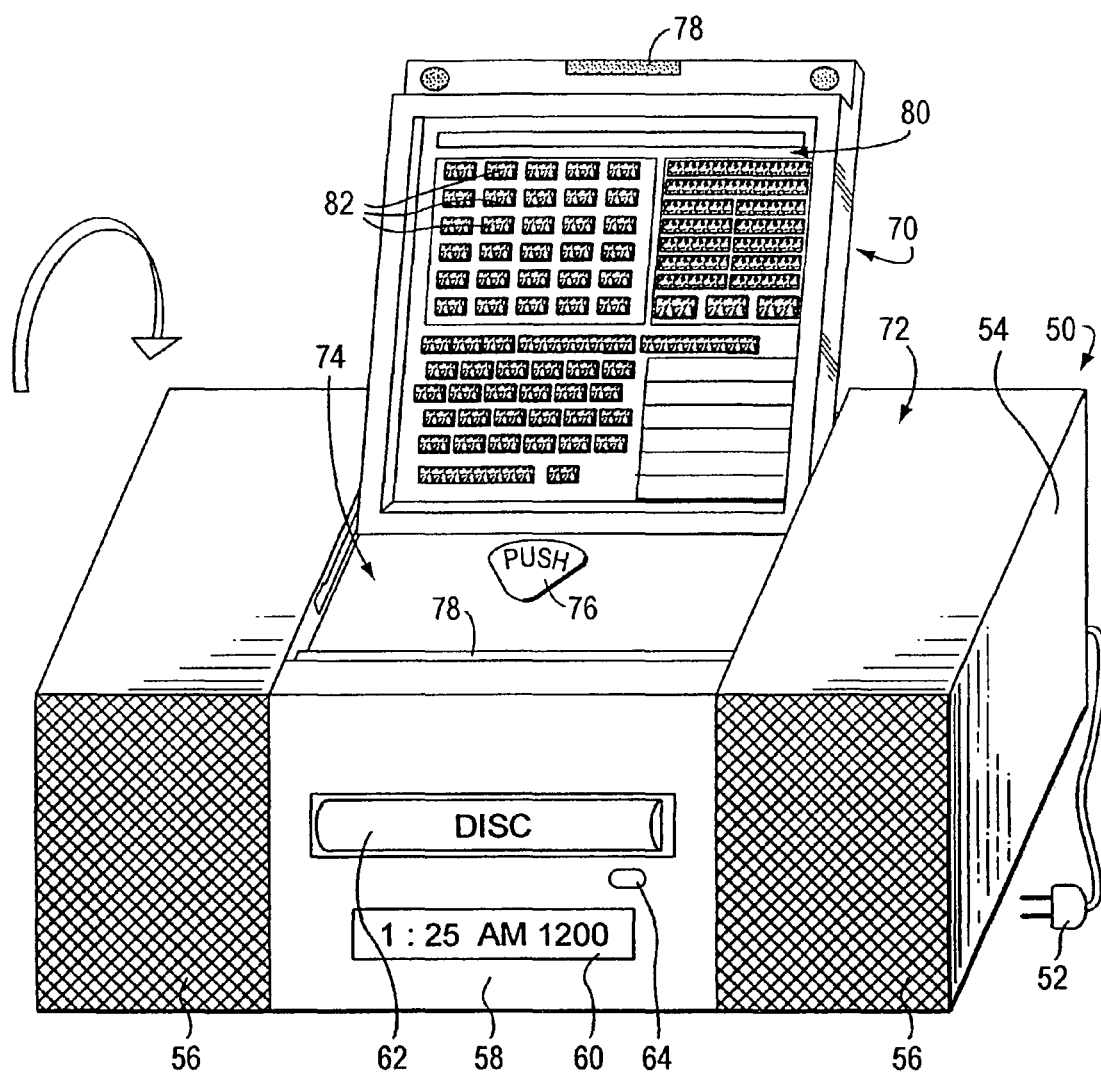


FIG. 1

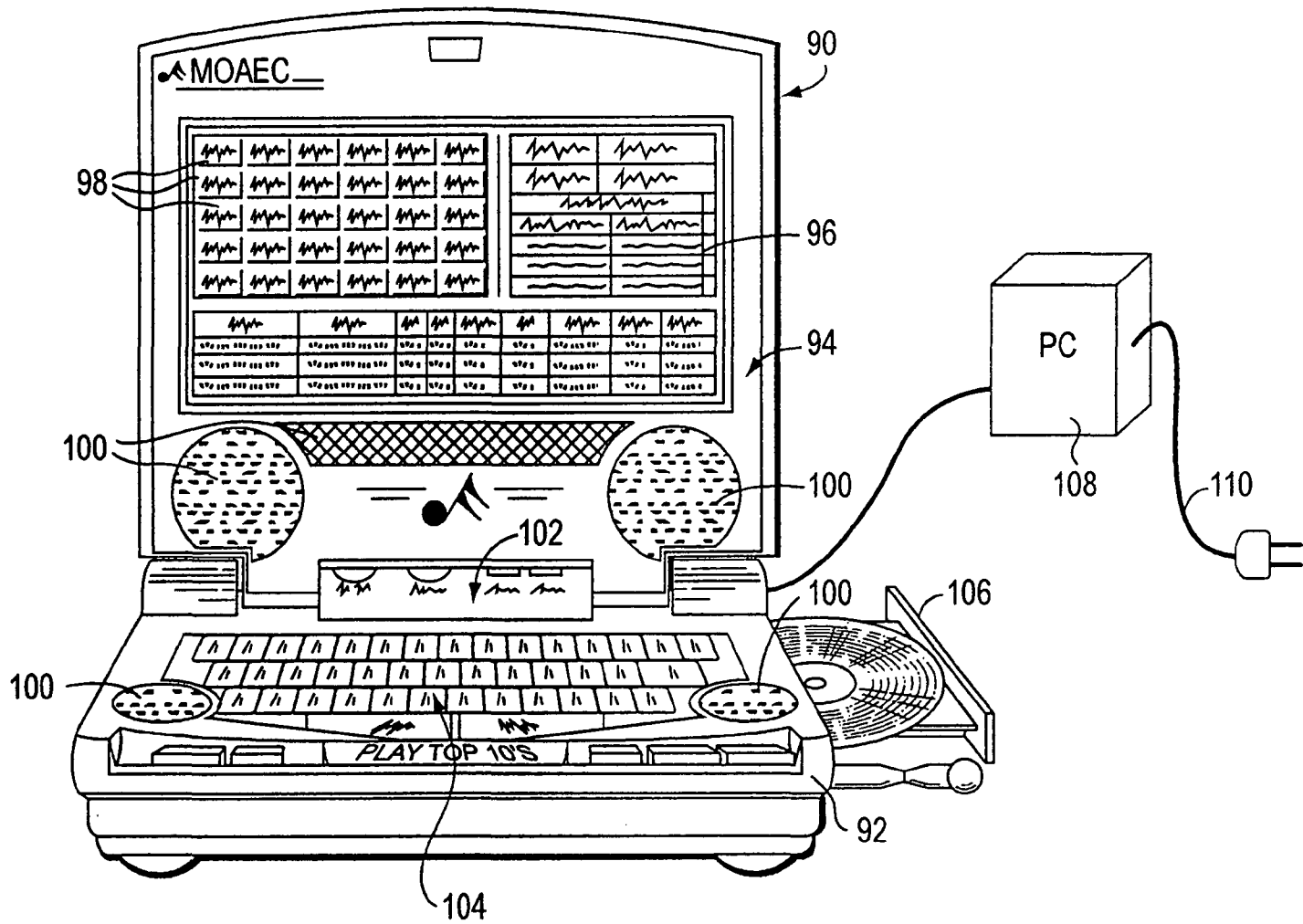


FIG. 2

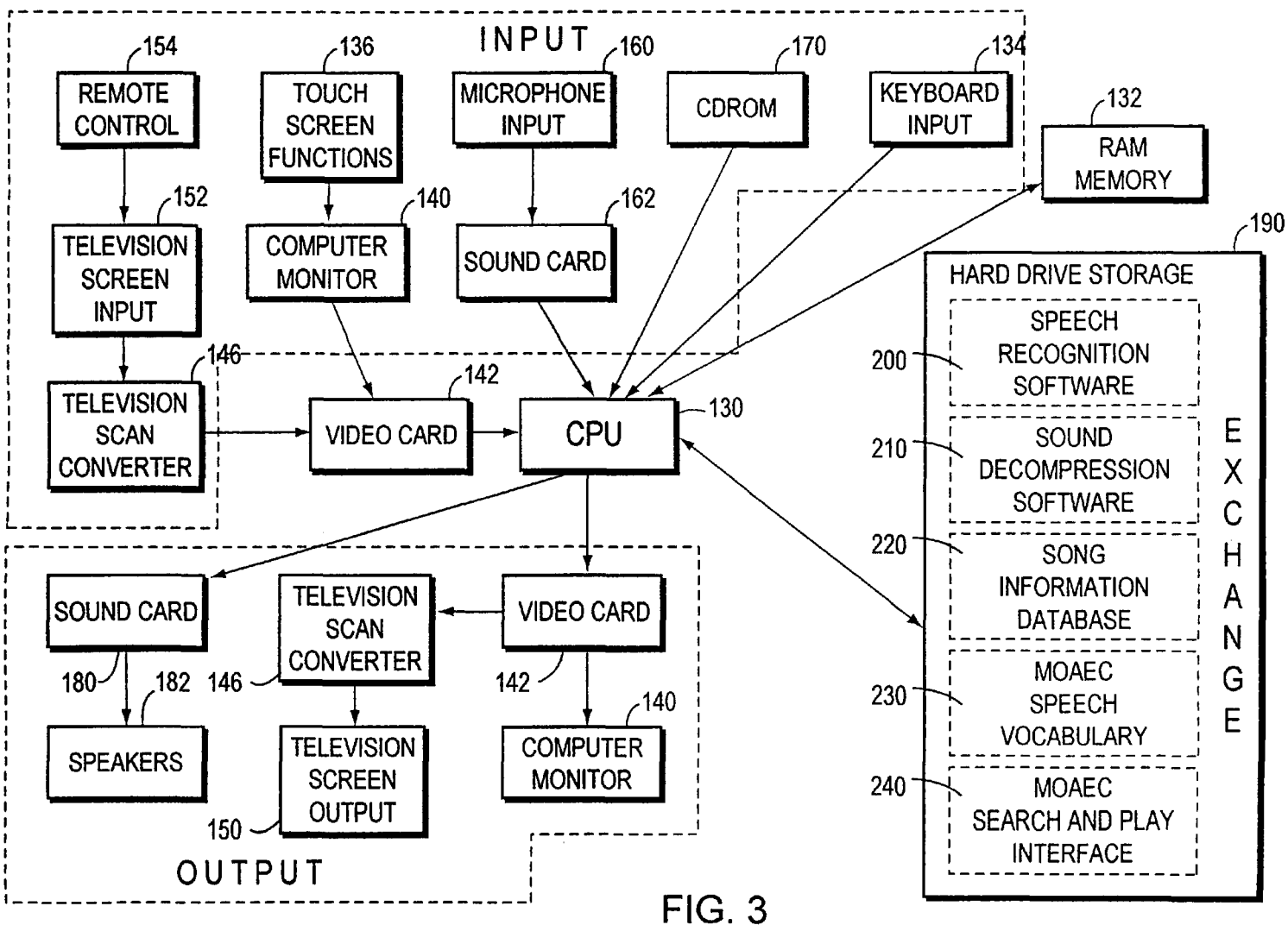


FIG. 3

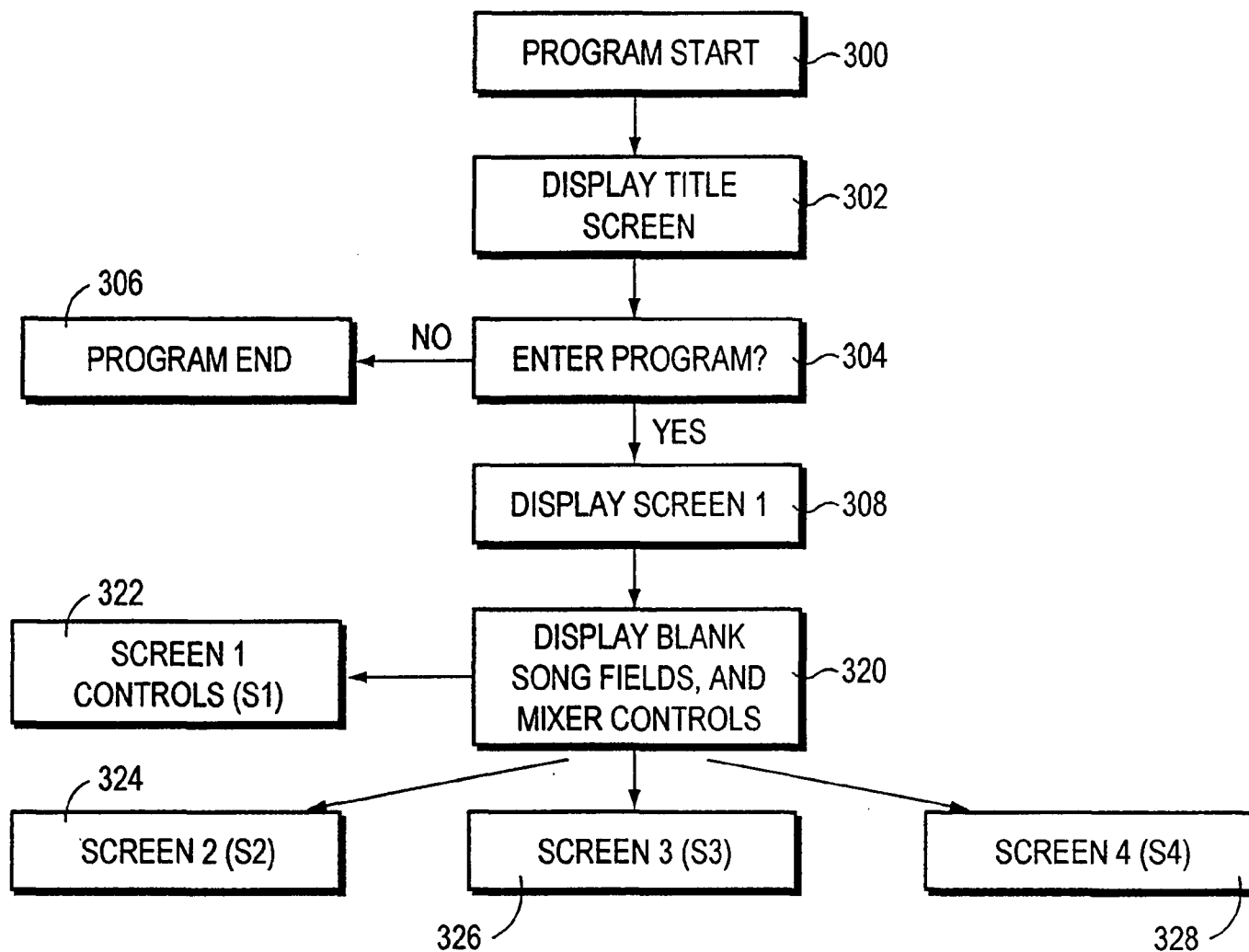


FIG. 4

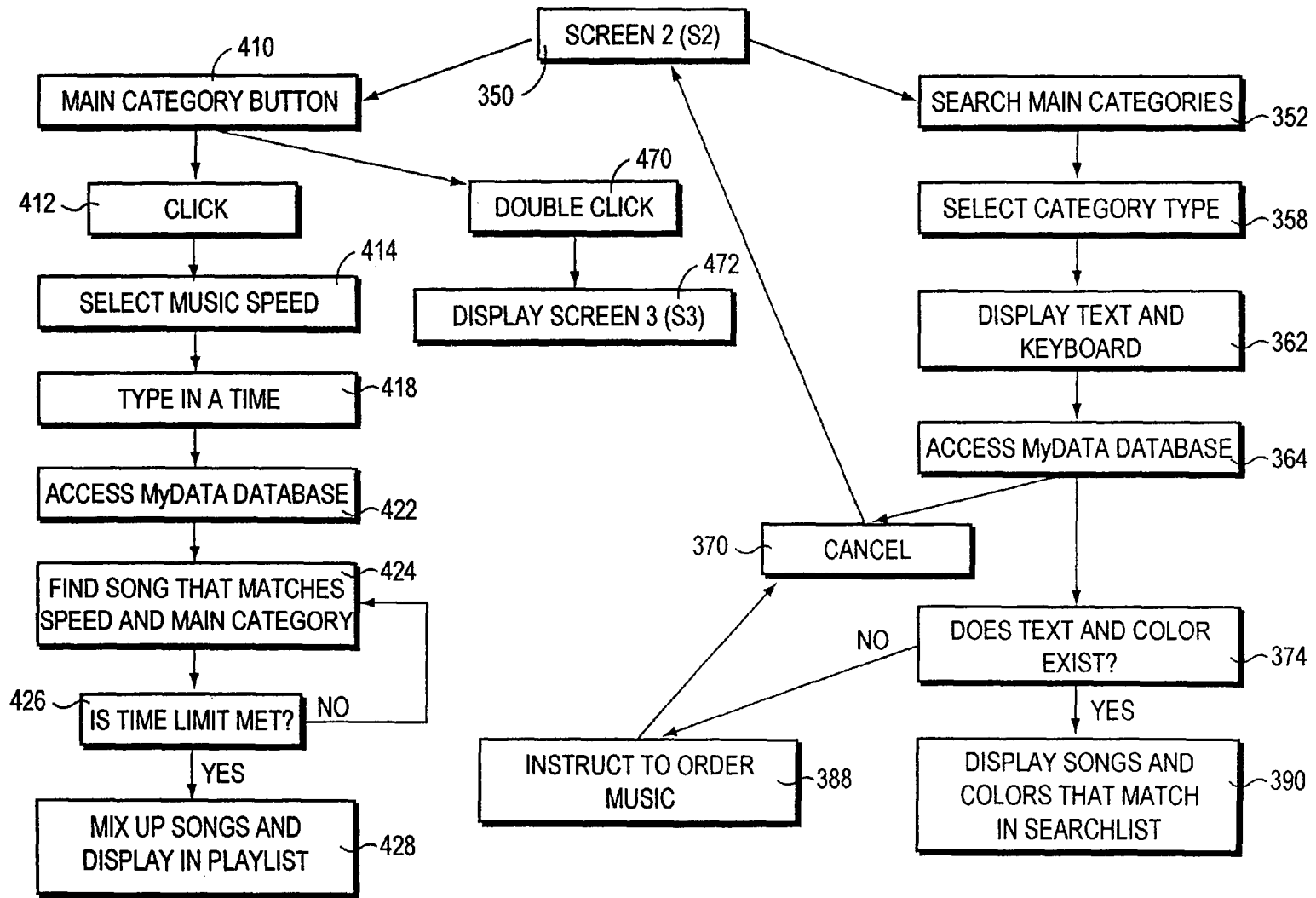


FIG. 5

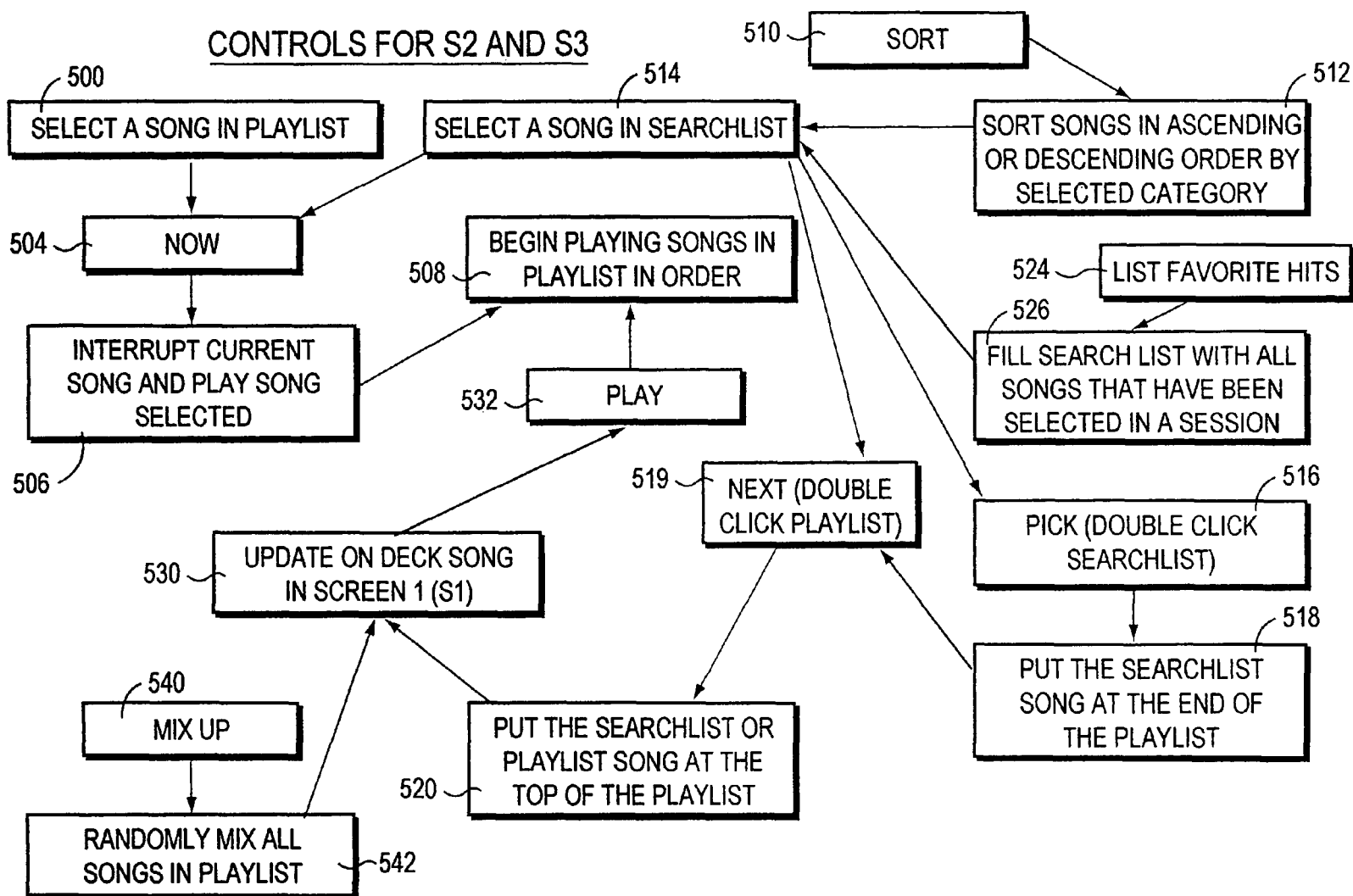


FIG. 6

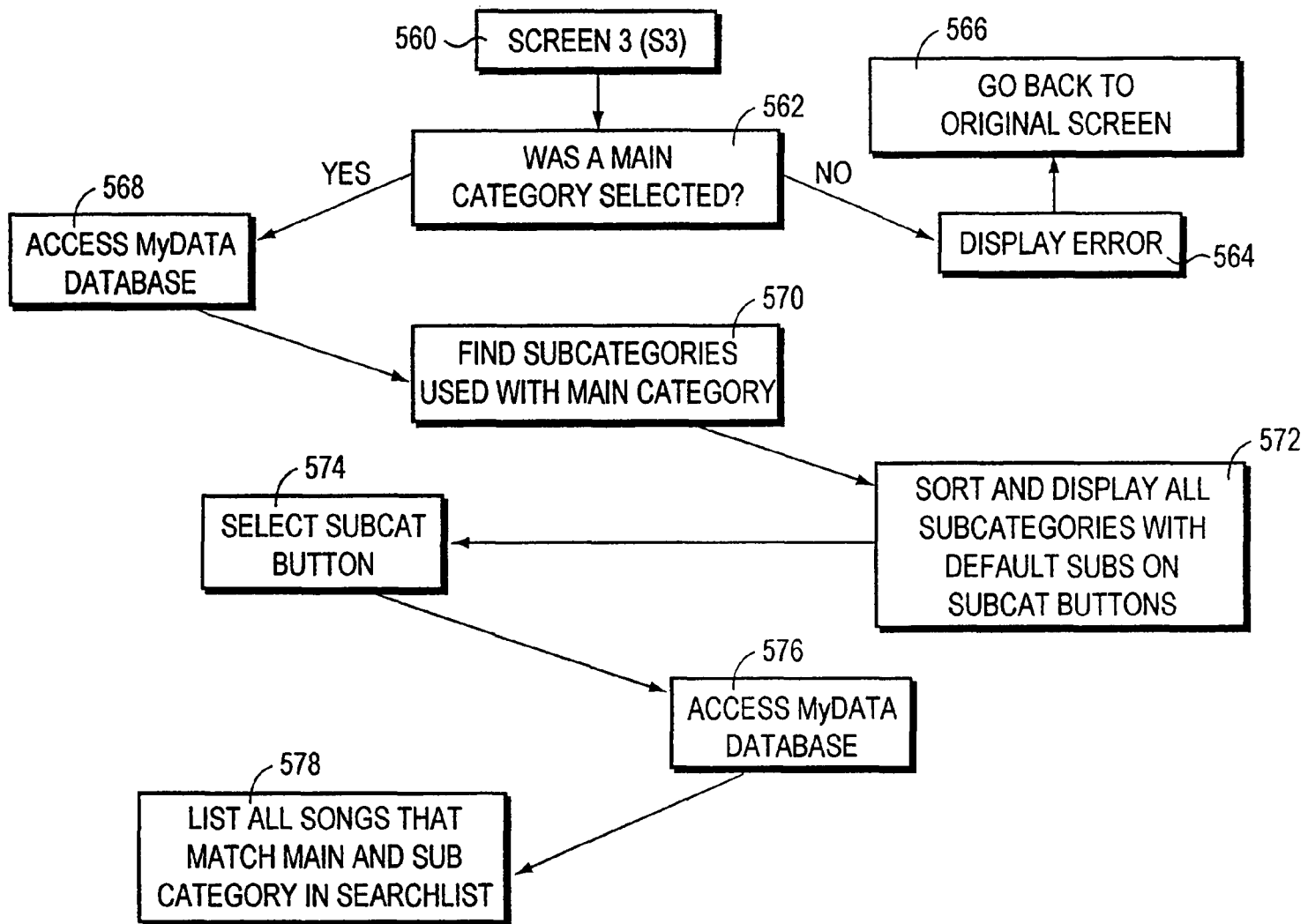


FIG. 7

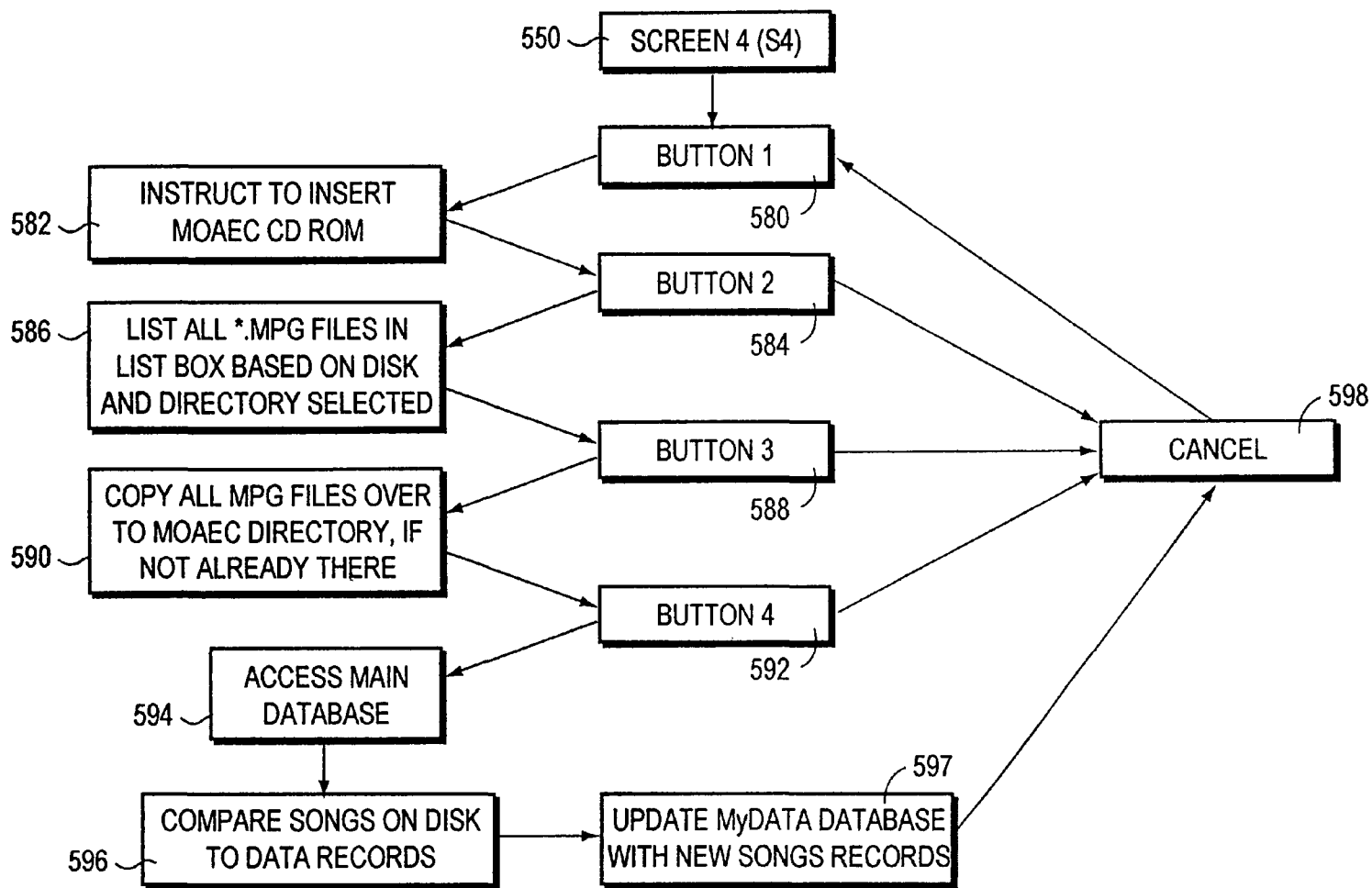


FIG. 8

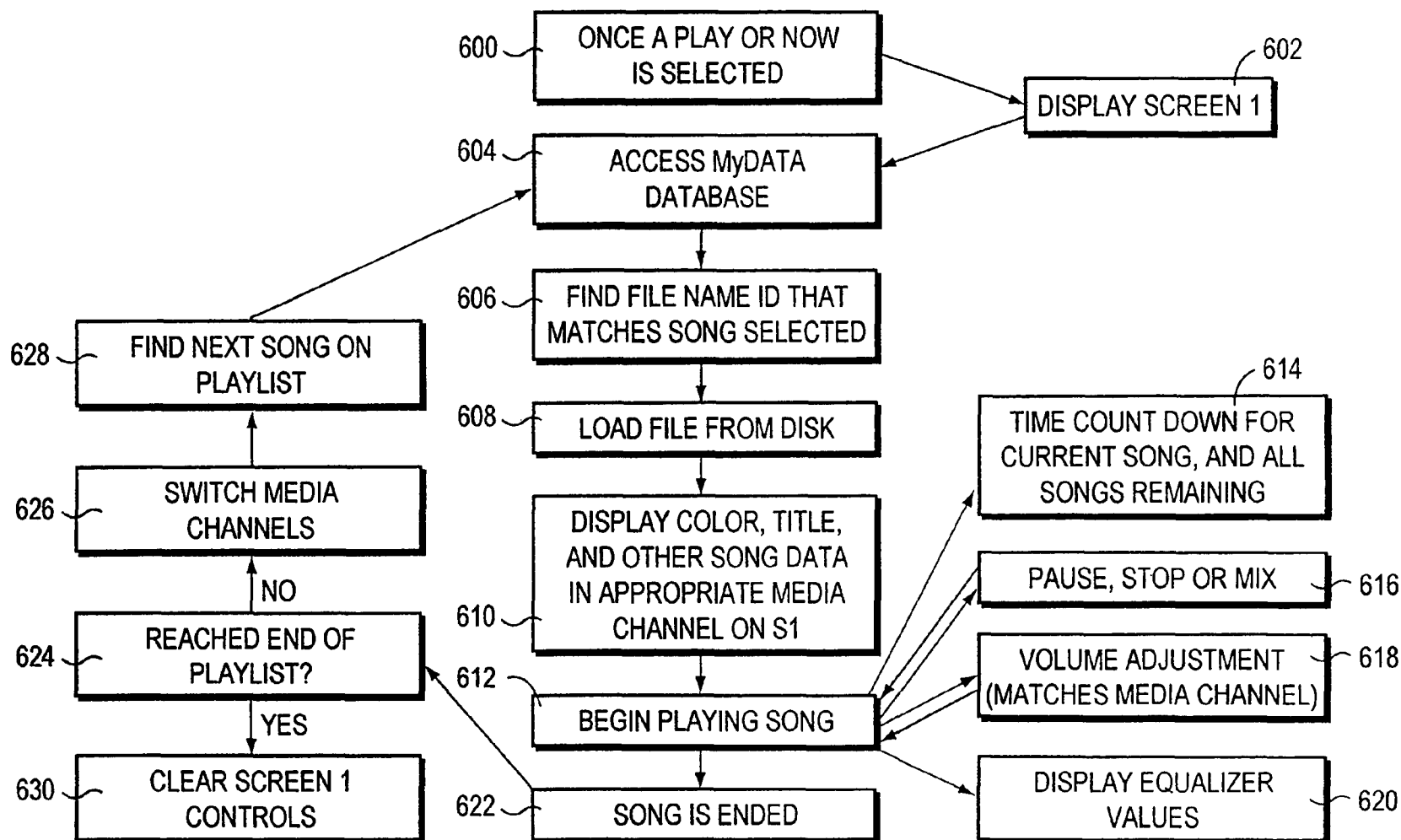


FIG. 9

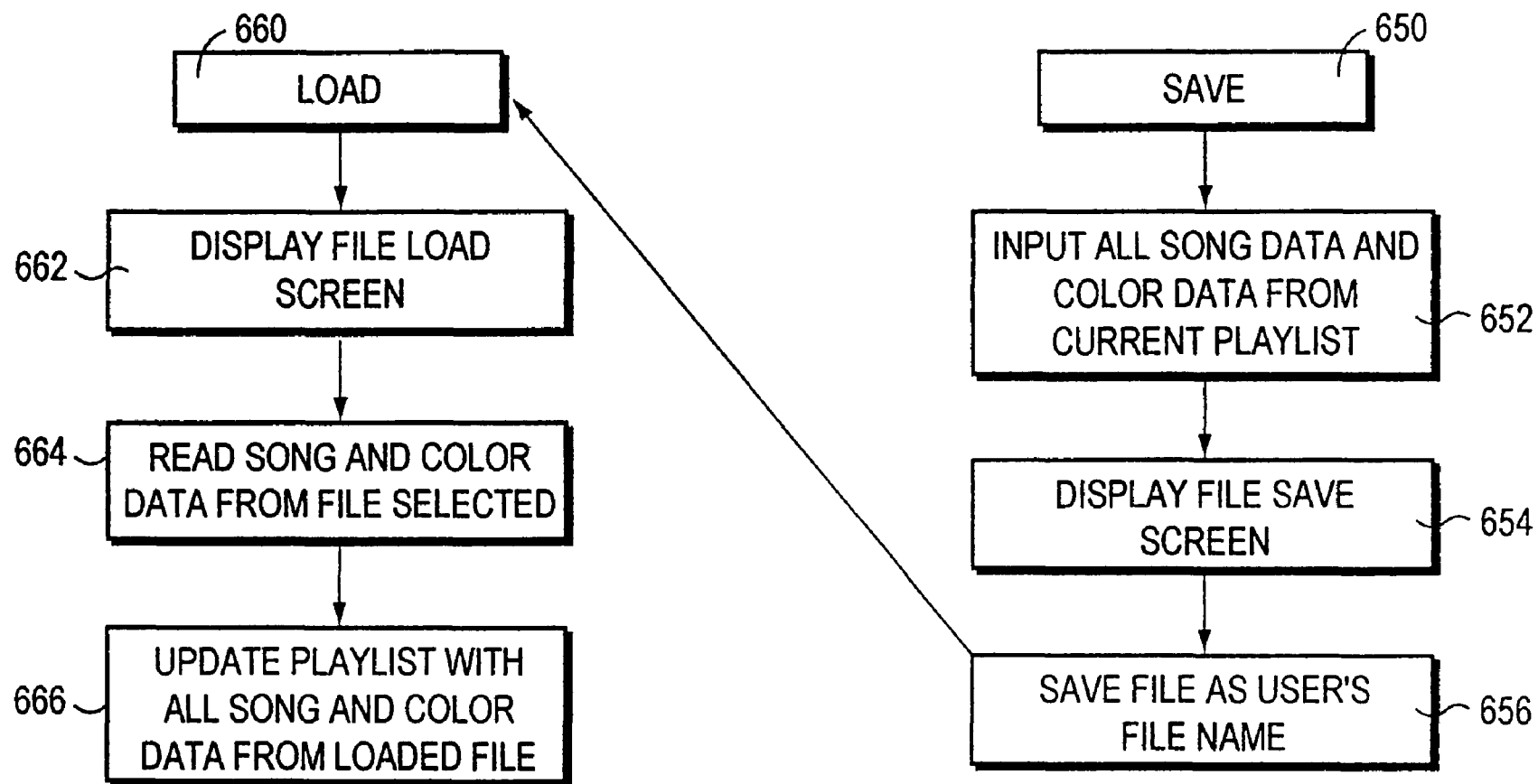
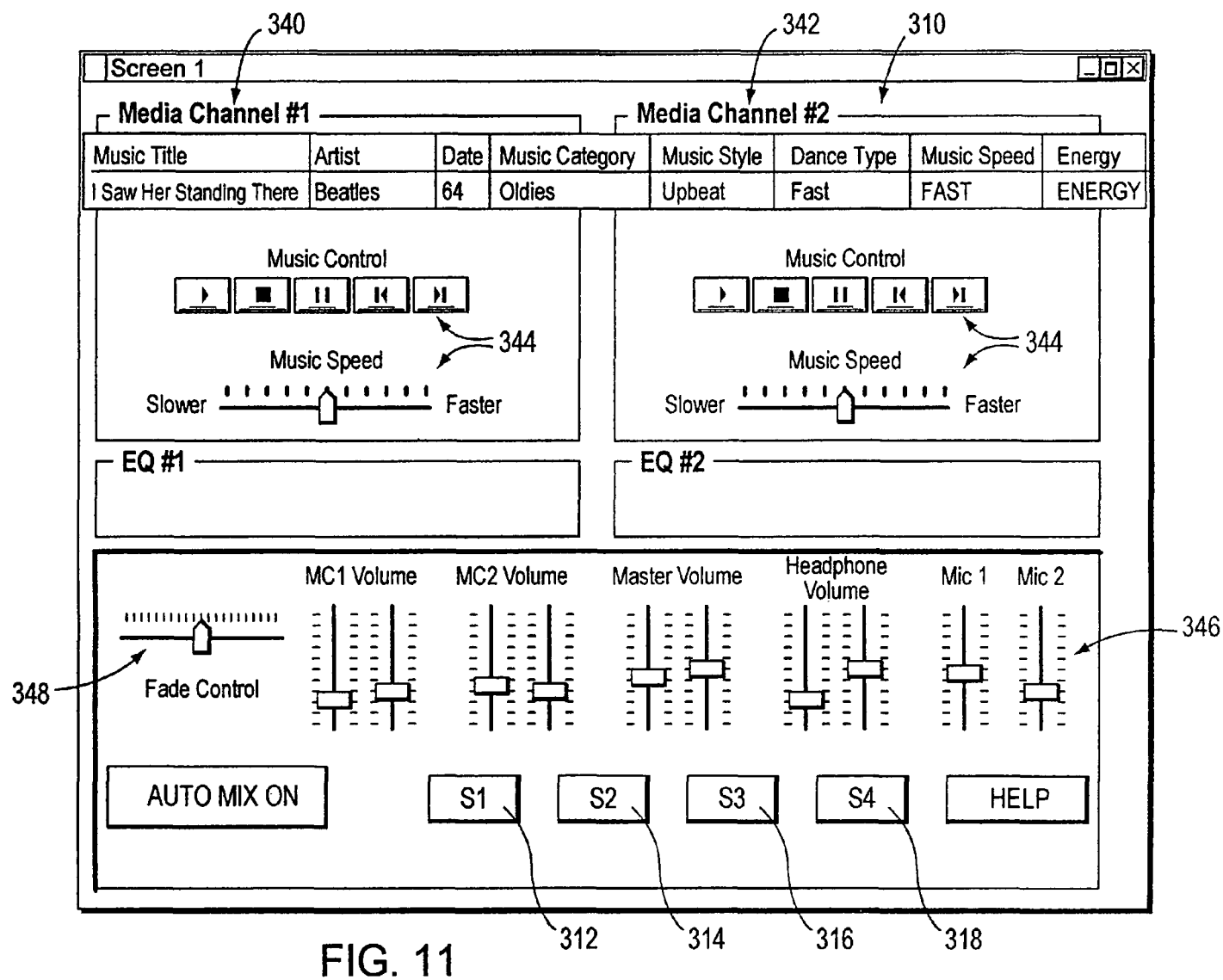
SAVING AND LOADING
PLAYLIST

FIG. 10



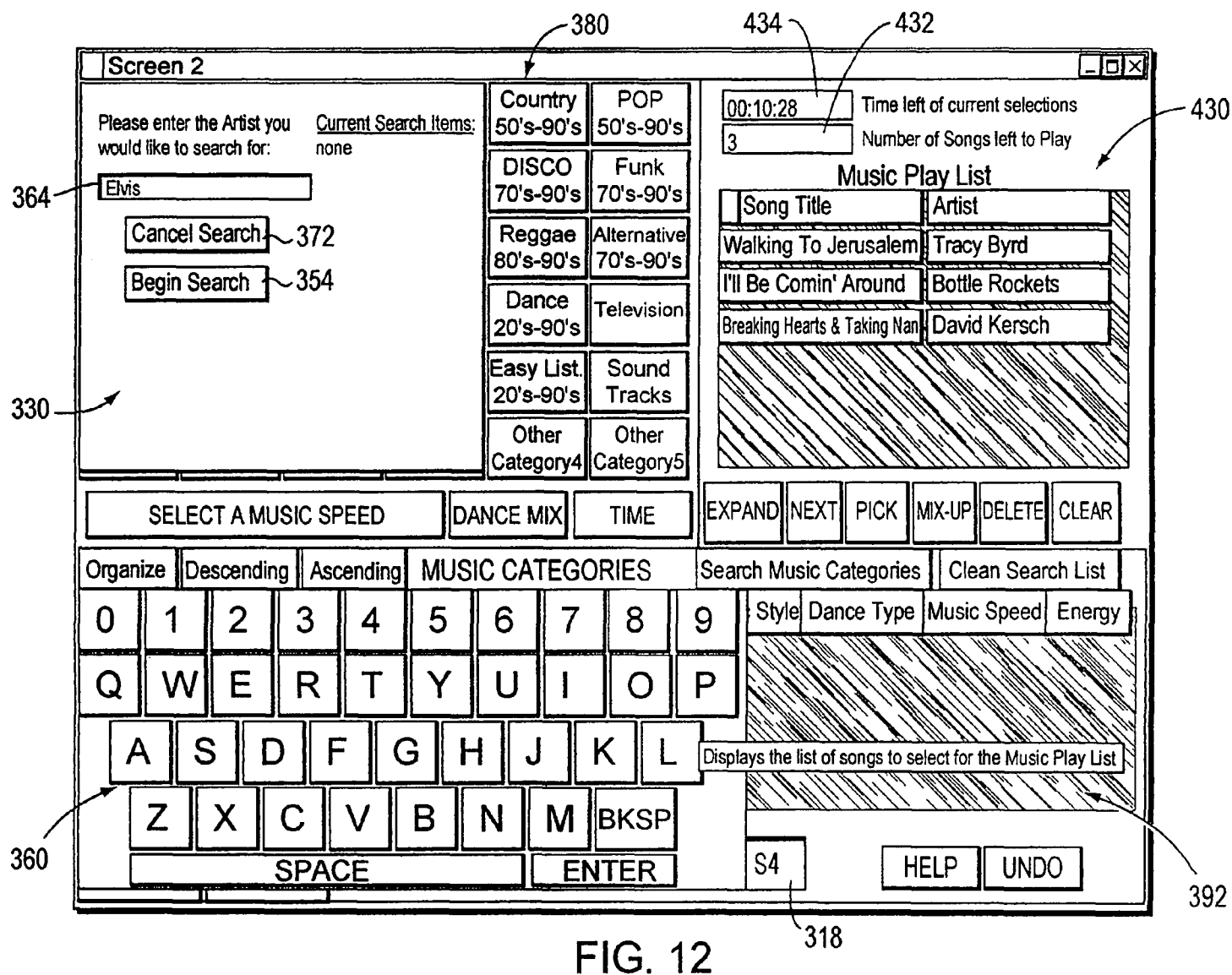


FIG. 12

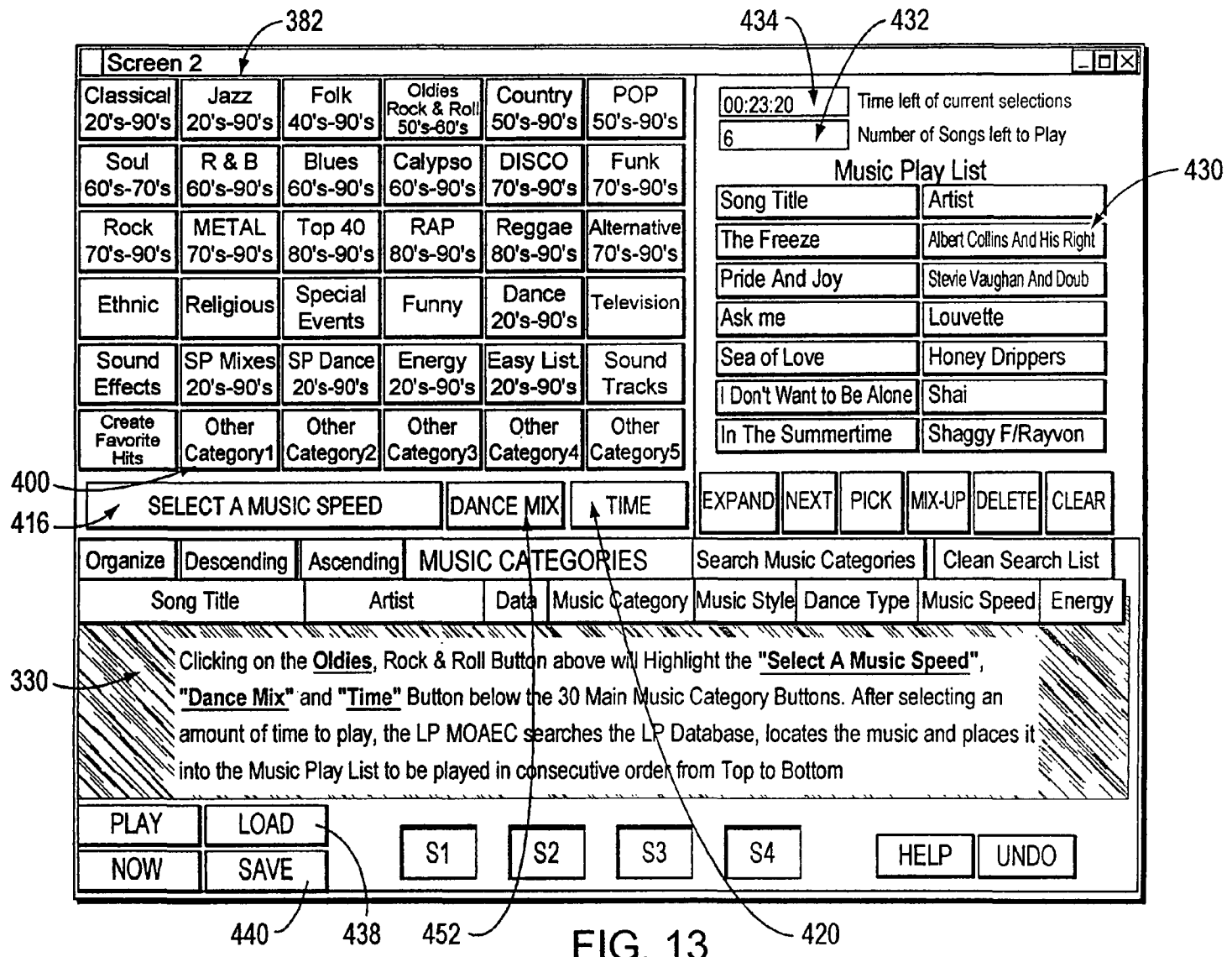


FIG. 13

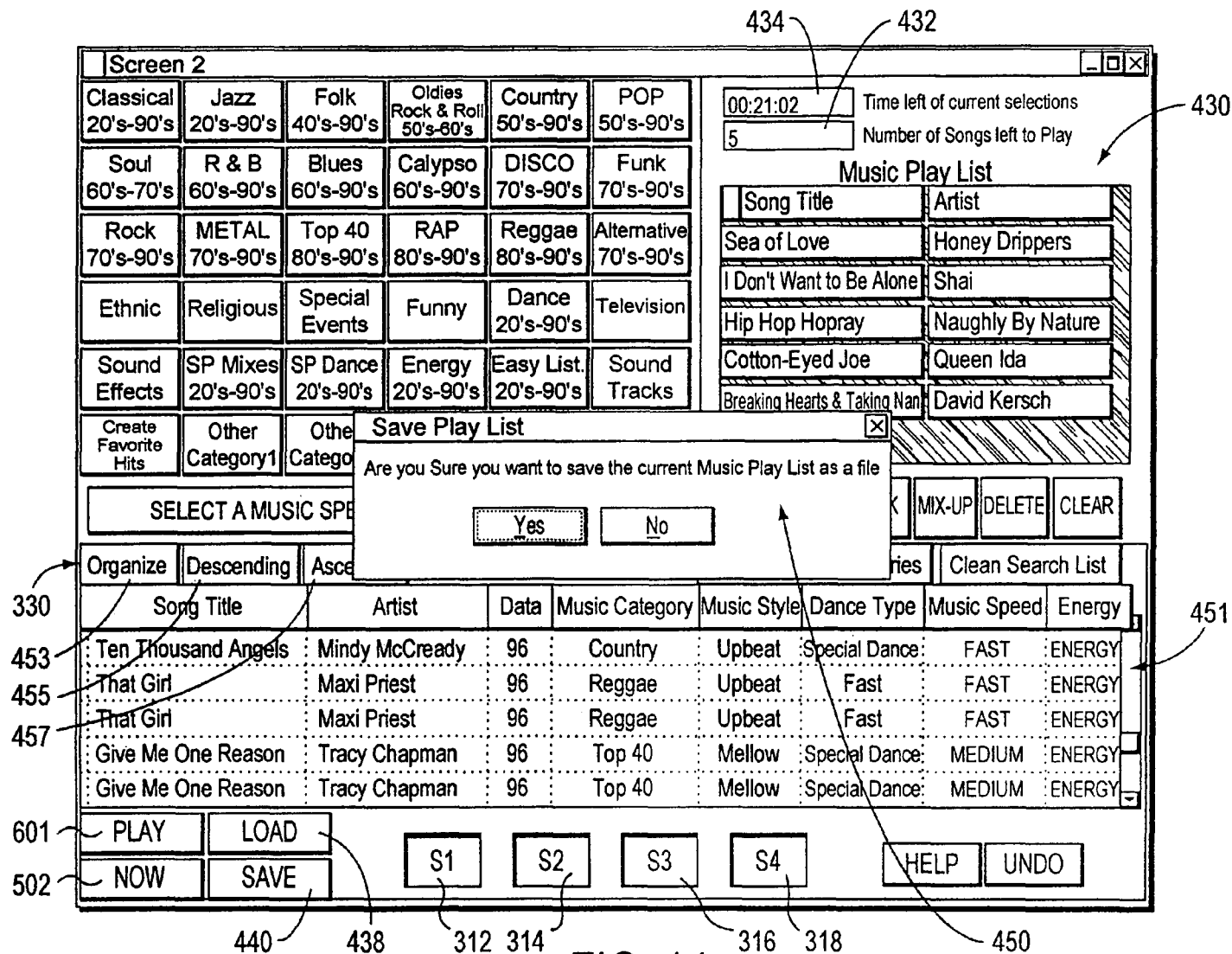


FIG. 14

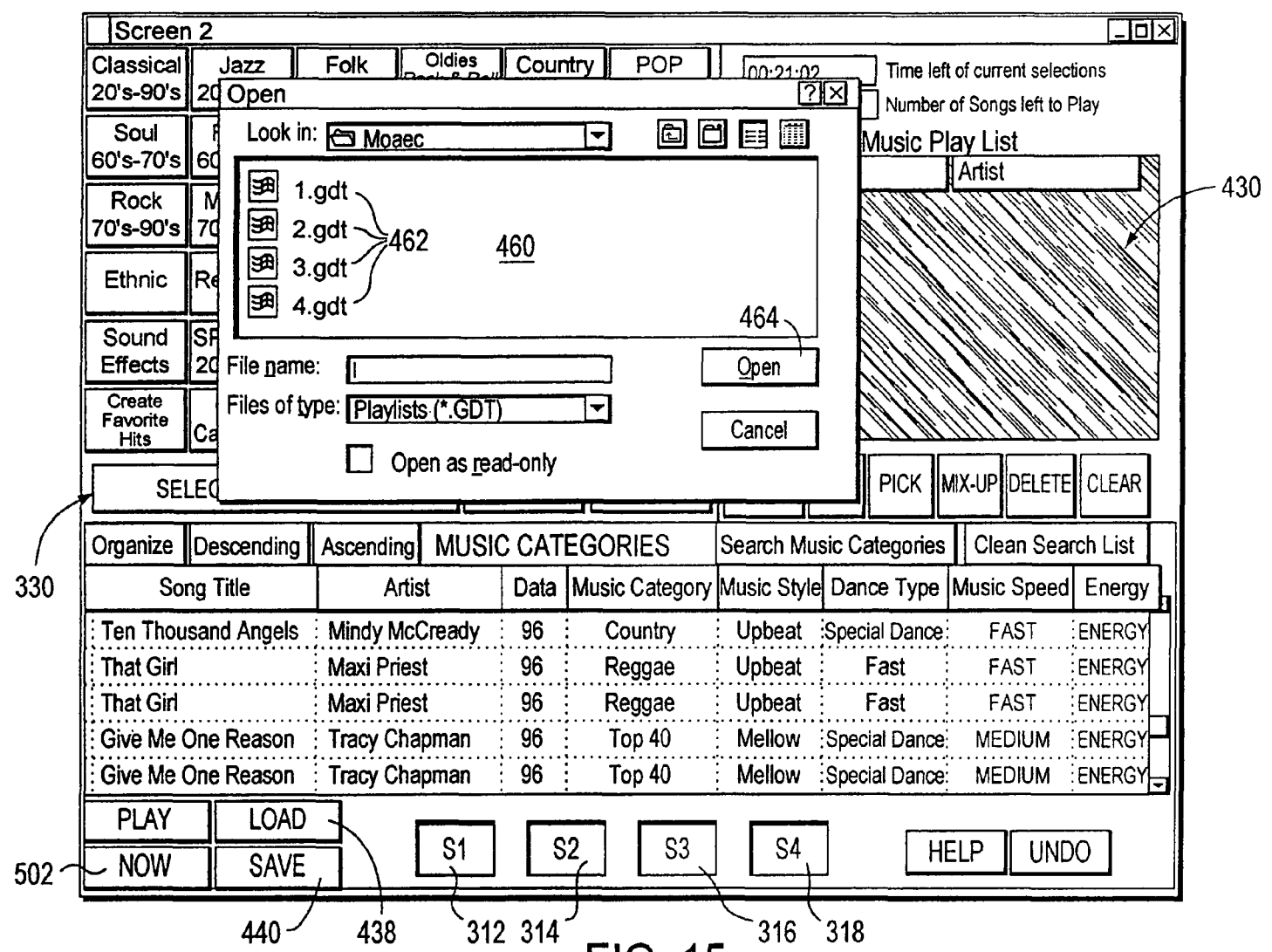


FIG. 15

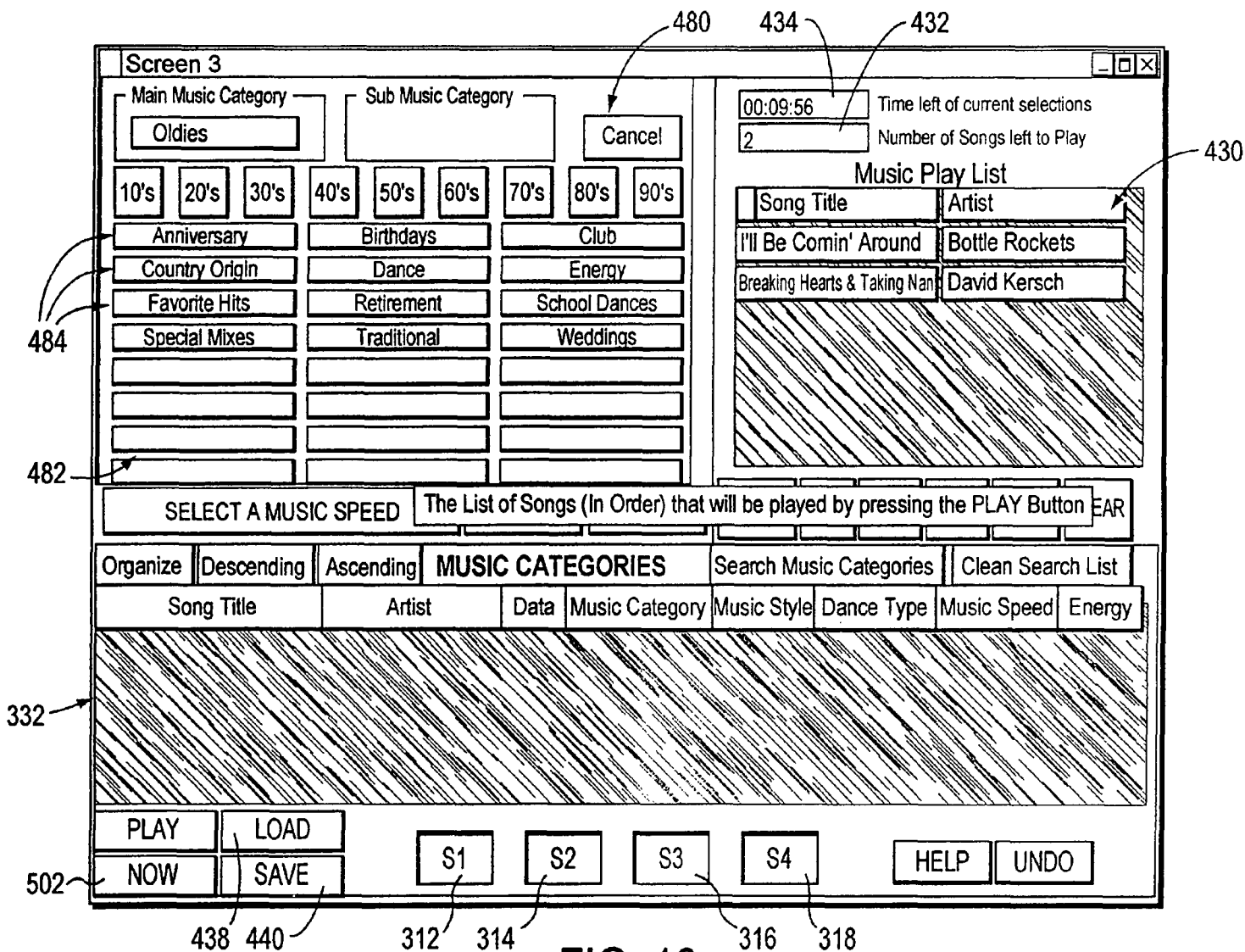


FIG. 16

336

Test	ID	DiskN	SongNum	Title	Artist	Mstyle	Dtype	Spe	Time	En	T
OK	2	RH34	3416	1979	Smashing Pumpkin	UP		M	260		A
OK	3	RU14	10	1979 (Vocal Mix)	Smashing Pumpkin	UP		M	310		A
OK	5	T327	11	A Little Bit Me. A Little	Specials	UP		M	211		F
OK	6	T317	11	Aeroplane	Red Hot Chili Peppe	UP	FAST D	F	251		A
OK	11	RH36	3607	Big Me	Foo Fighters	UP	MELLO	UP	133		A
OK	12	T319	13	Big Me	Foo Fighters	UP	MELLO	UP	133		A
OK	13	T319	10	Bing Bang Baby	Stone Temple Pilots	UP		F	203		A
OK	15	T320	15	Bluster	Salt	UP		M	194		C
OK	16	T314	16	Brother	Toad The Wet Spro	MEL		M	237		A
OK	17	RH38	06	But Anyway (Studio E	Blues Traveler	MEL		M	179		A
OK	19	RH36	3618	Champagne Super No	Oasis	MEL		M	304		A
OK	20	T317	13	Champagne Super No	Oasis	MEL		M	301		A
OK	22	T322	04	Charms (Radio Remix	Philosopher Kings	UP		M	247		A
OK	23	RH35	3508	Closer to Free	Bodeans	UP	FAST D	F	191	EN	A
OK	24	T322	13	Common People (7 B	Pulp	UP	FAST D	F	249		A
OK	25	RH37	3702	Counting Blue Cars	Dishwalla	UP		M	263	EN	A
OK	26	T319	15	Counting Blue Cars (E	Dishwalla	UP		M	263	EN	A
OK	28	T325	17	Dangerous Type	Letters To Cleo	UP	FAST D	F	194		A
OK	31	T350	14	Don't Speak	No Doubt	UP		M	252		A
OK	34	RH35	3502	Everything Falls Apart	Dog's Eve View	UP		F	227	EN	A
F/OK	35	T318	17	Flood	Jars Of Clay	UP		F	196		A
F/OK	36	RH36	3614	Flood	Jars Of Clay	UP		F	197		A
OK	37	RH35	3513	Follow You Down	Gin Blossoms	UP		F	226	EN	A
OK	38	T313	11	Follow You Down	Gin Blossoms	UP		F	225	EN	A
OK	40	T334	11	Free To Decide	Cranberries	MEL		M	265	EN	A
OK	41	RH38	03	Free To Decide	Cranberries	MEL		M	265	EN	A
F/OK	43	T323	18	Girl Don't Tell Me	Fuzzy	UP		F	148		A
F/OK	44	T324	03	God Only Knows	Nylons	UP		M	211	EN	F

Record 1 of 2285

FIG. 17

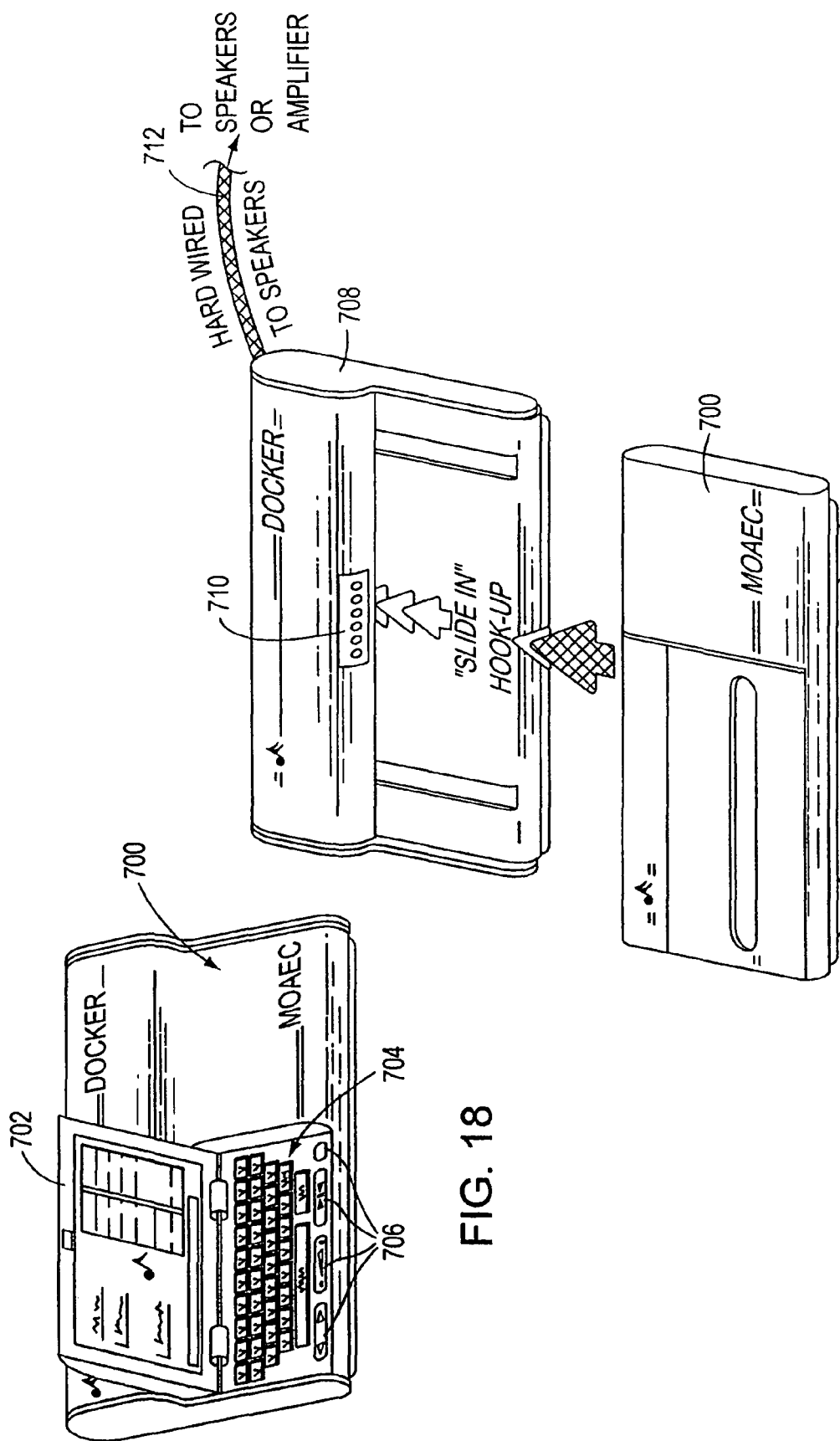


FIG. 19

FIG. 18

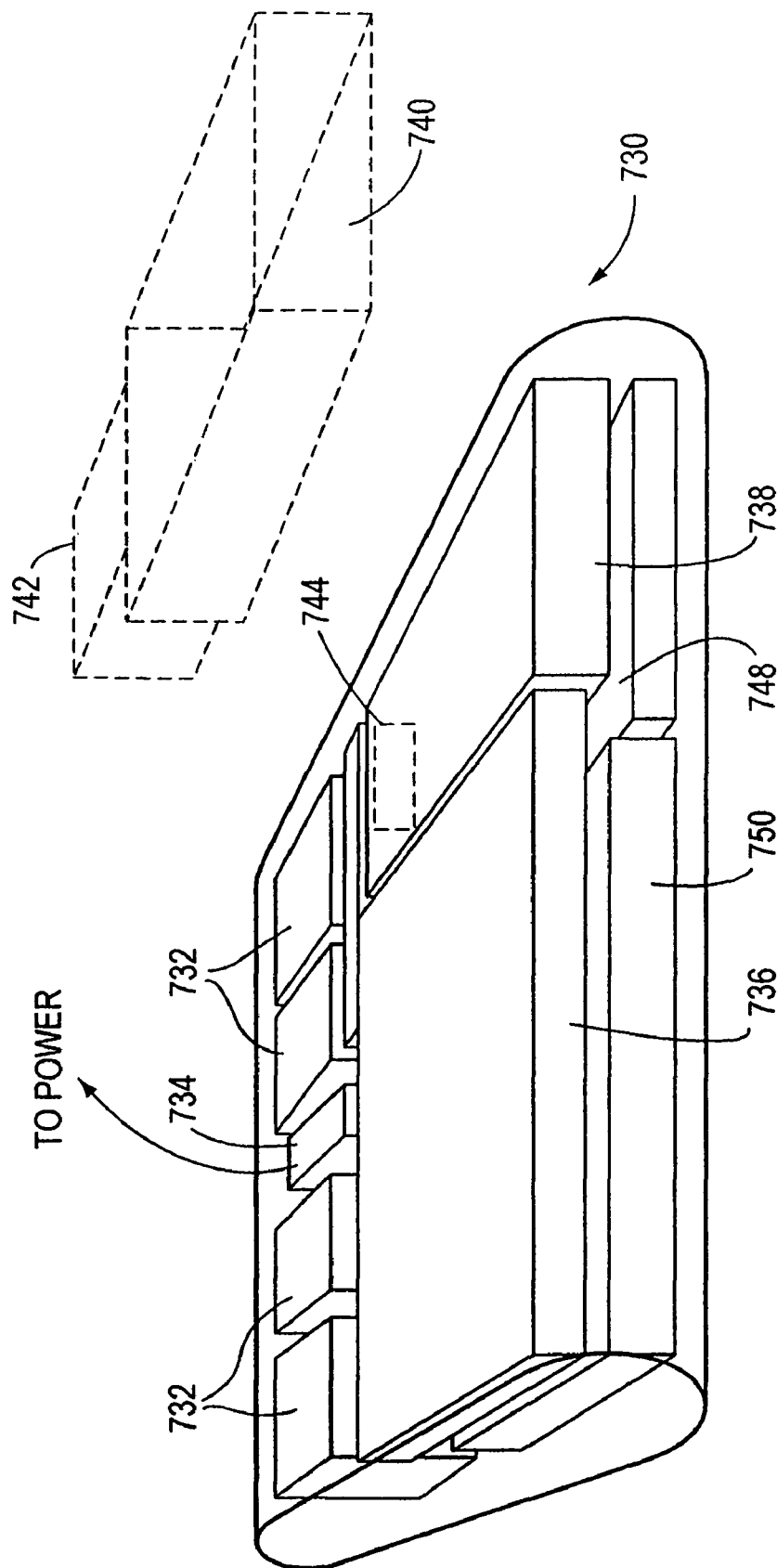
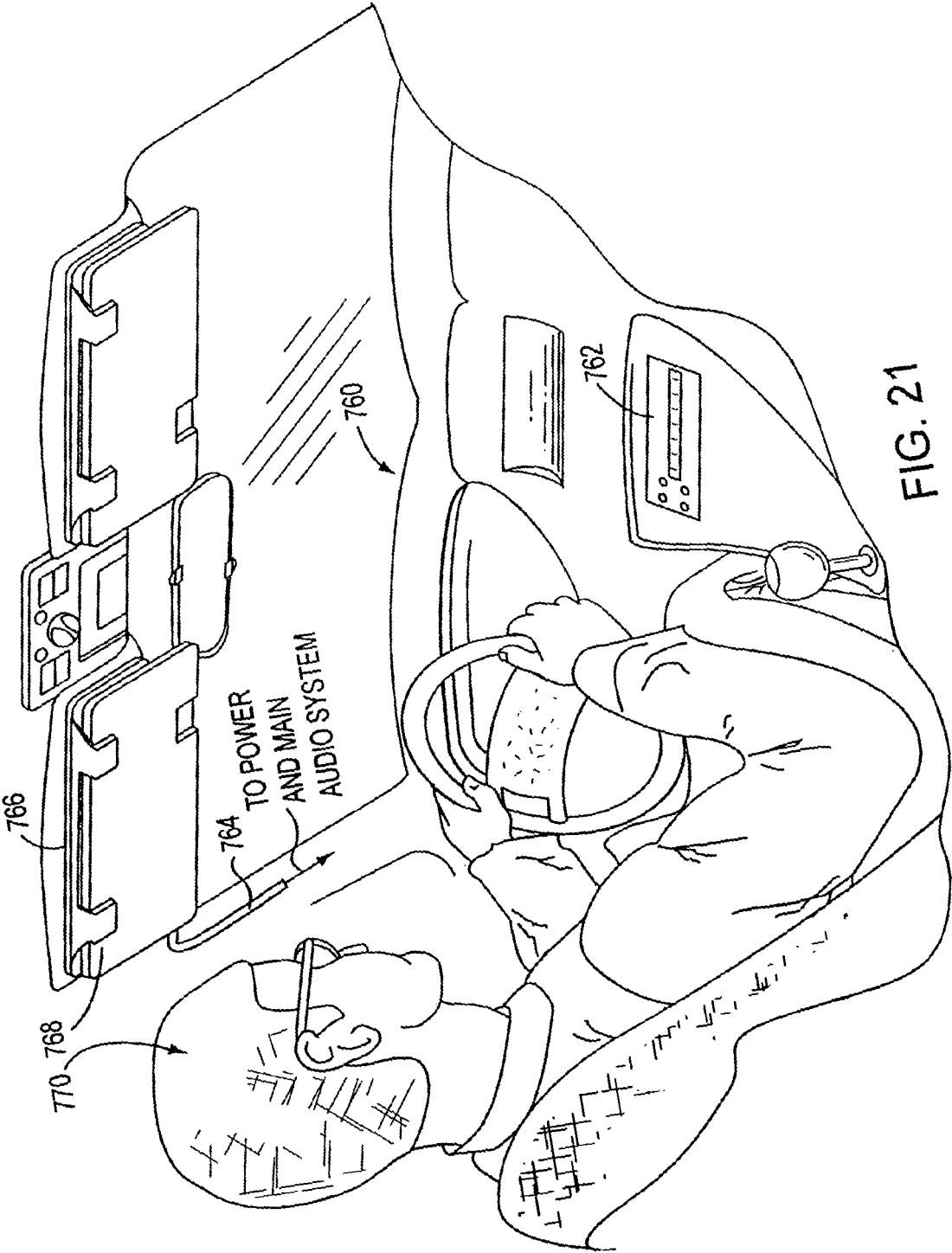


FIG. 20



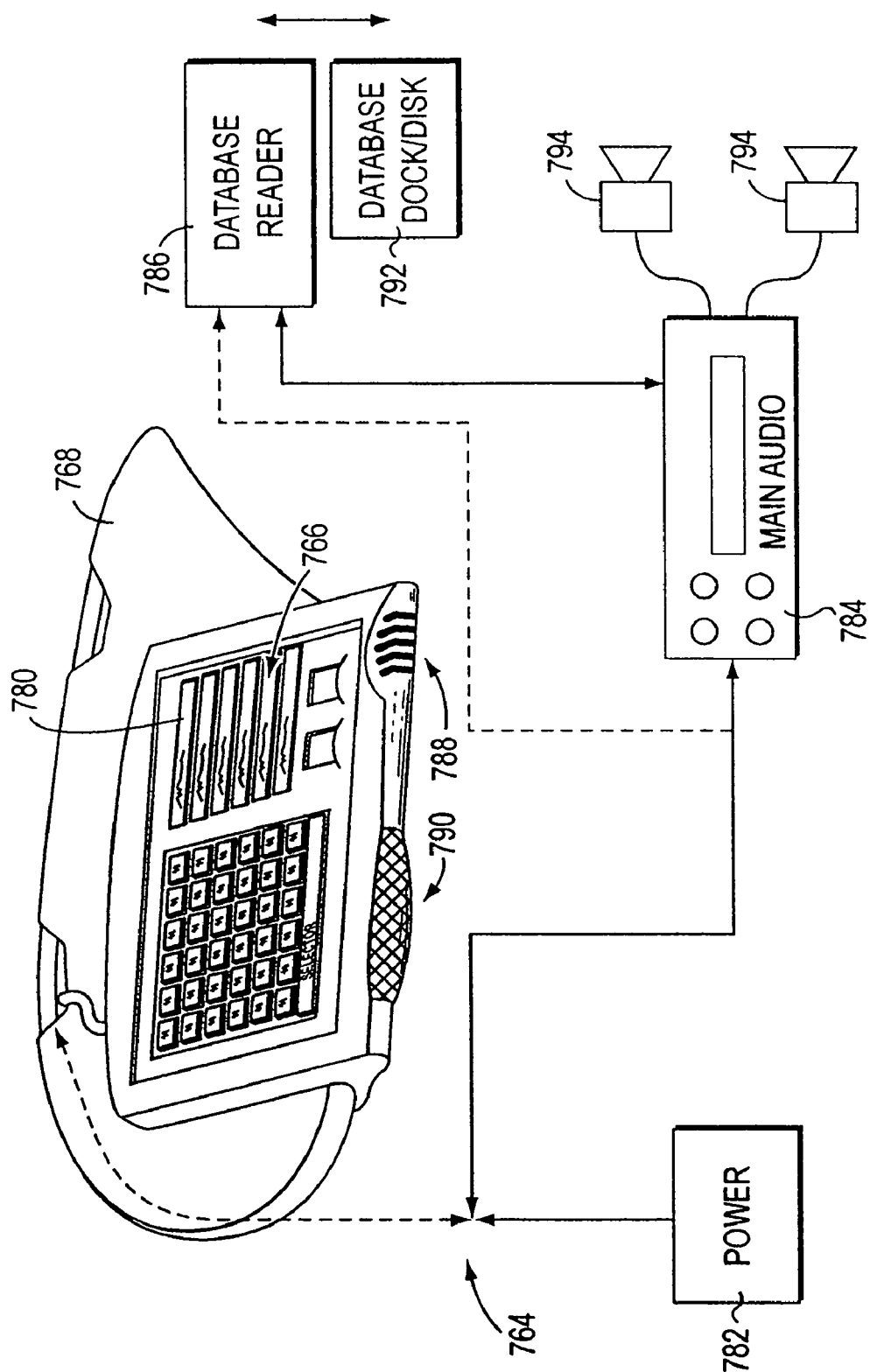


FIG. 22

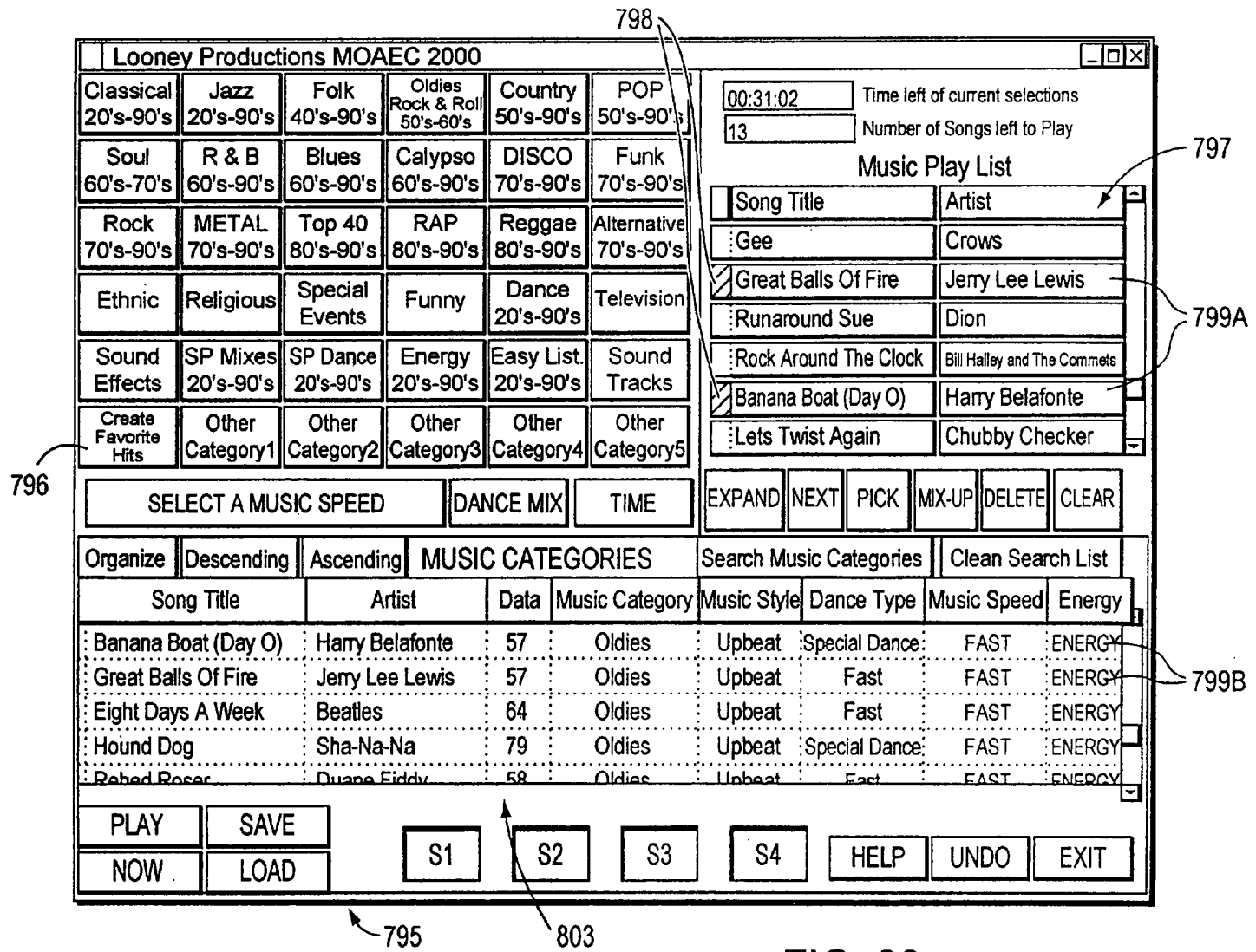


FIG. 23

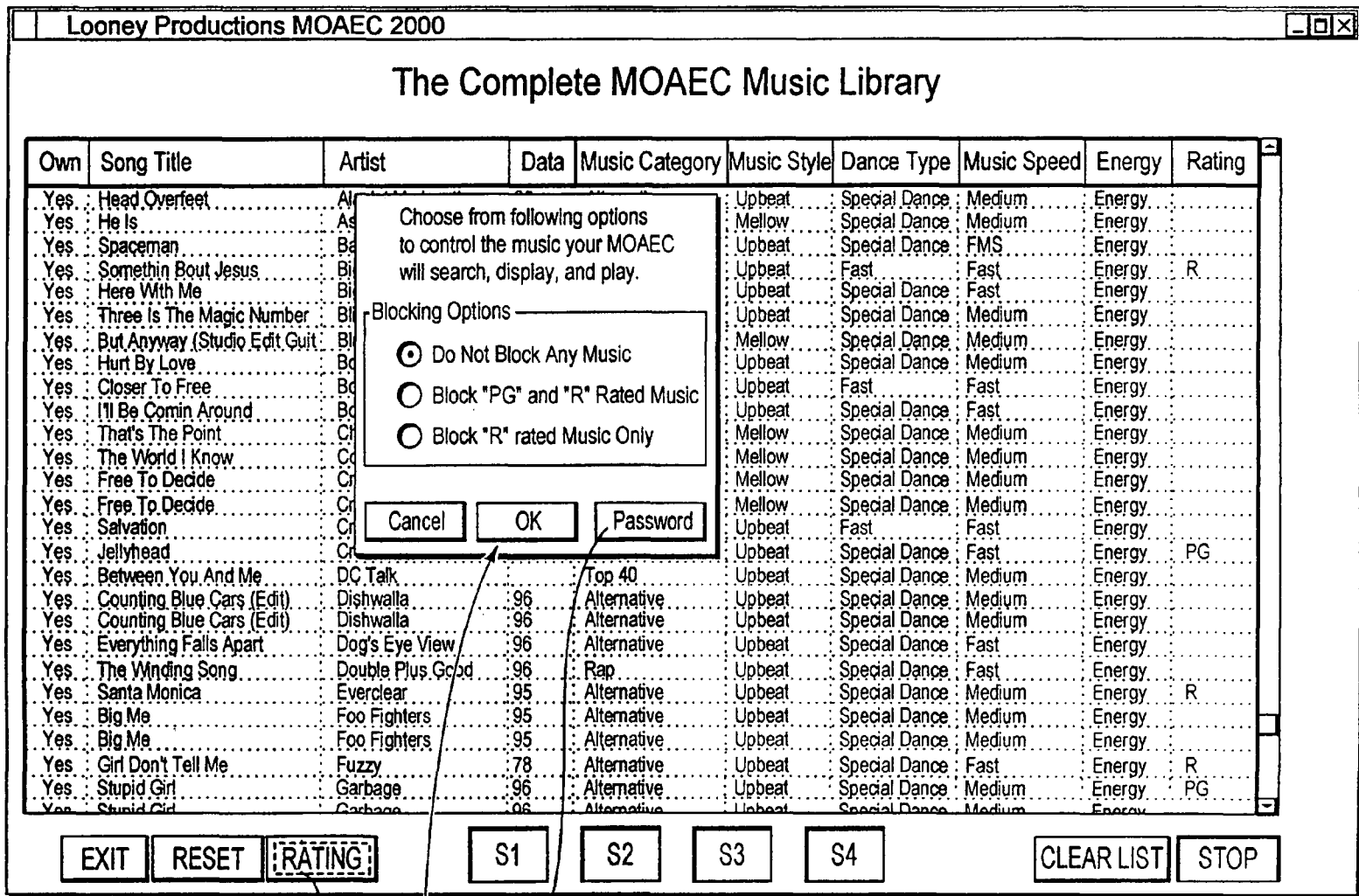
Looney Productions MOAEC 2000

The Complete MOAEC Music Library

Own	Song Title	Artist	Data	Music Category	Music Style	Dance Type	Music Speed	Energy	Rating
Yes	Head Overfeet	Alanis Morissette	95	Alternative	Upbeat	Special Dance	Medium	Energy	
Yes	He Is	Ashley Cleveland		Country	Mellow	Special Dance	Medium	Energy	
Yes	Spaceman	Babylon Zoo		Metal	Upbeat	Special Dance	FMS	Energy	
Yes	Somethin Bout Jesus	Big Tent Revival		Religion	Upbeat	Fast	Fast	Energy	R
Yes	Here With Me	Big Tent Revival		Rock	Upbeat	Special Dance	Fast	Energy	
Yes	Three Is The Magic Number	Blind Melon	96	Alternative	Upbeat	Special Dance	Medium	Energy	
Yes	But Anyway (Studio Edit Guit)	Blues Traveler	91	Alternative	Mellow	Special Dance	Medium	Energy	
Yes	Hurt By Love	Bodeans	97	Rock	Upbeat	Special Dance	Medium	Energy	
Yes	Closer To Free	Bodeans	96	Alternative	Upbeat	Fast	Fast	Energy	
Yes	I'll Be Comin Around	Bottle Rockets		Country	Upbeat	Special Dance	Fast	Energy	
Yes	That's The Point	Charlie Peacock		Country	Mellow	Special Dance	Medium	Energy	
Yes	The World I Know	Collective Soul	95	Alternative	Mellow	Special Dance	Medium	Energy	
Yes	Free To Decide	Cranberries	96	Alternative	Mellow	Special Dance	Medium	Energy	
Yes	Free To Decide	Cranberries	96	Alternative	Mellow	Special Dance	Medium	Energy	
Yes	Salvation	Cranberries	96	Alternative	Upbeat	Fast	Fast	Energy	
Yes	Jellyhead	Crush	96	Alternative	Upbeat	Special Dance	Fast	Energy	PG
Yes	Between You And Me	DC Talk		Top 40	Upbeat	Special Dance	Medium	Energy	
Yes	Counting Blue Cars (Edit)	Dishwalla	96	Alternative	Upbeat	Special Dance	Medium	Energy	
Yes	Counting Blue Cars (Edit)	Dishwalla	96	Alternative	Upbeat	Special Dance	Medium	Energy	
Yes	Everything Falls Apart	Dog's Eye View	96	Alternative	Upbeat	Special Dance	Fast	Energy	
Yes	The Winding Song	Double Plus Good	96	Rap	Upbeat	Special Dance	Fast	Energy	
Yes	Santa Monica	Everclear	95	Alternative	Upbeat	Special Dance	Medium	Energy	R
Yes	Big Me	Foo Fighters	95	Alternative	Upbeat	Special Dance	Medium	Energy	
Yes	Big Me	Foo Fighters	95	Alternative	Upbeat	Special Dance	Medium	Energy	
Yes	Girl Don't Tell Me	Fuzzy	78	Alternative	Upbeat	Special Dance	Fast	Energy	R
Yes	Stupid Girl	Garbage	96	Alternative	Upbeat	Special Dance	Medium	Energy	PG
Yes	Stupid Girl	Garbage	96	Alternative	Upbeat	Special Dance	Medium	Energy	

EXIT RESET RATING S1 S2 S3 S4 CLEAR LIST STOP

FIG. 24



820 822 824

FIG. 25

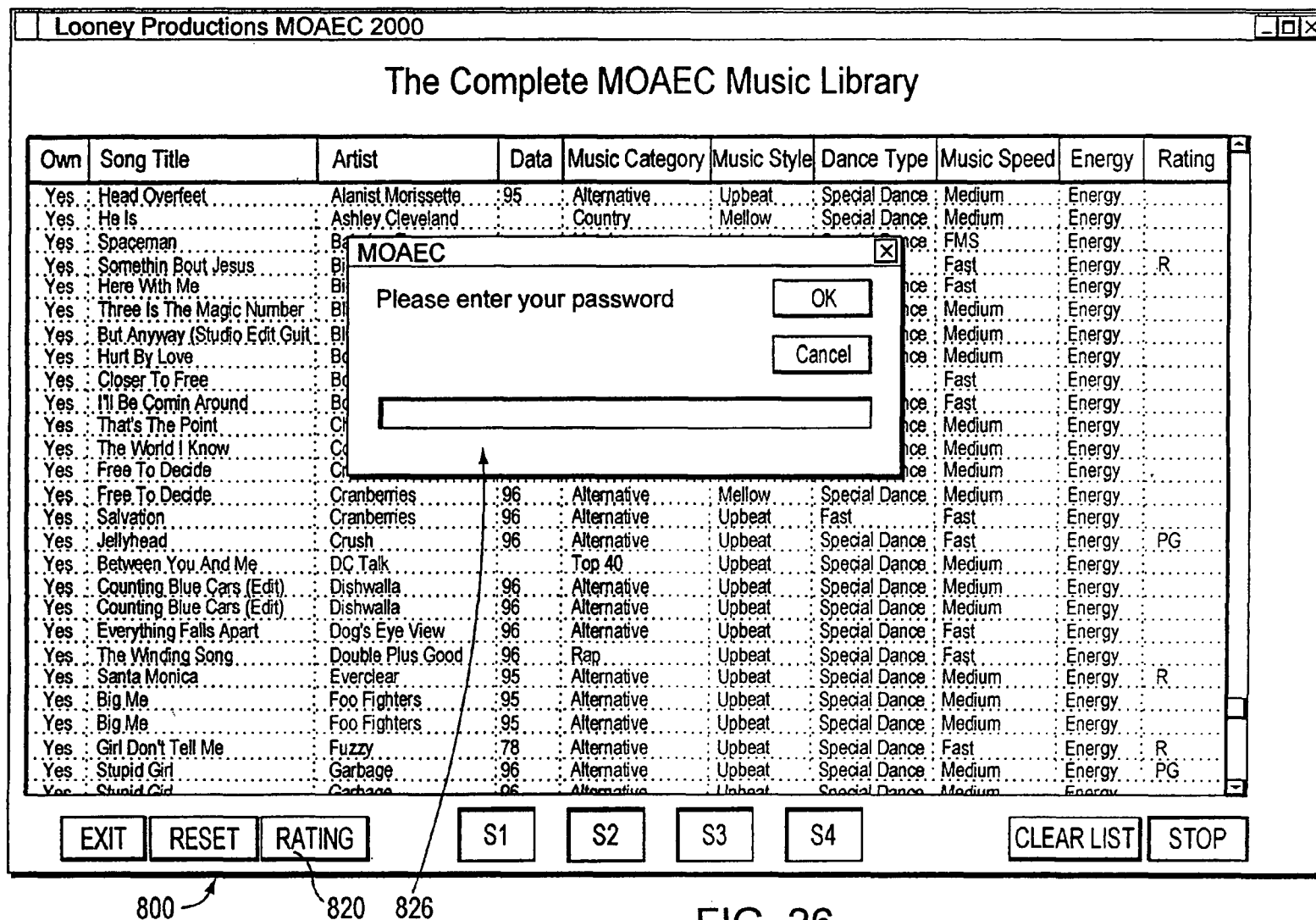


FIG. 26

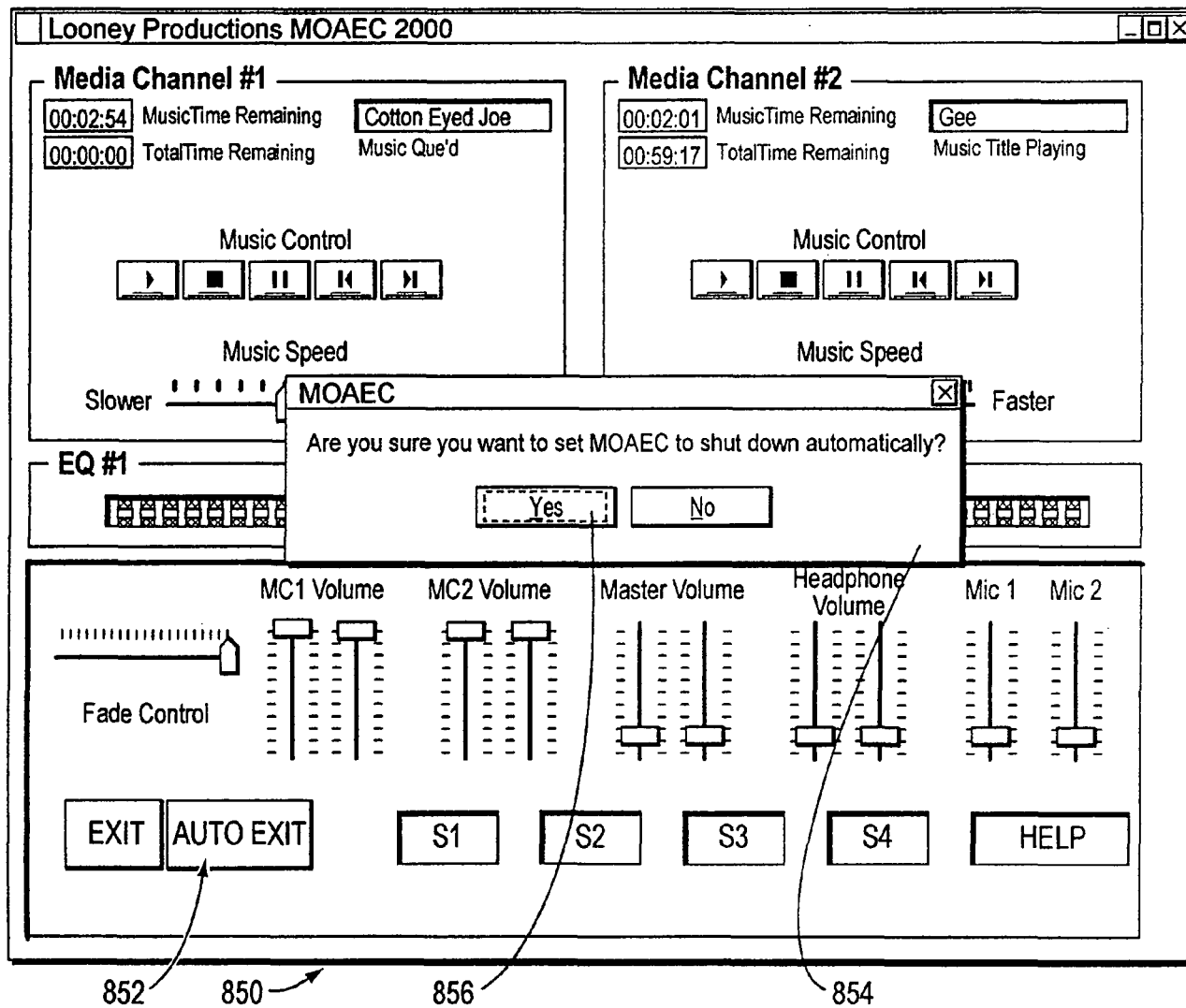


FIG. 27

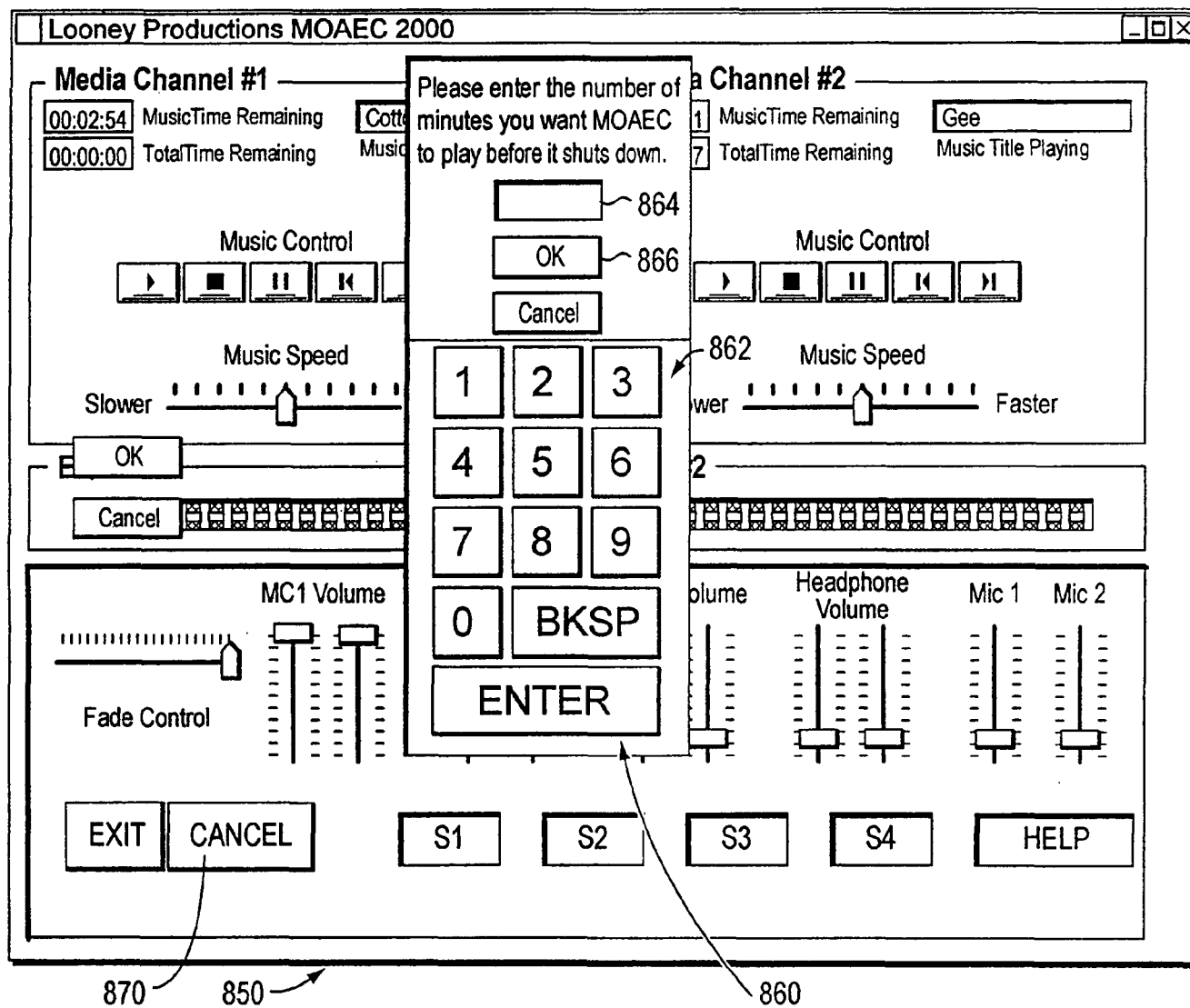


FIG. 28

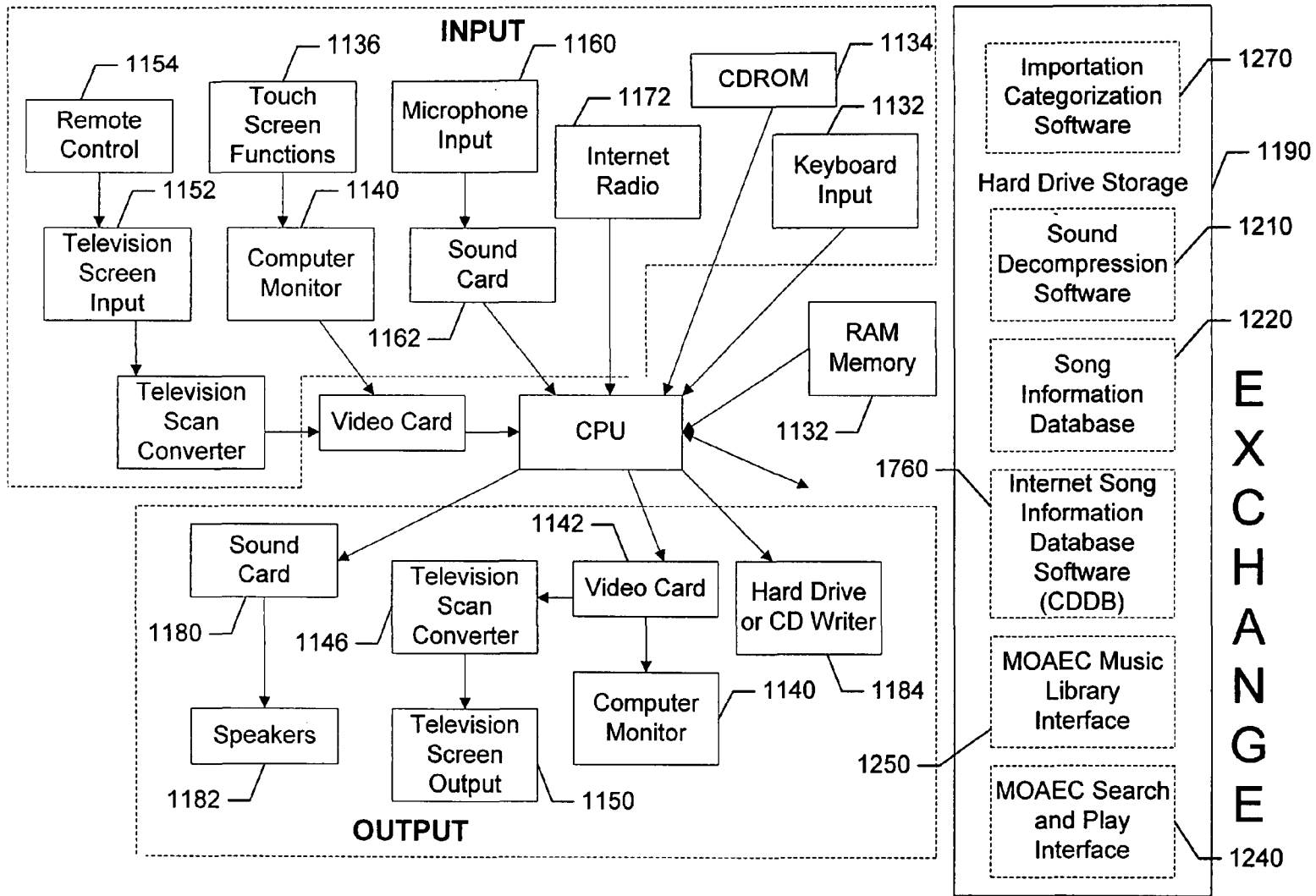
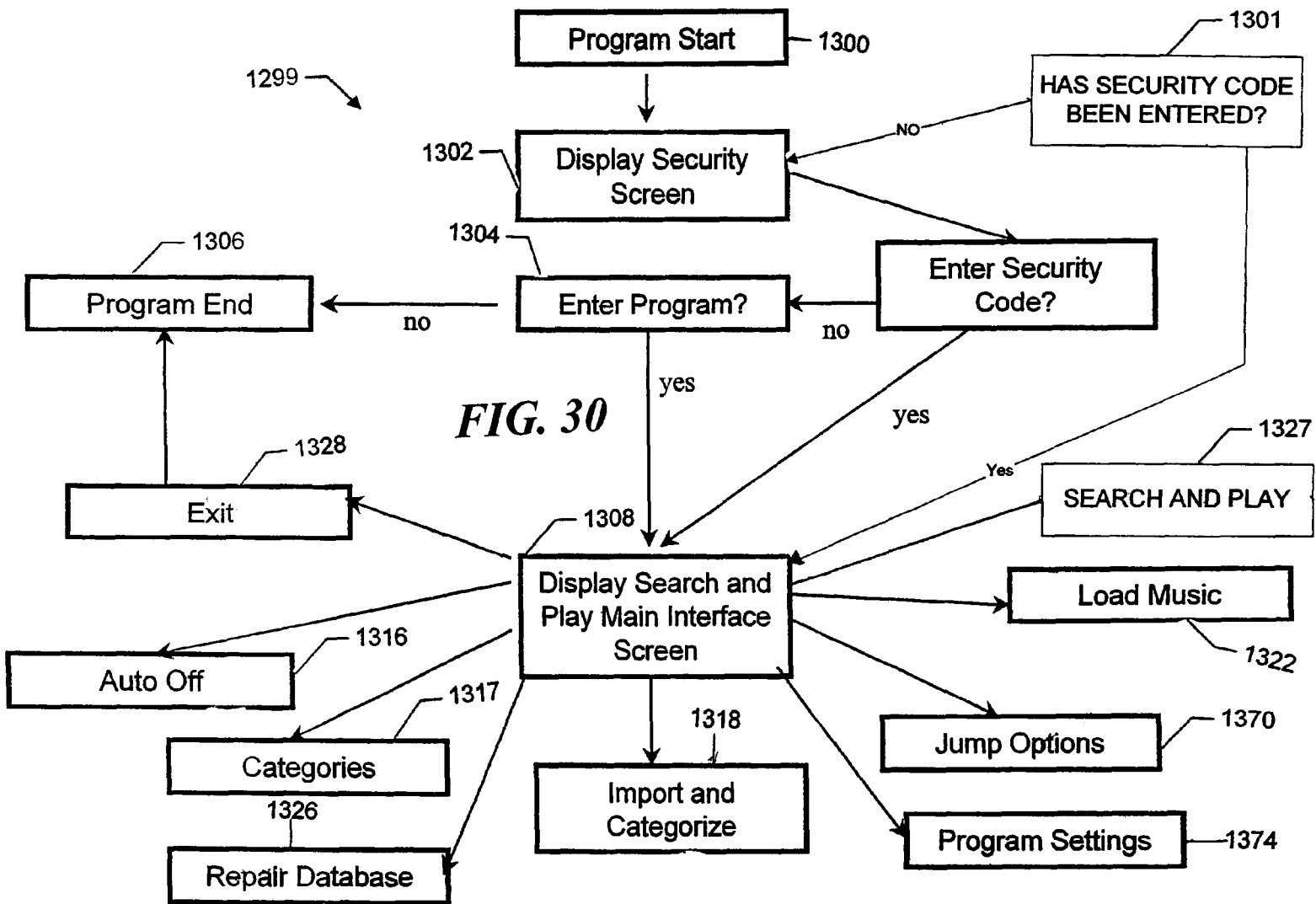


FIG. 29



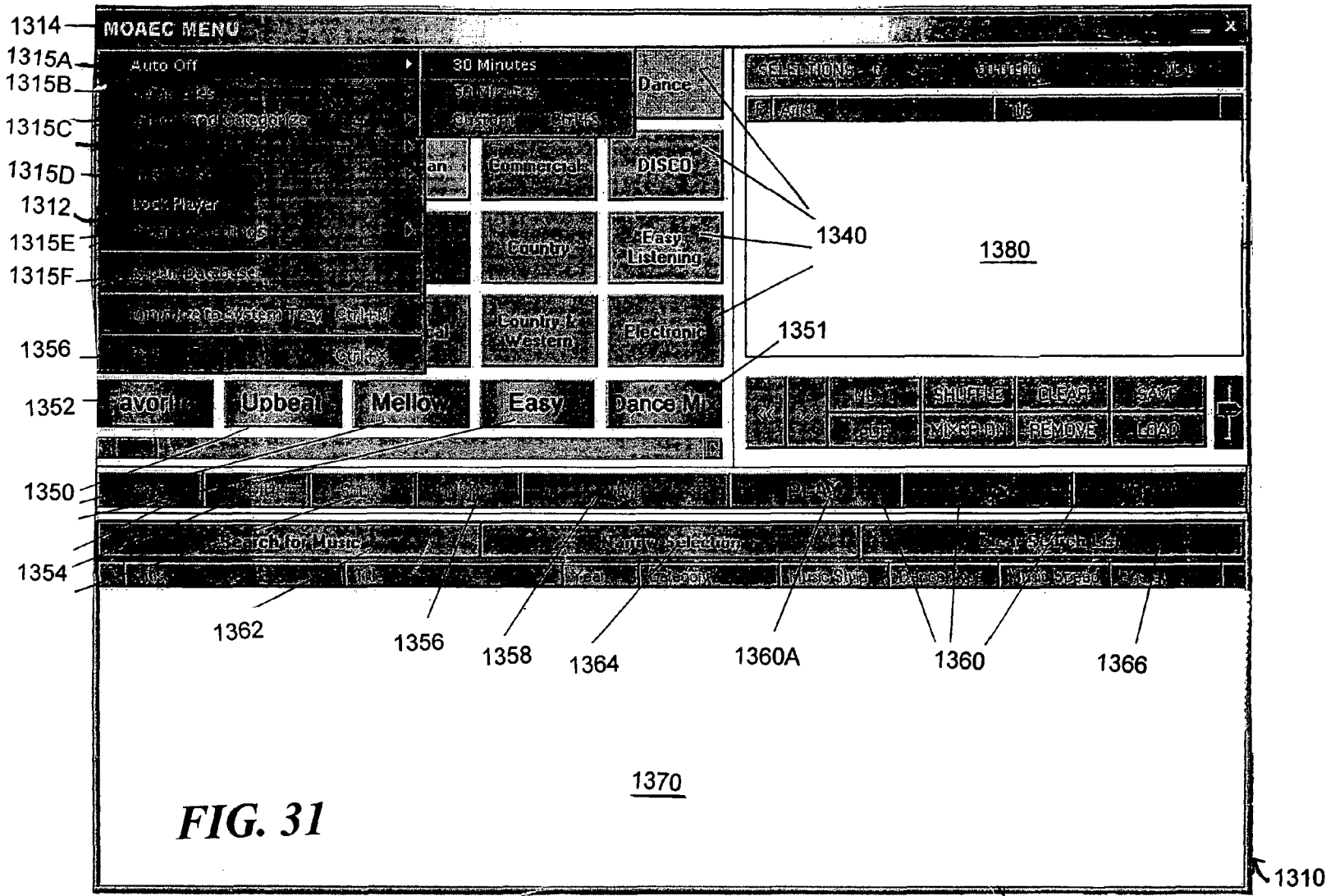


FIG. 31

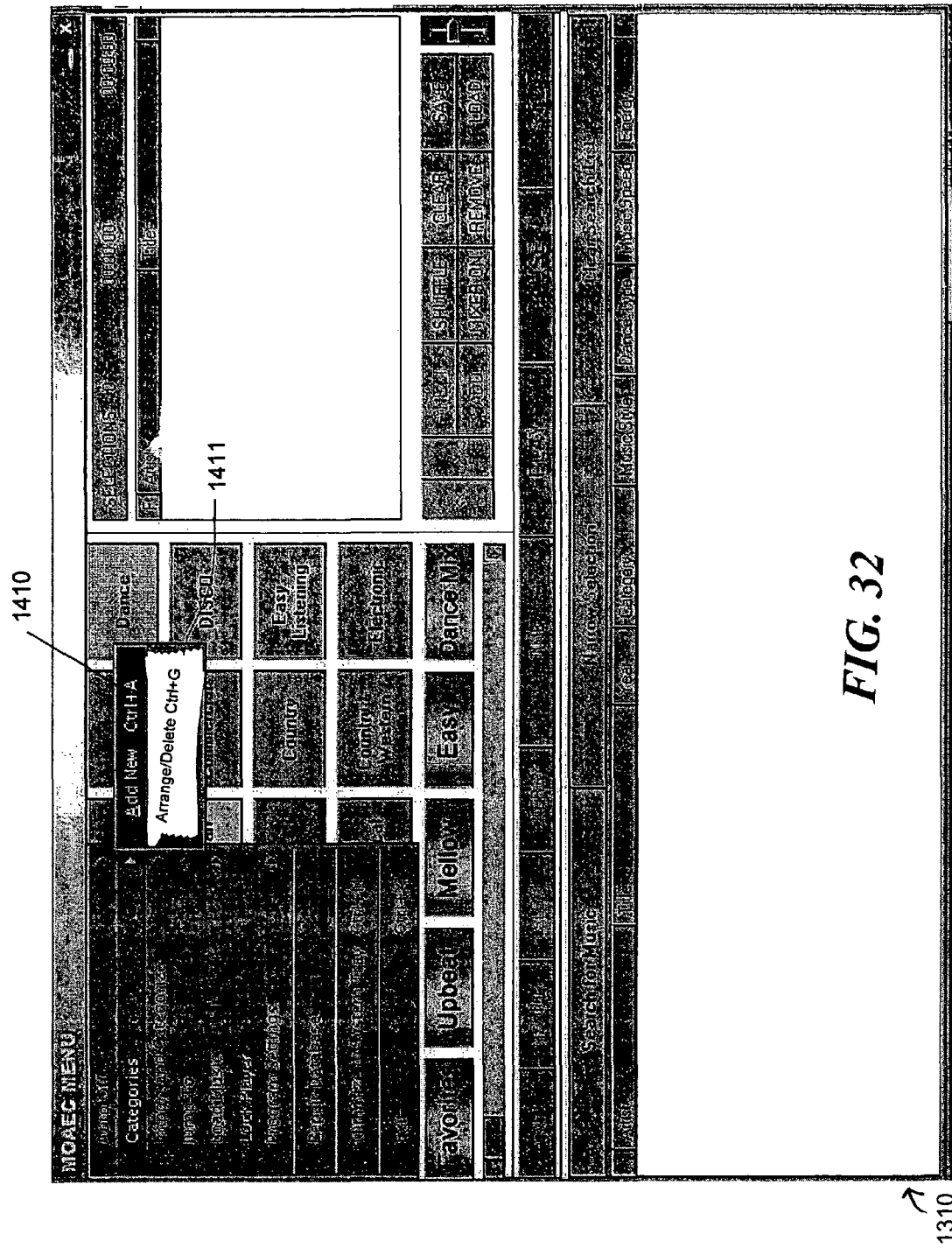
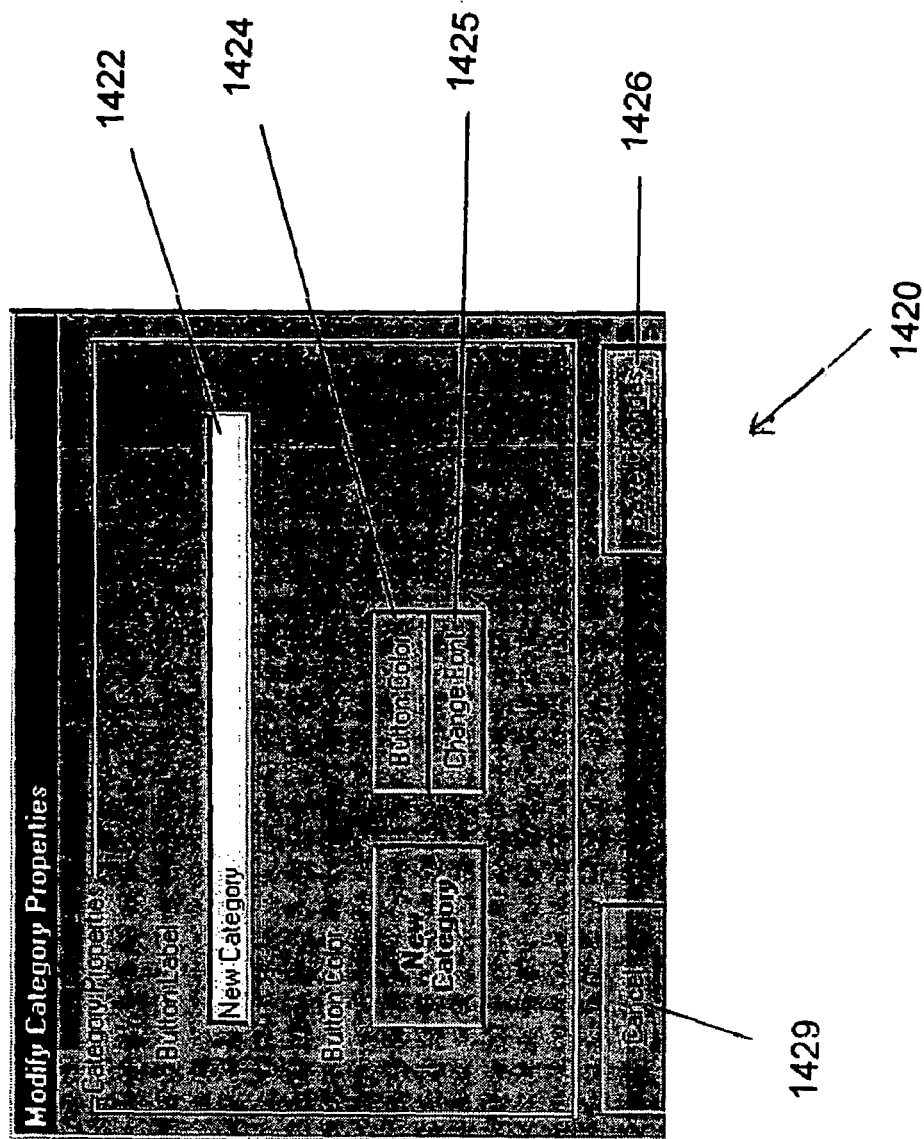
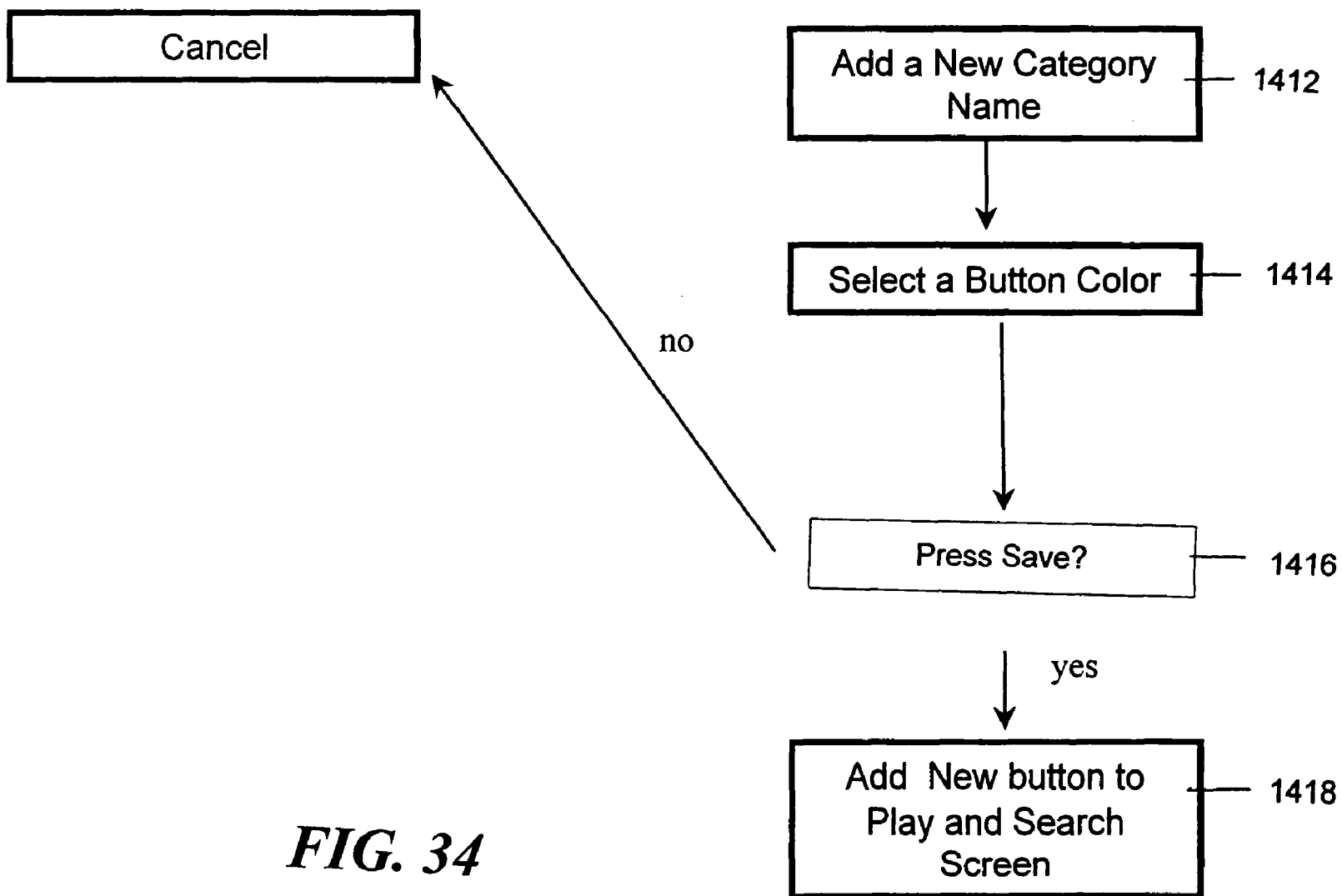


FIG. 33



**FIG. 34**

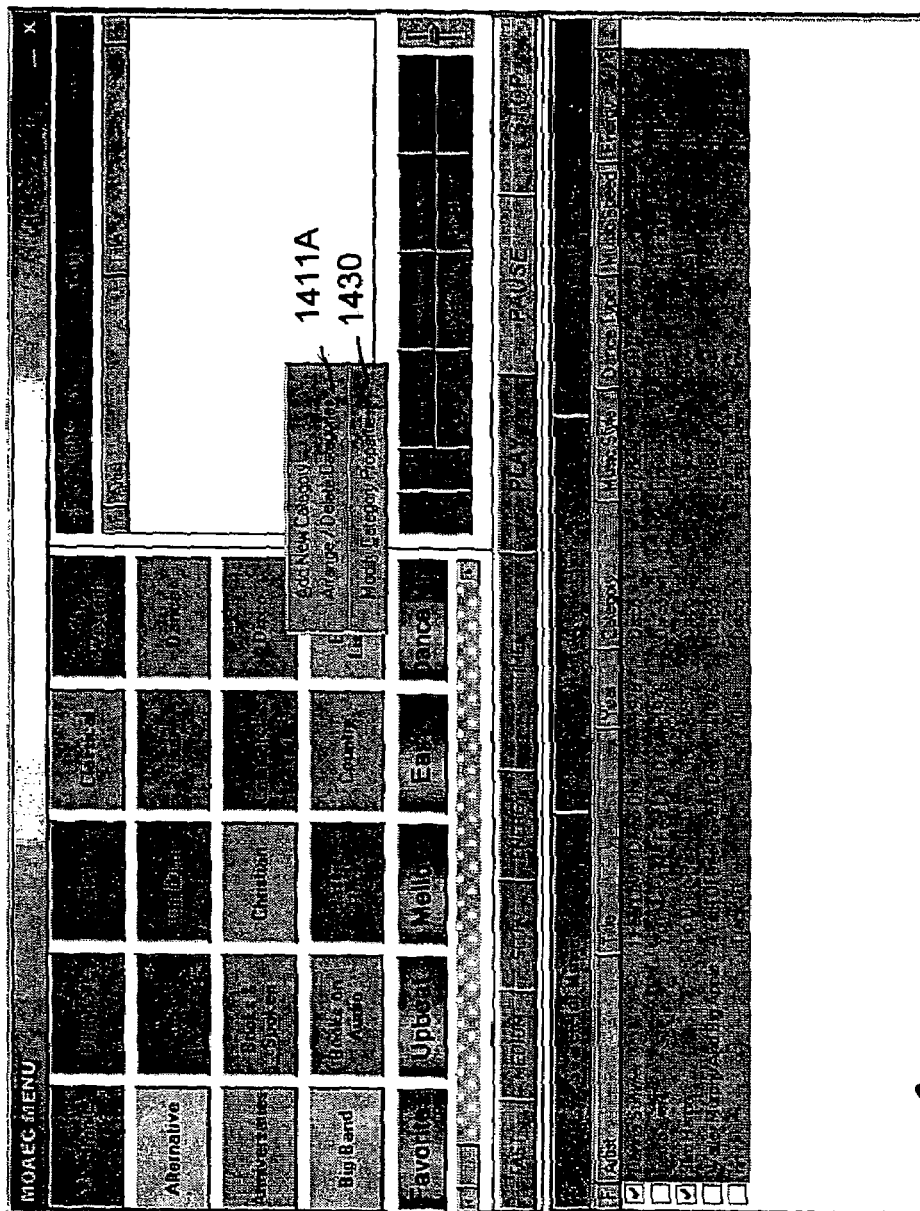
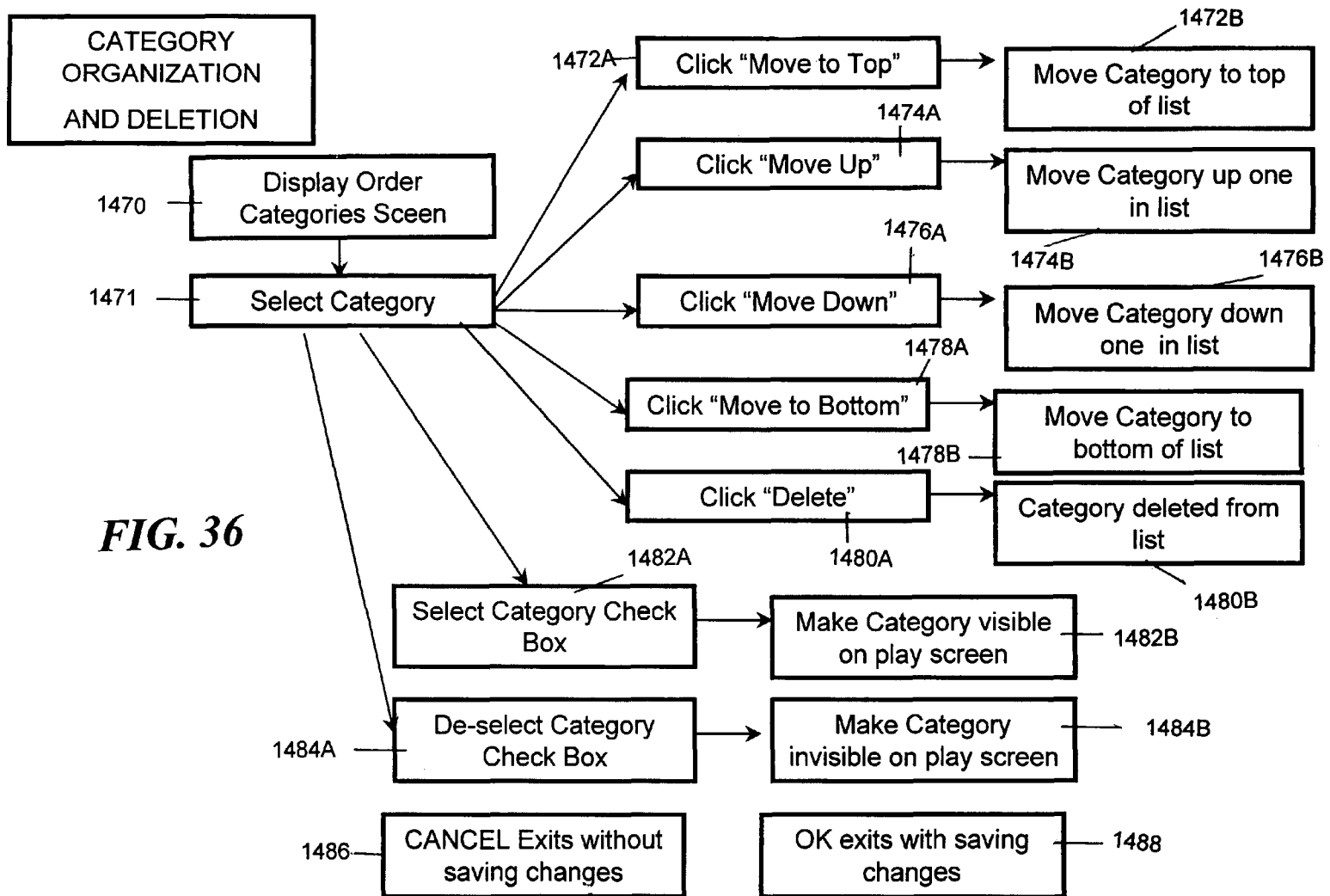


FIG. 35

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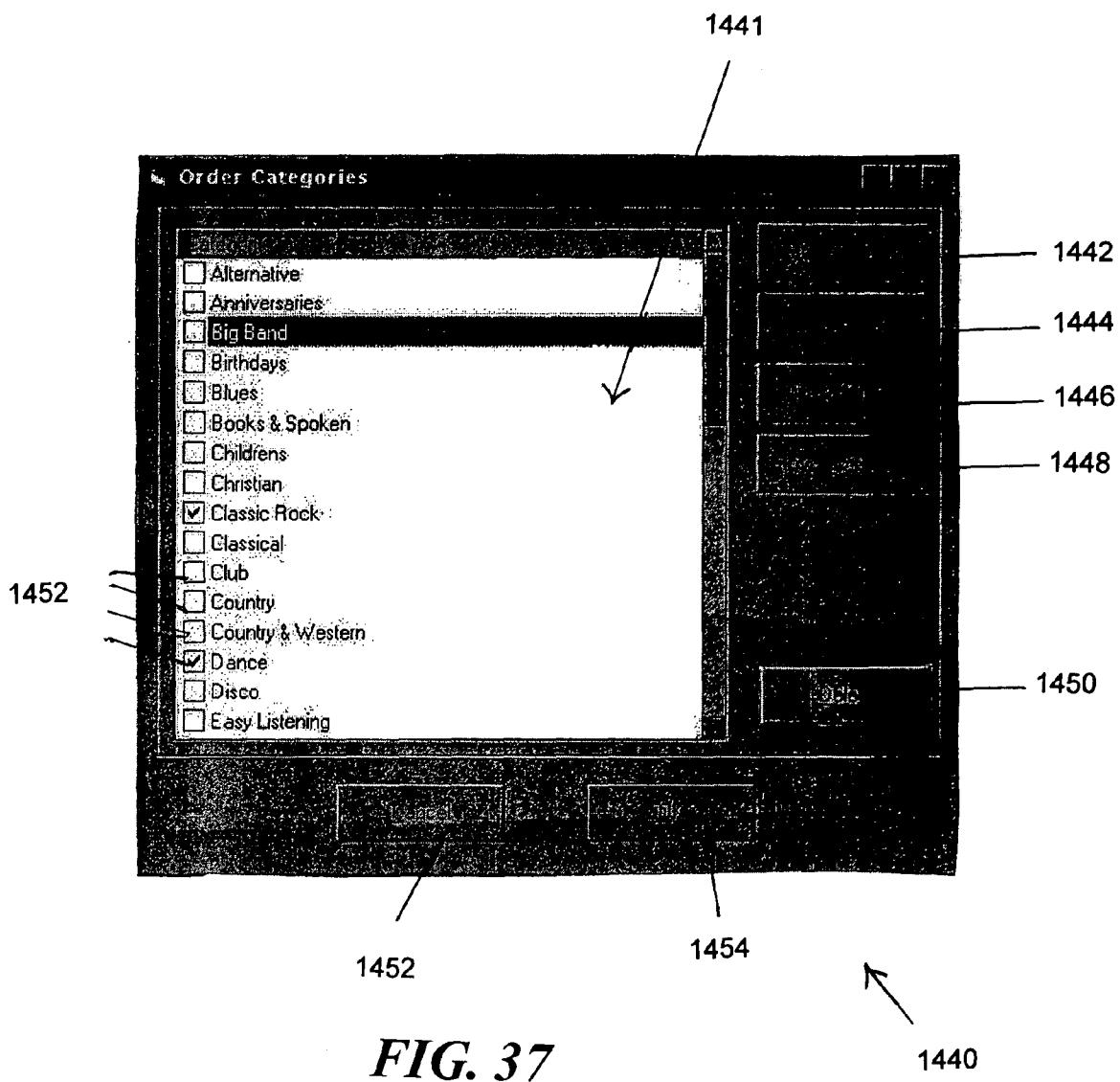
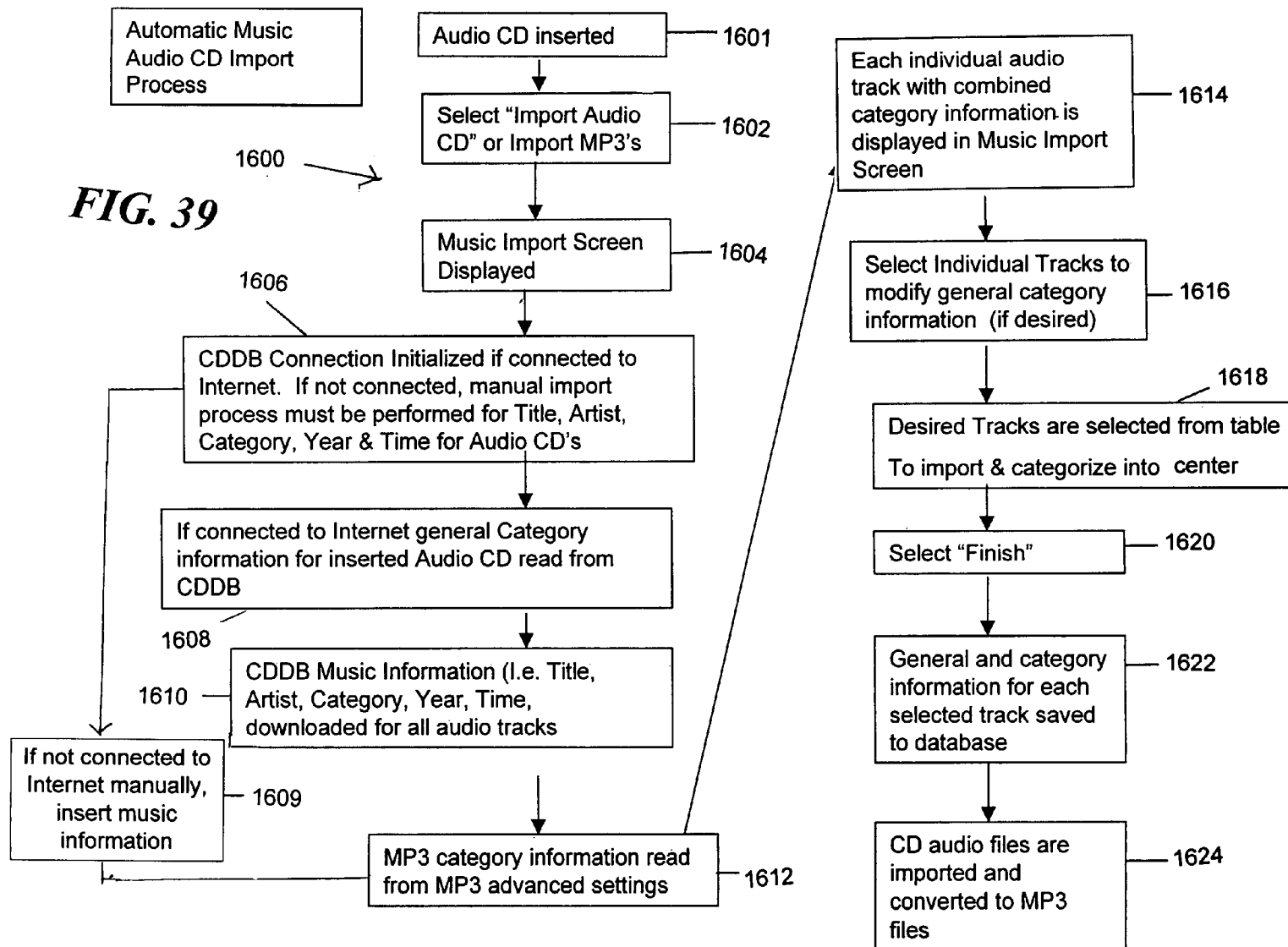


FIG. 37



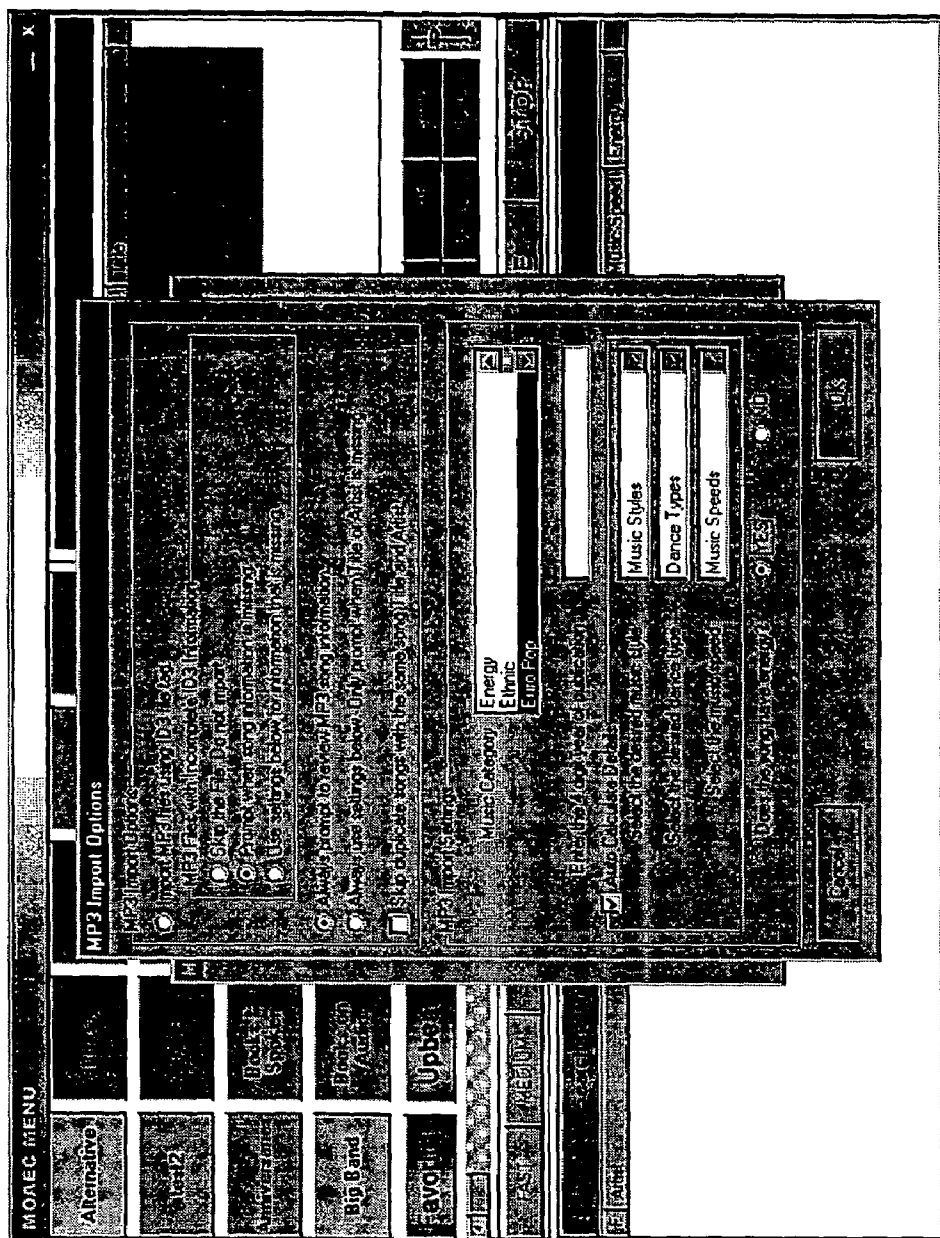


FIG. 39A

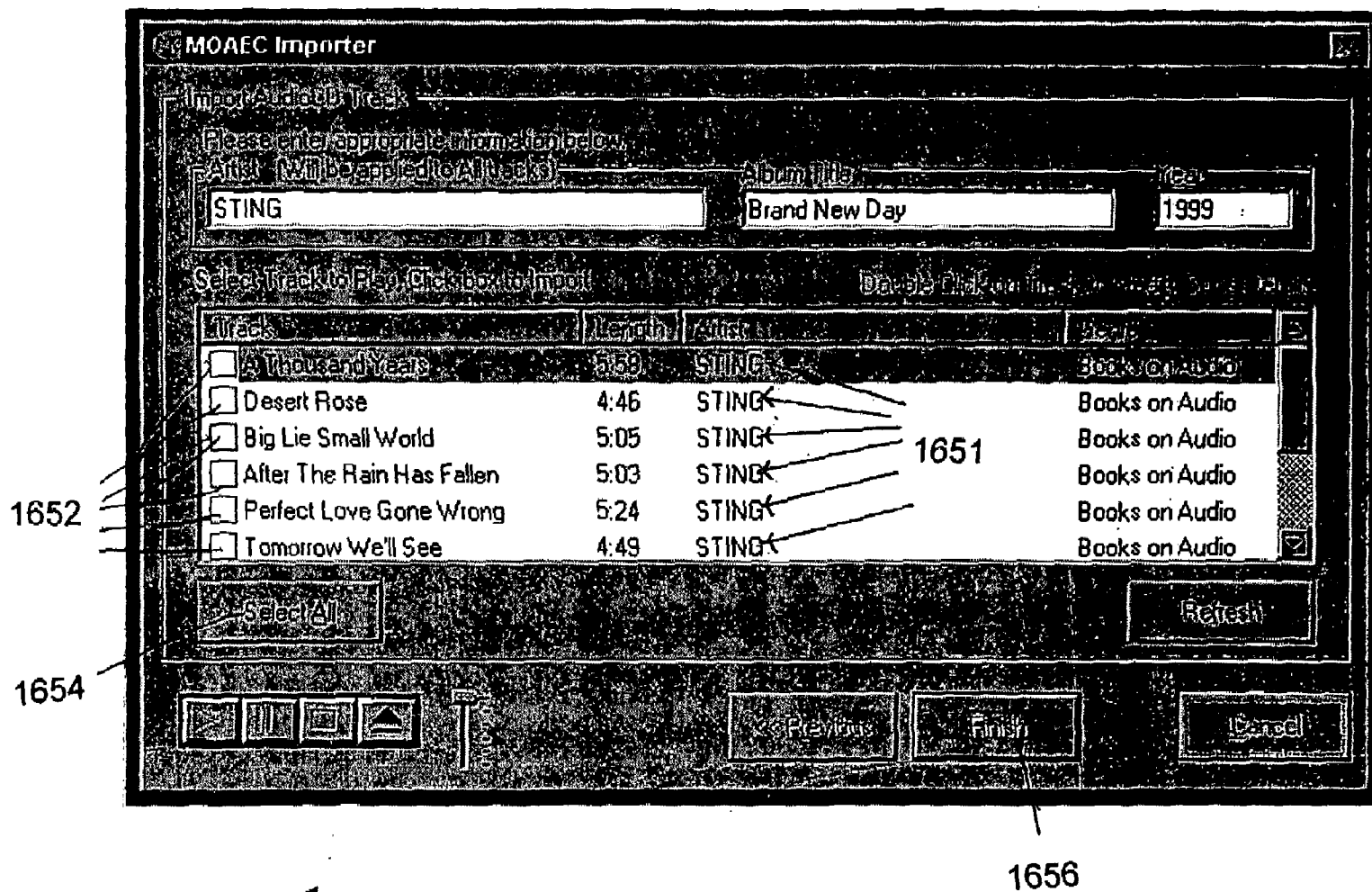


FIG. 40

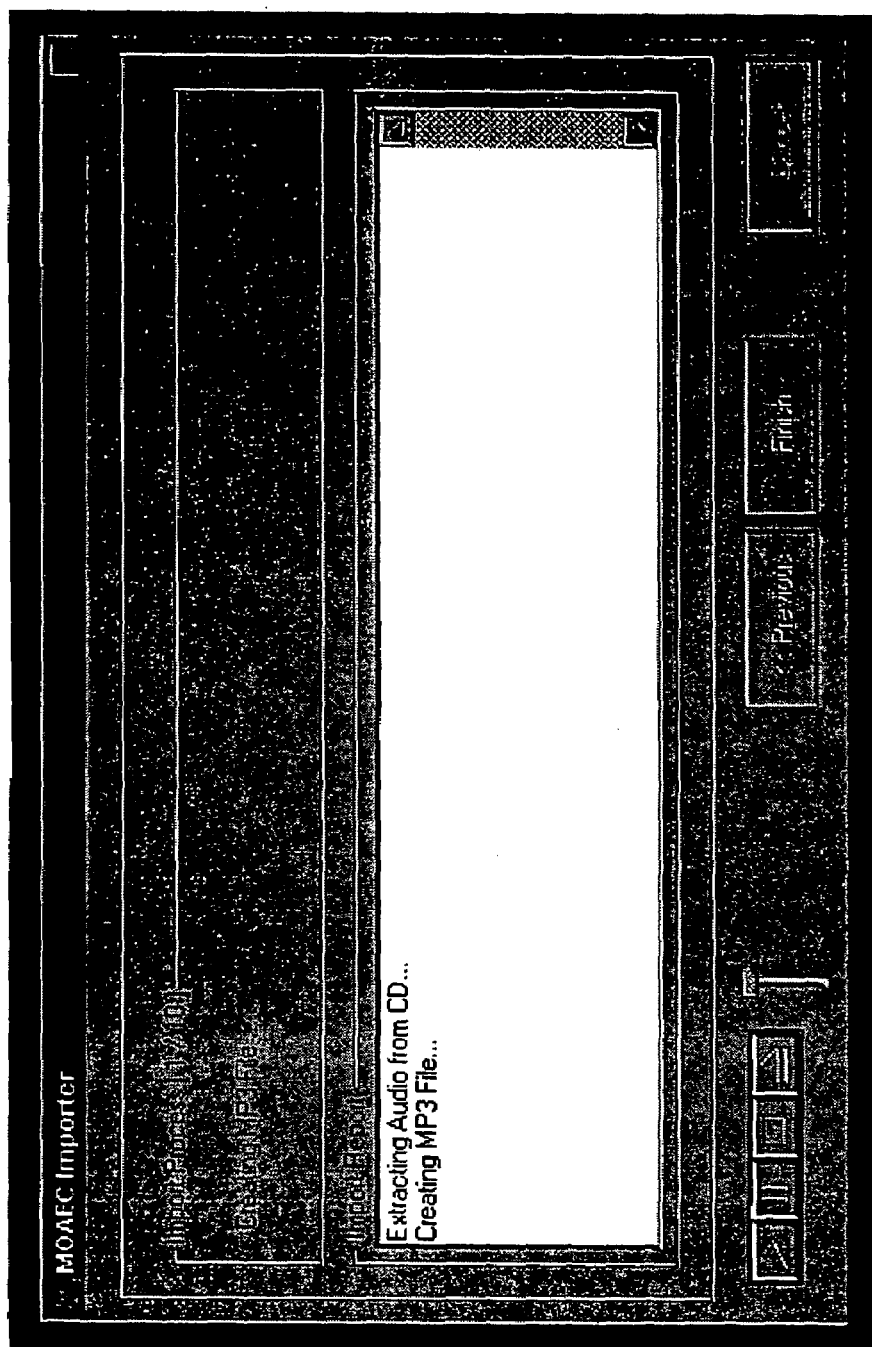
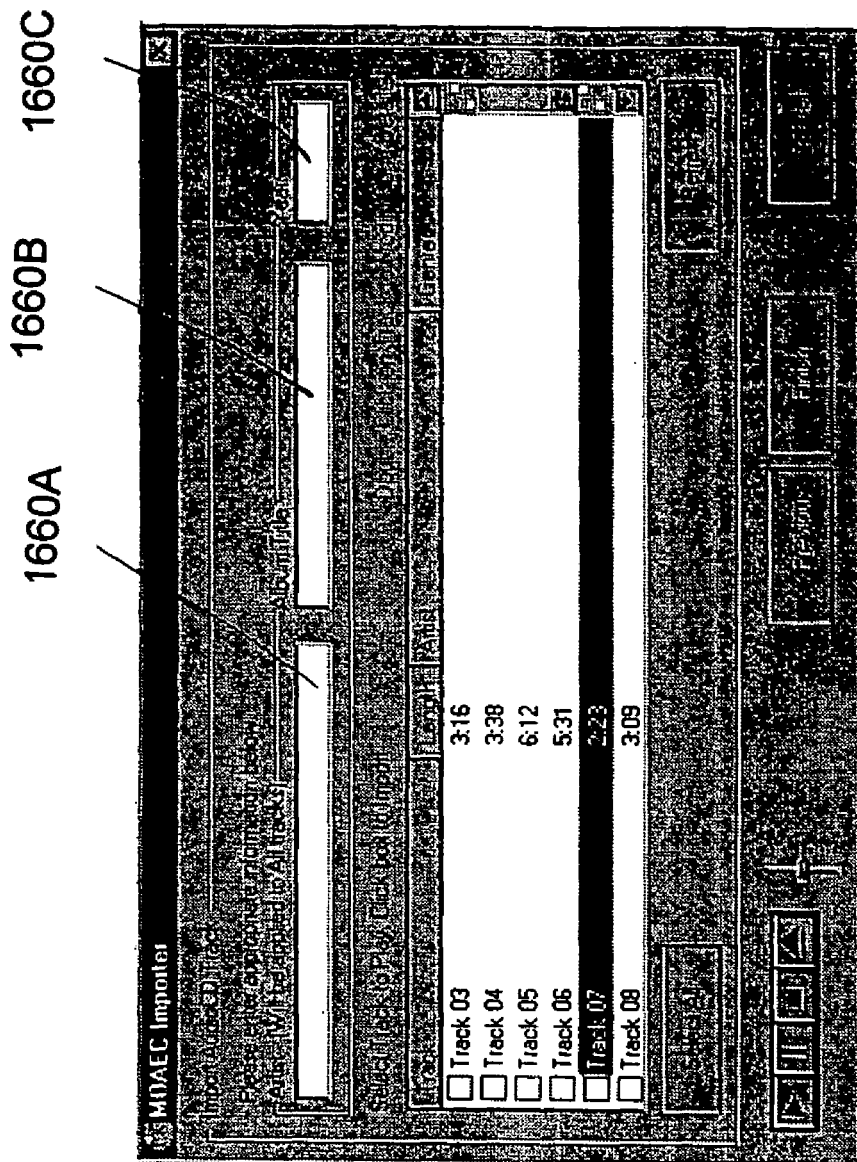


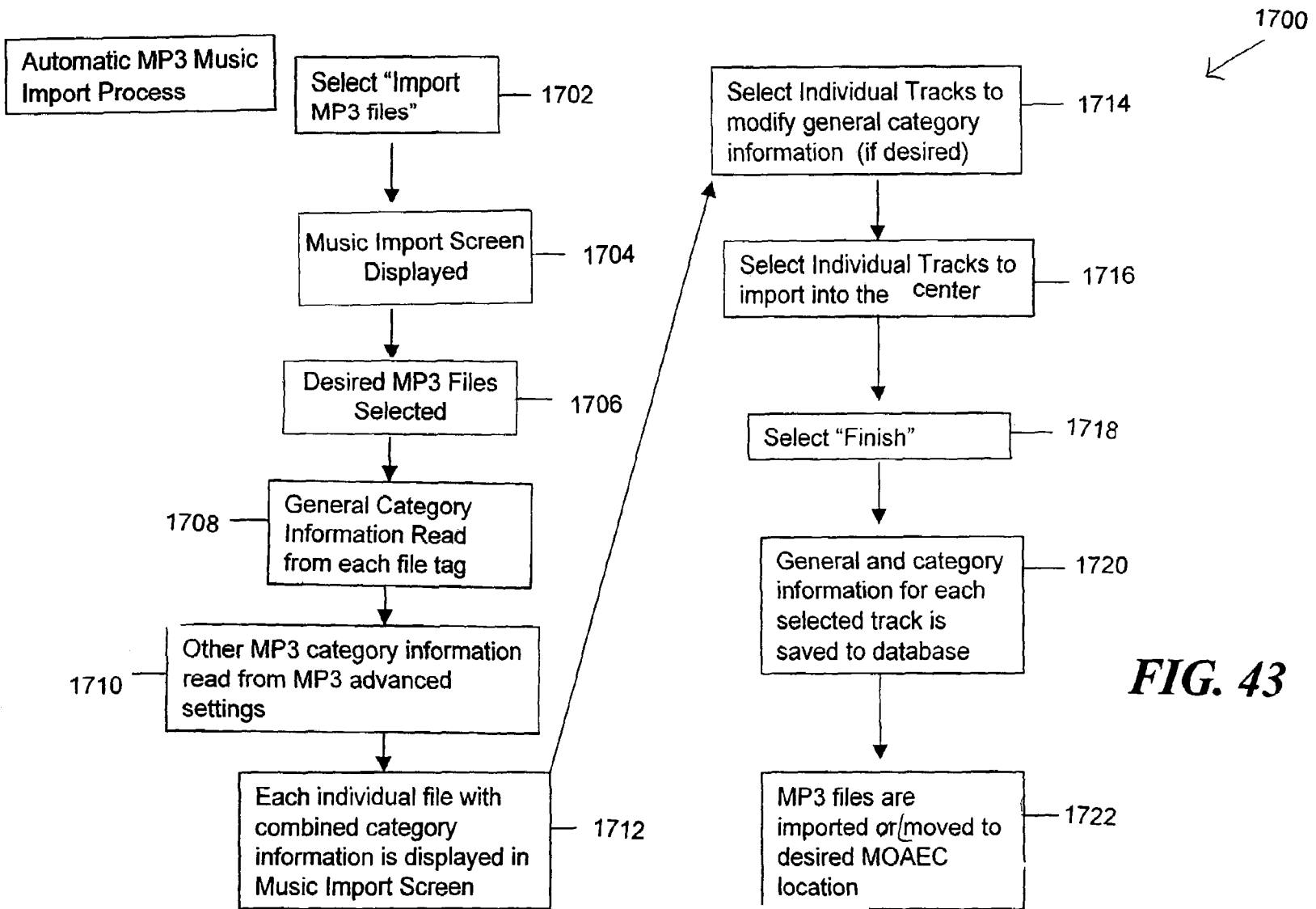
FIG. 41

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FIG. 42



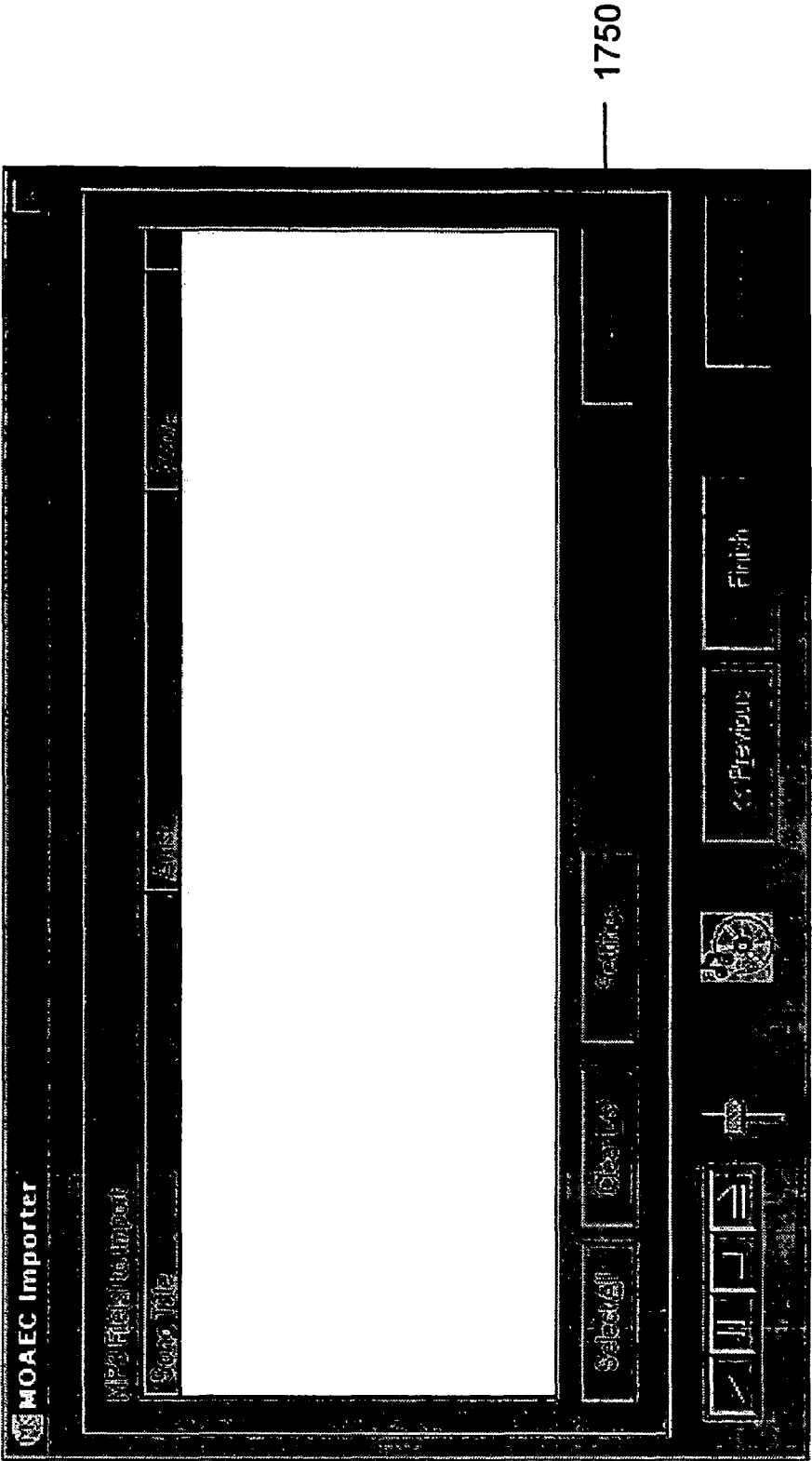
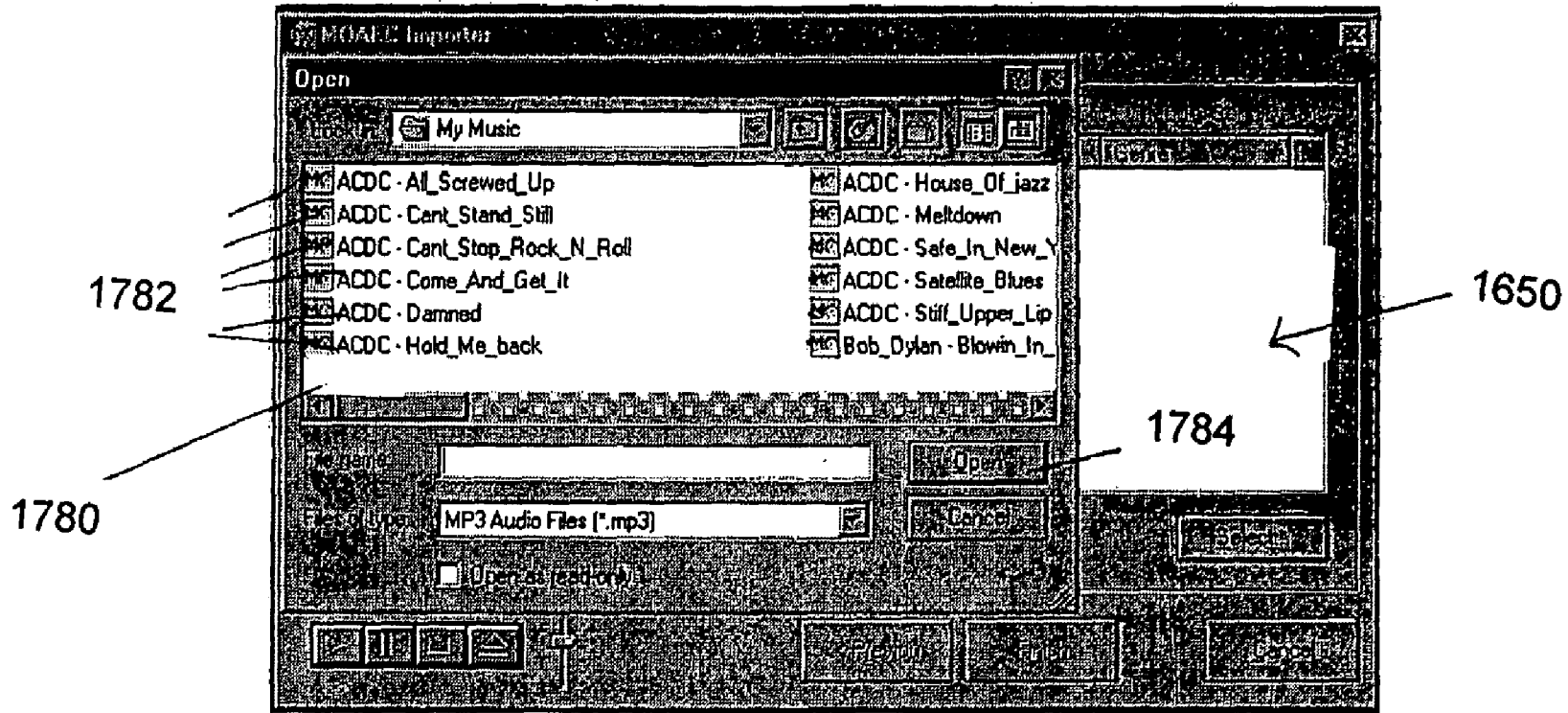


FIG. 44

**FIG. 45**

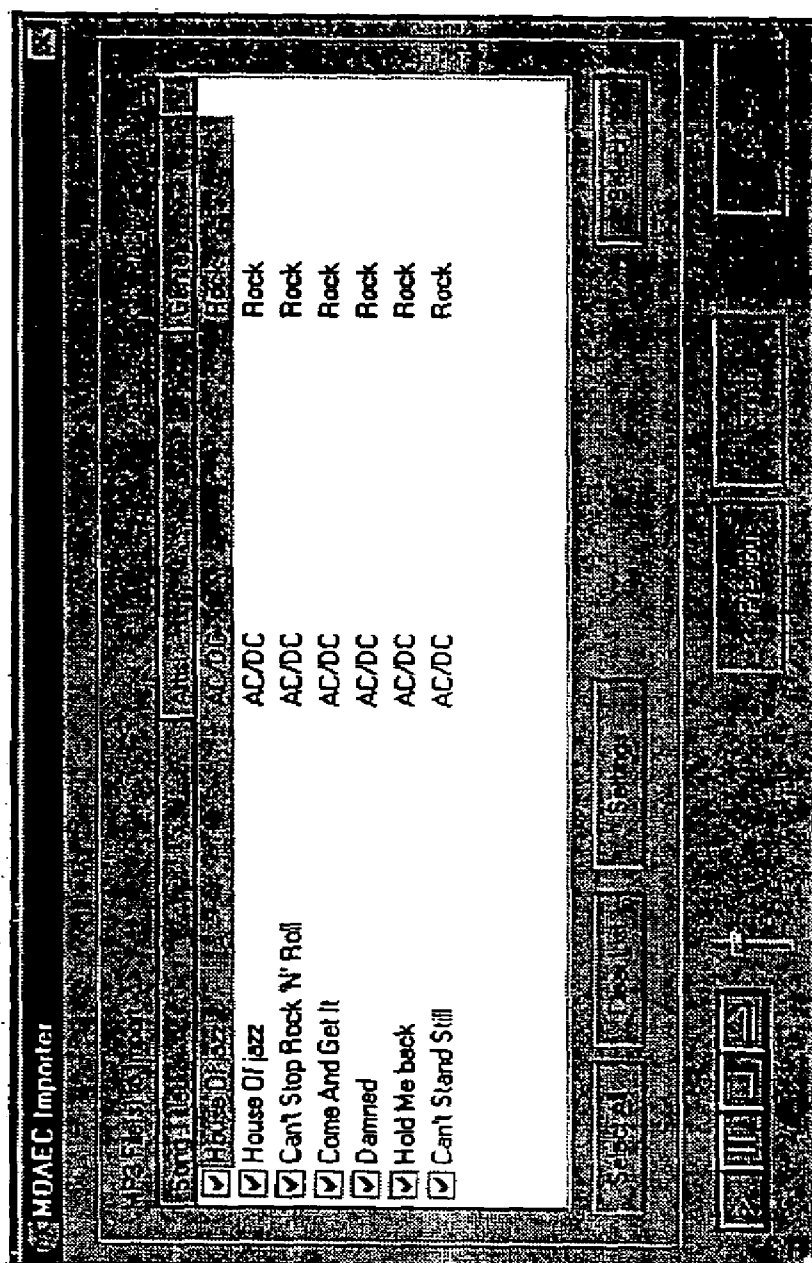


FIG. 46

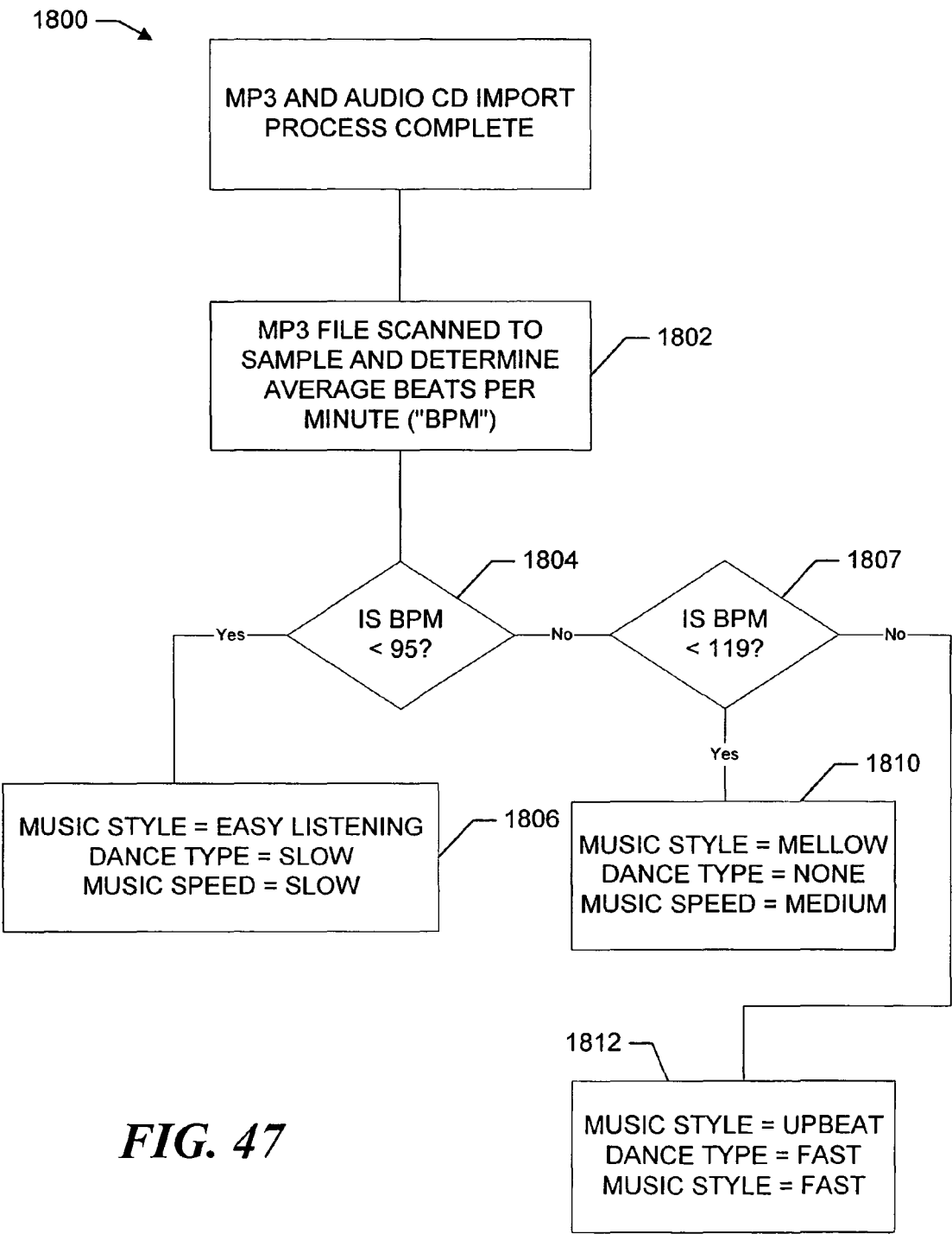


FIG. 47

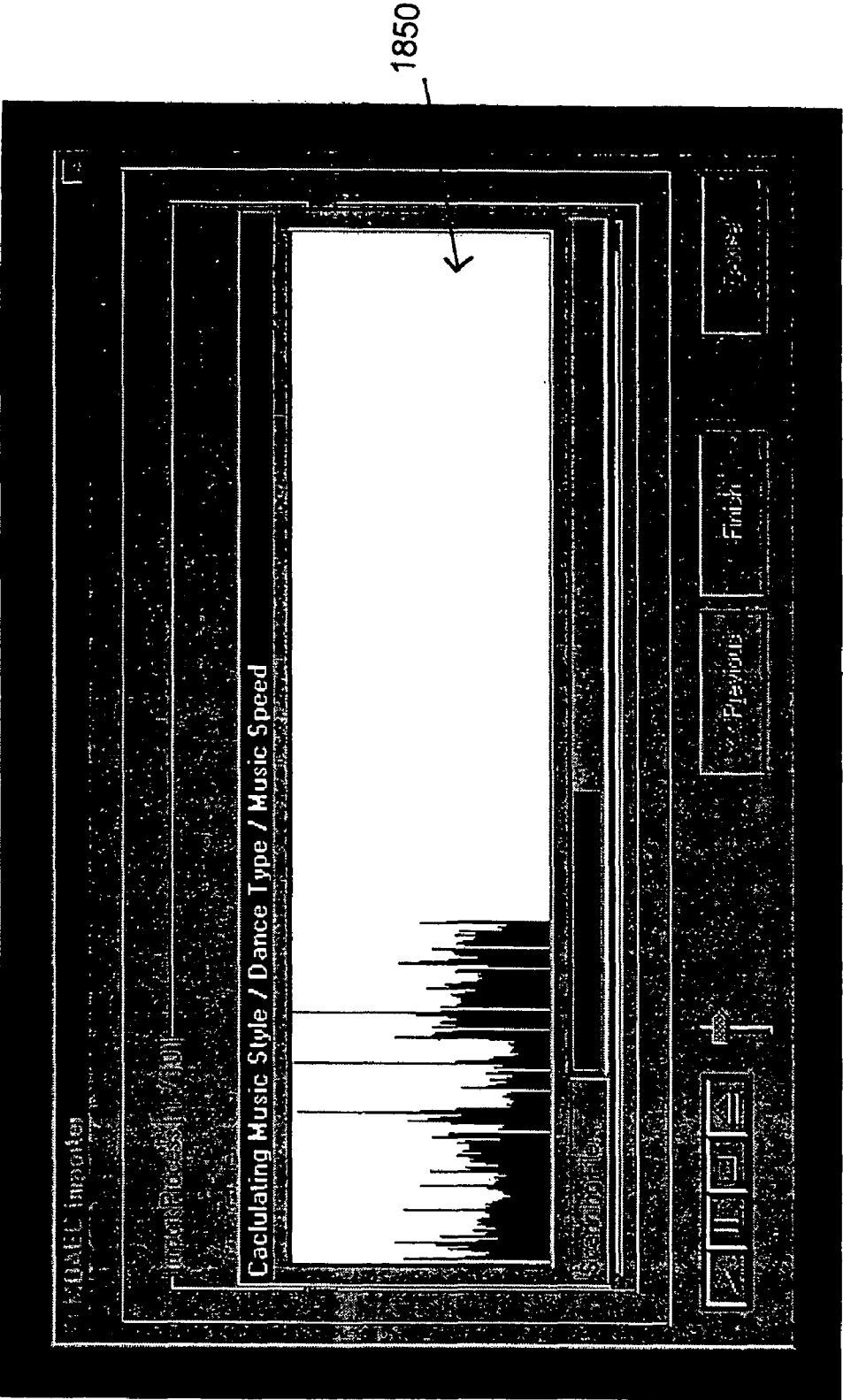
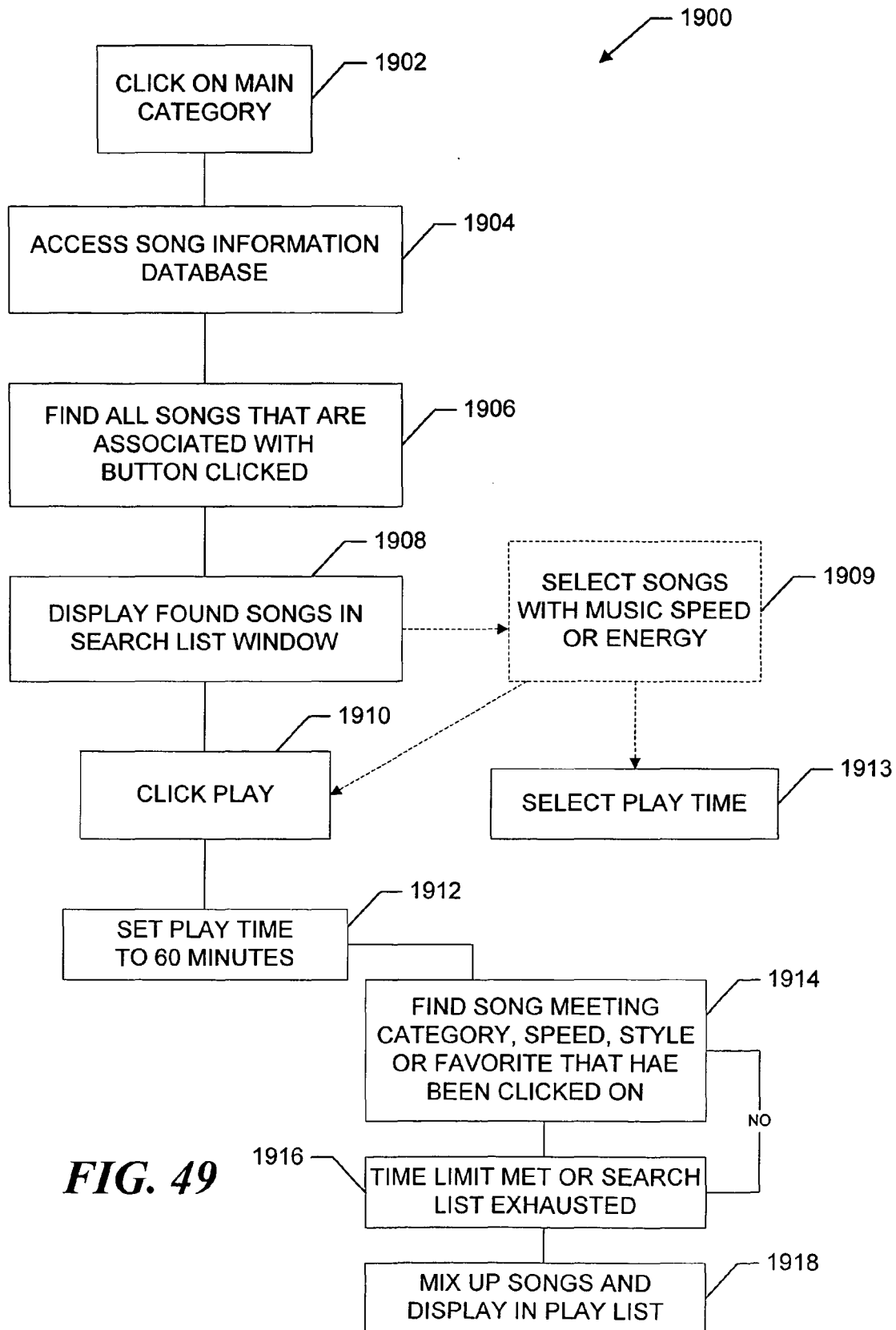
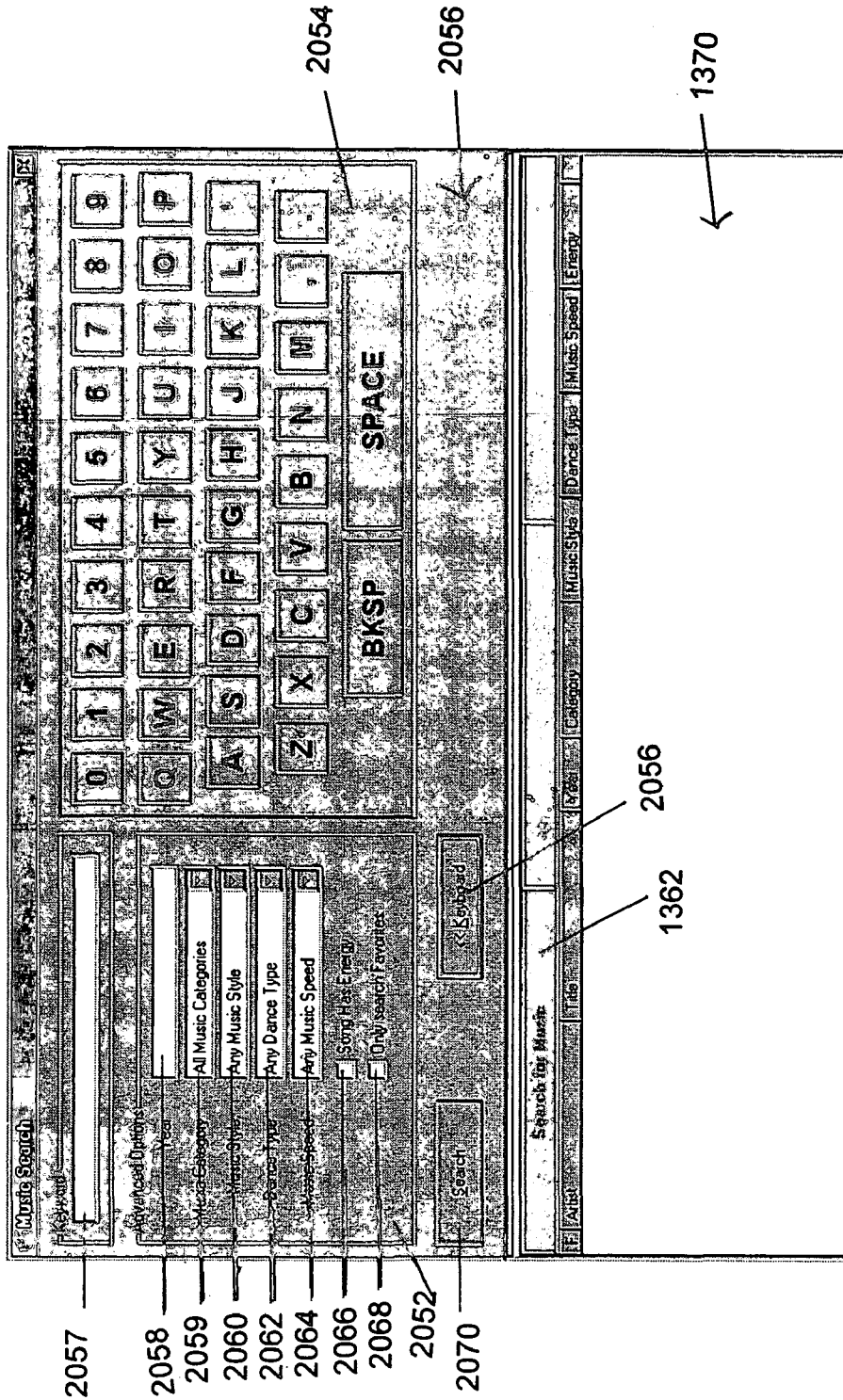


FIG. 48

**FIG. 49**



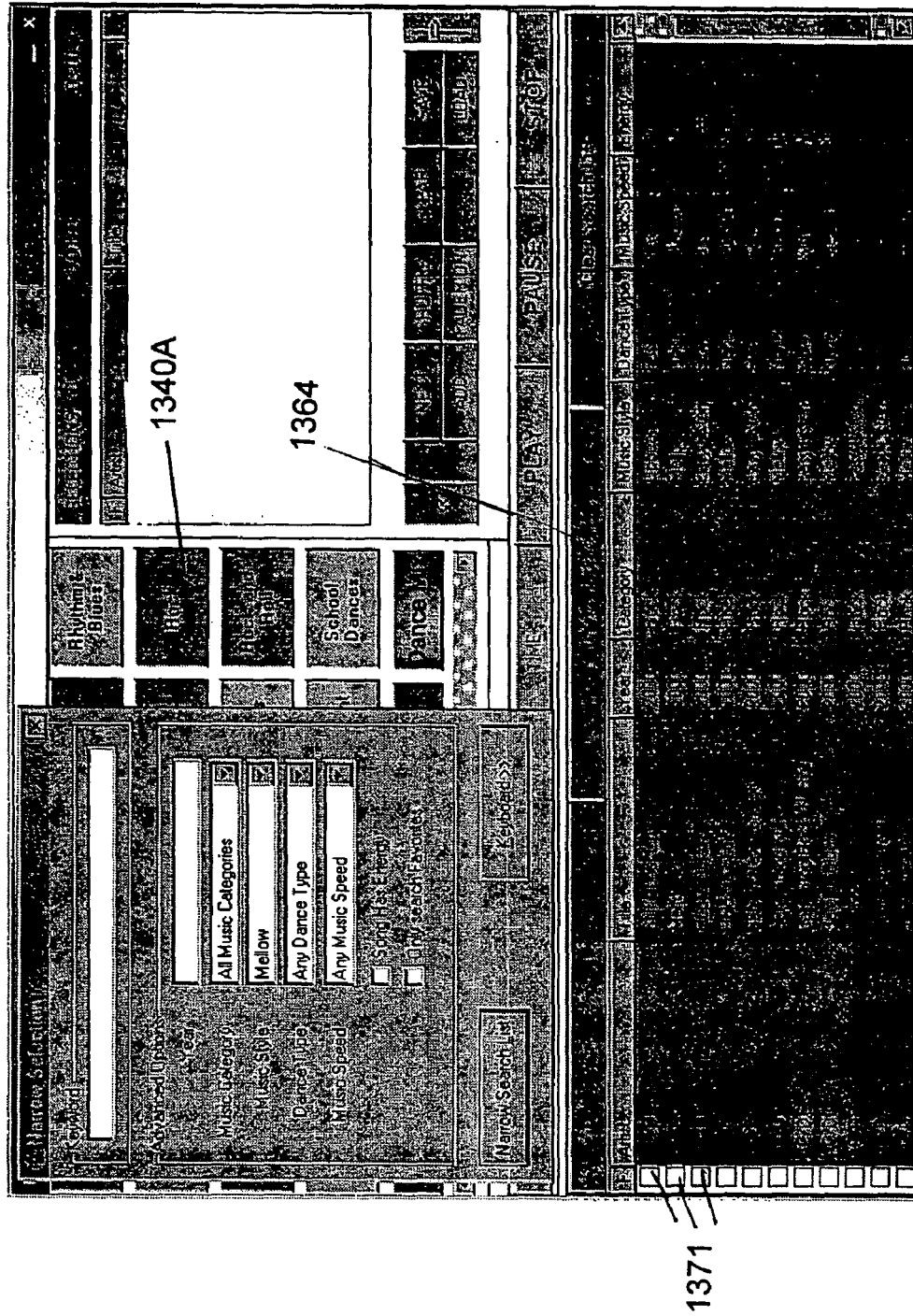


FIG. 51

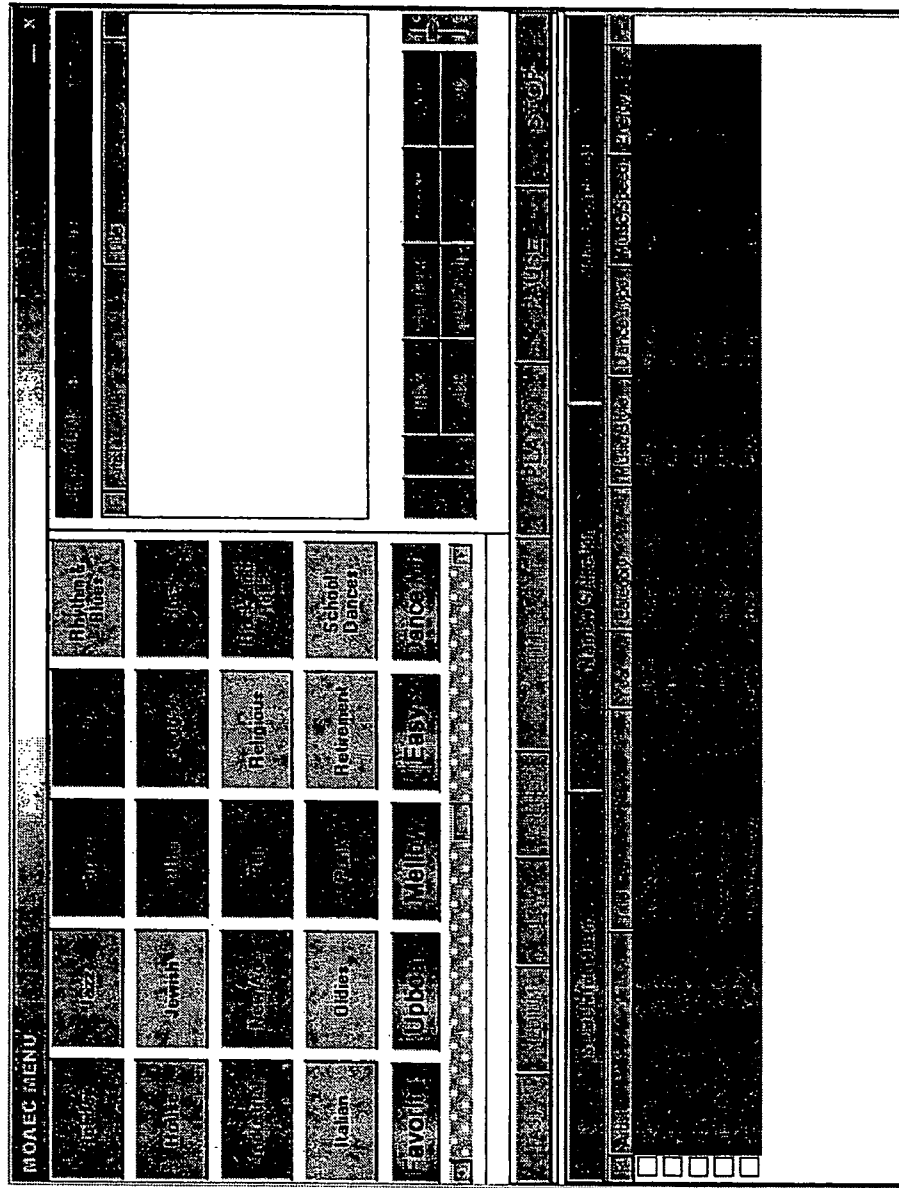
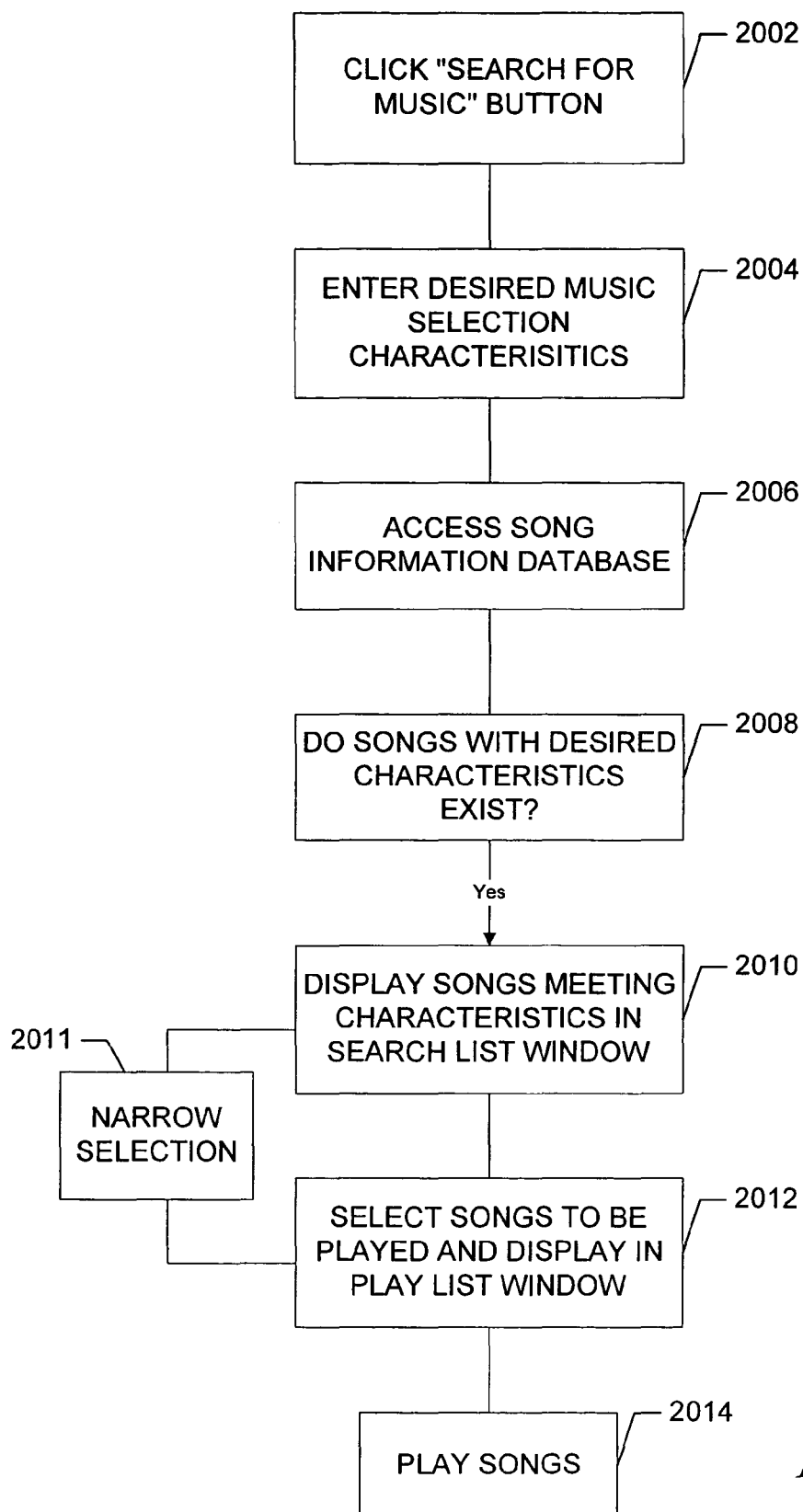
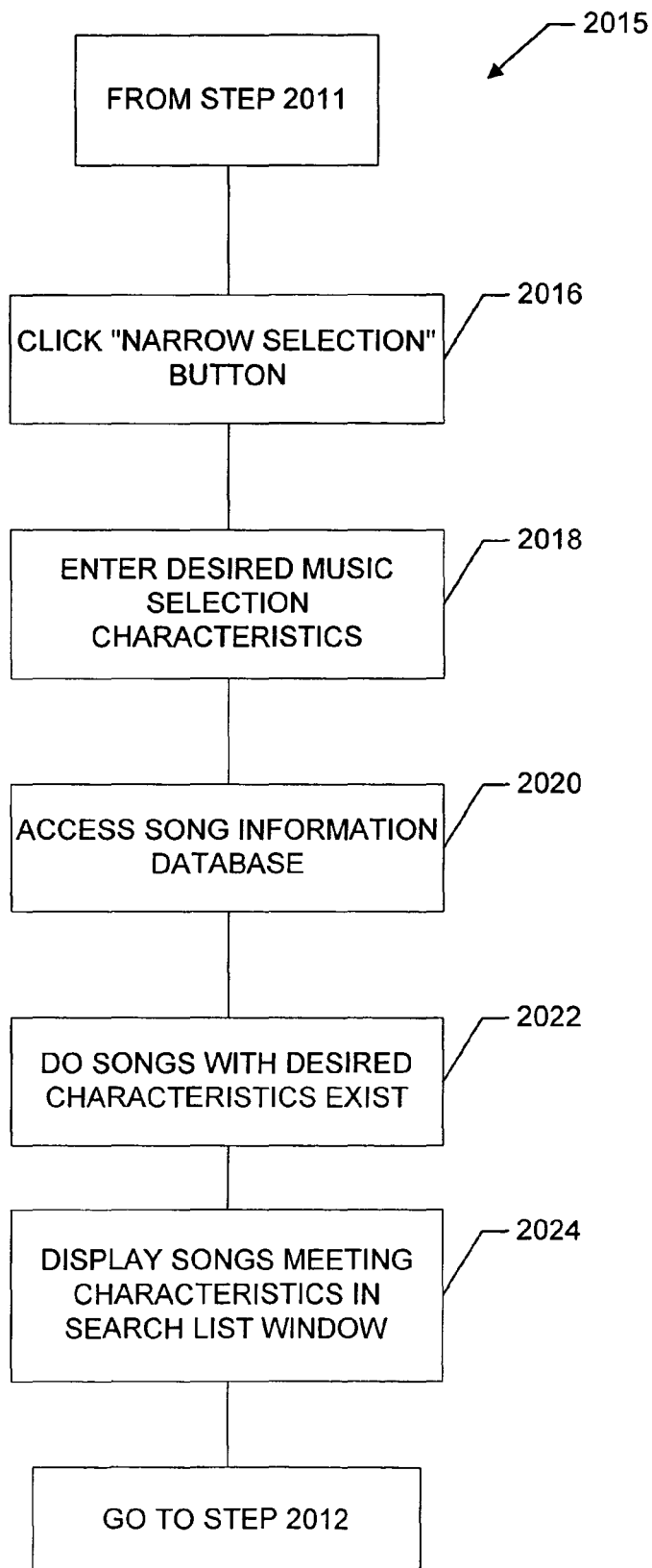


FIG. 52

1310

**FIG. 53**

**FIG. 54**

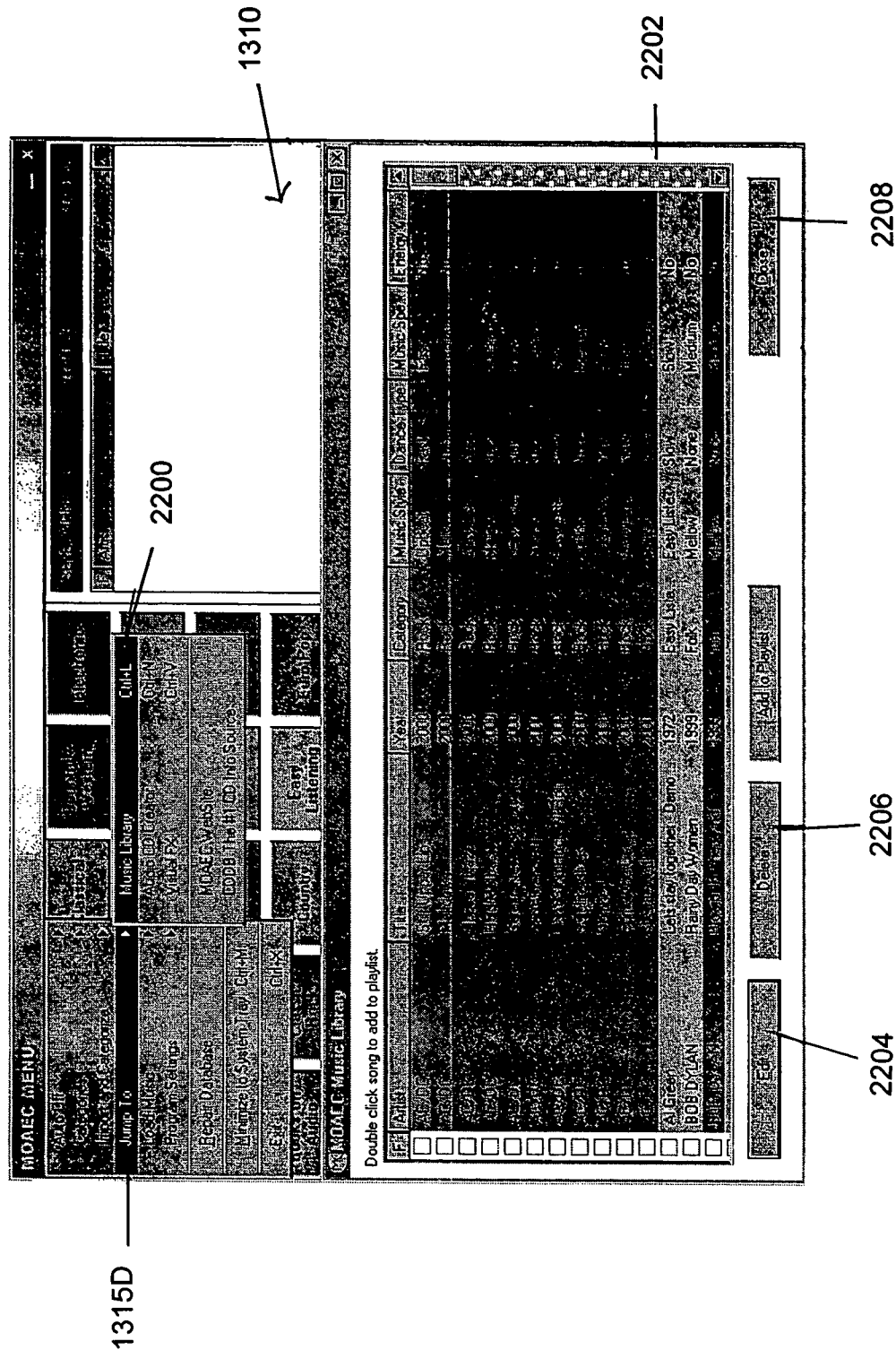
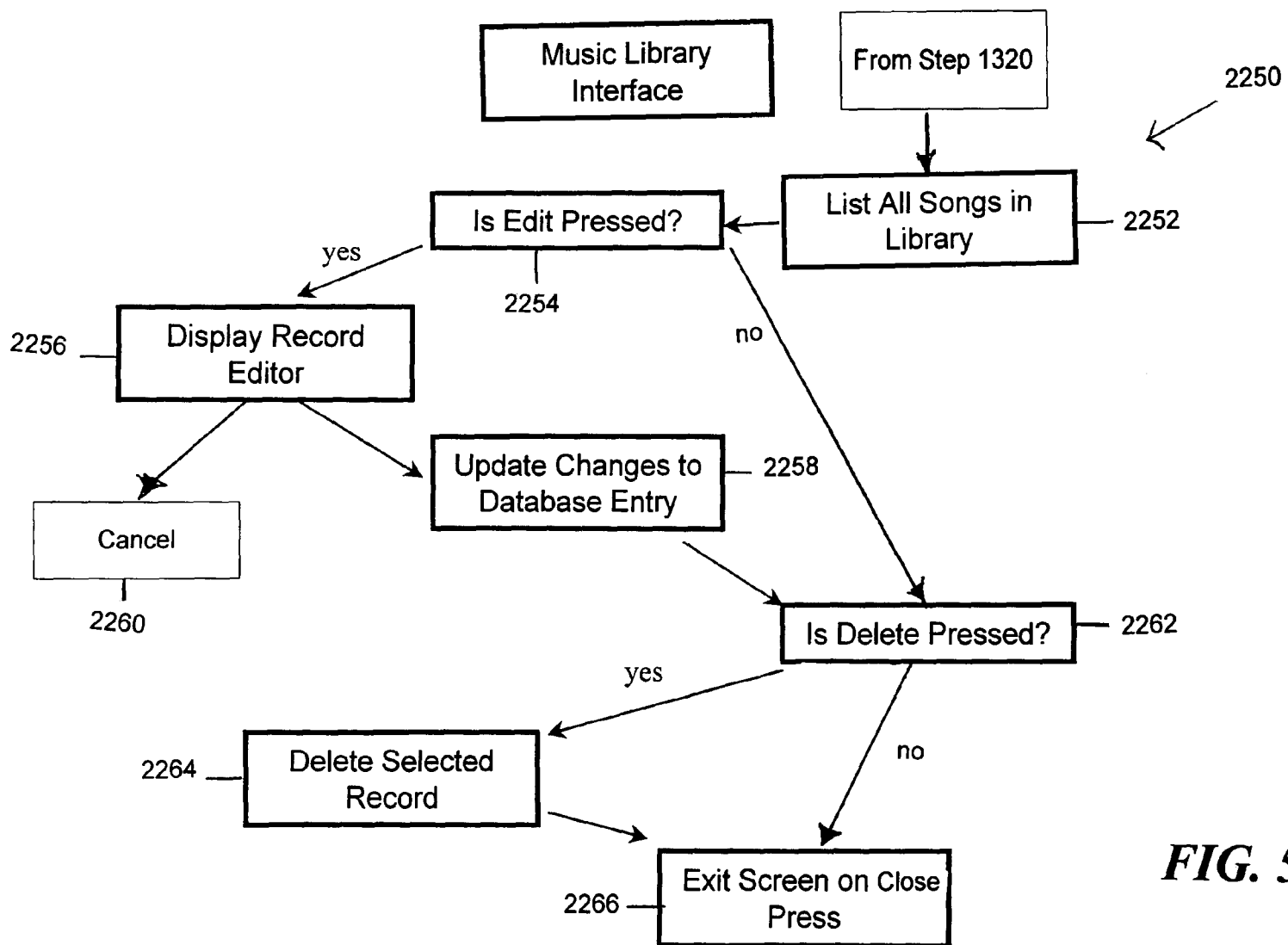


FIG. 55

**FIG. 56**

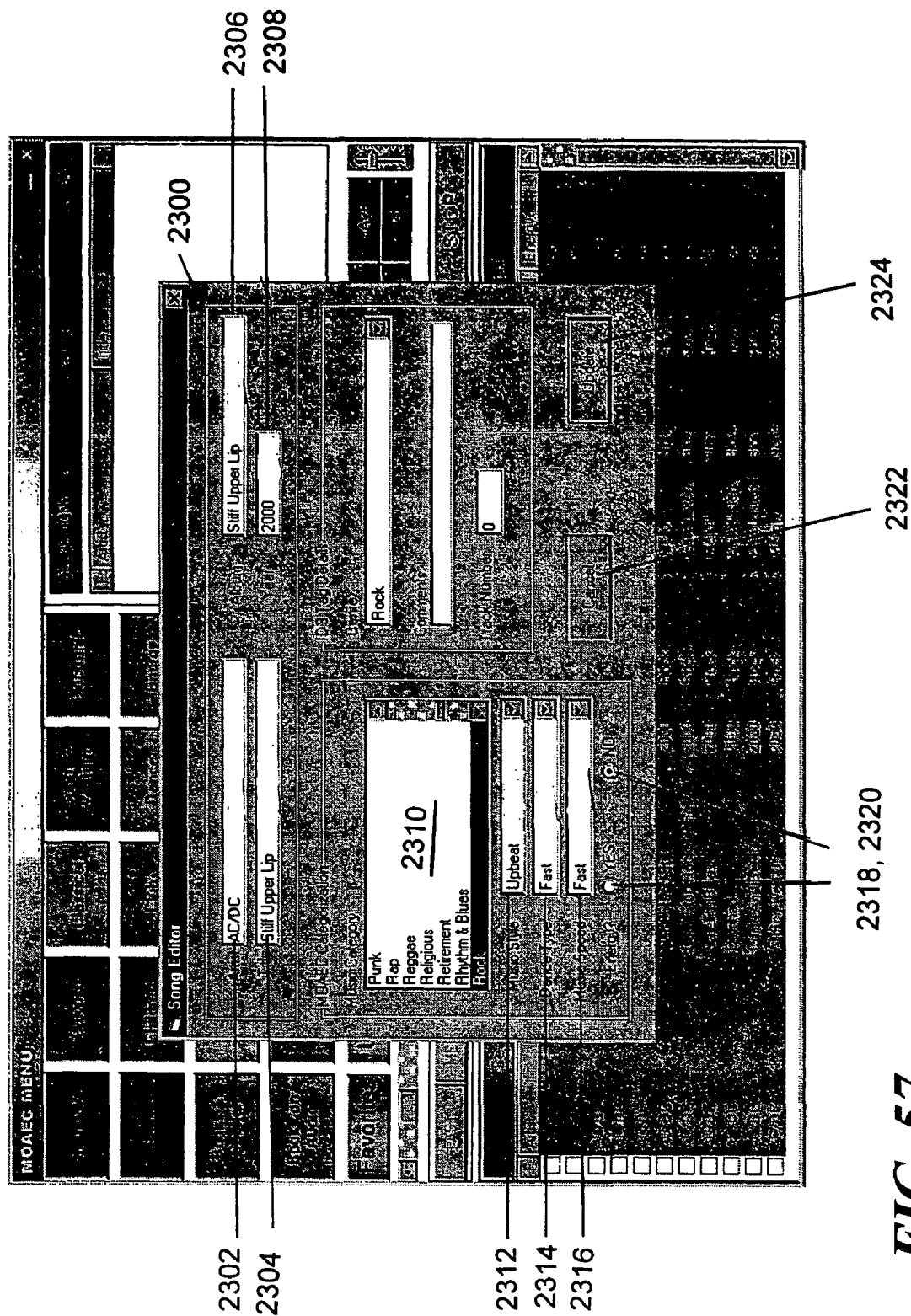


FIG. 57

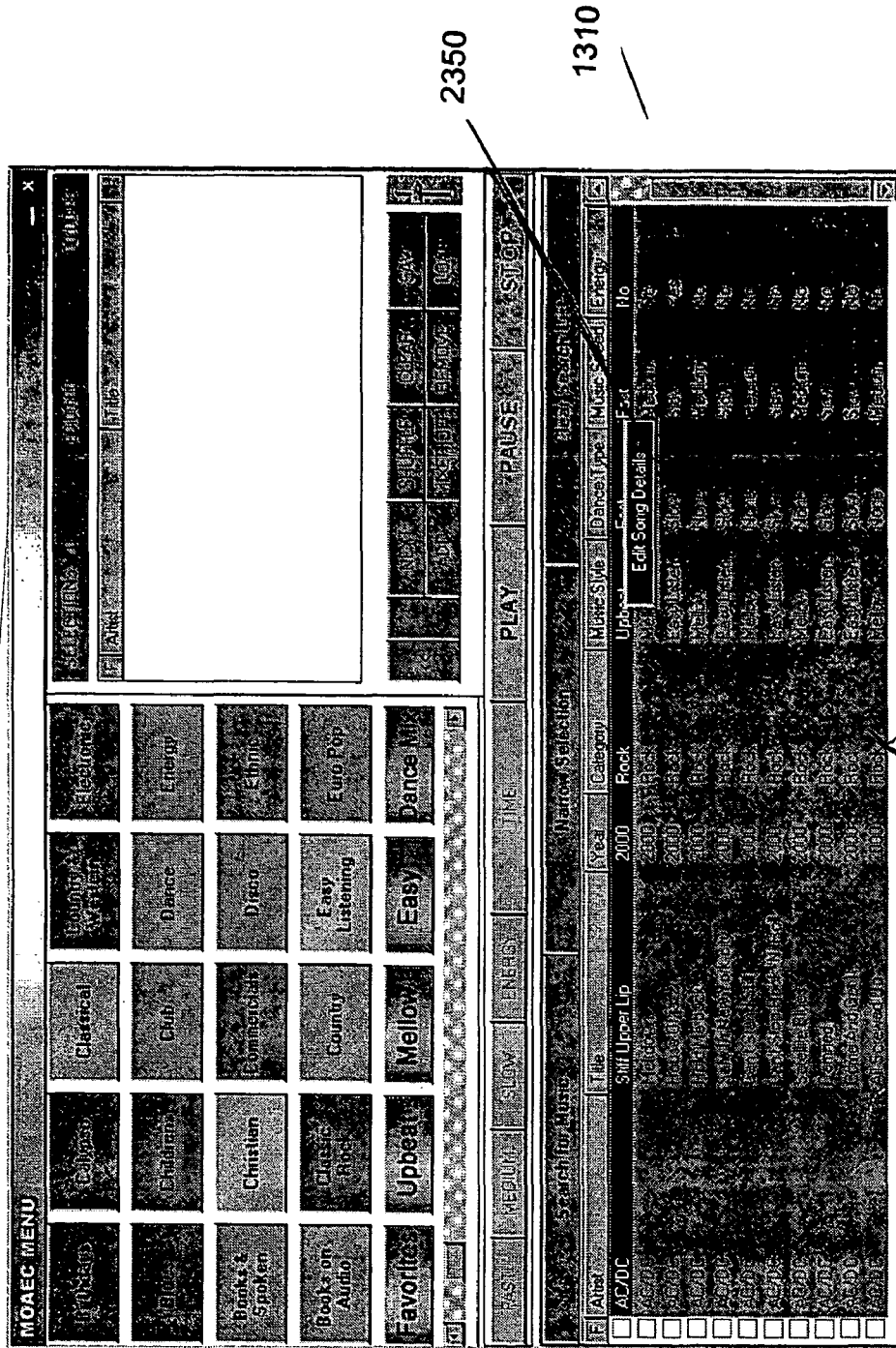
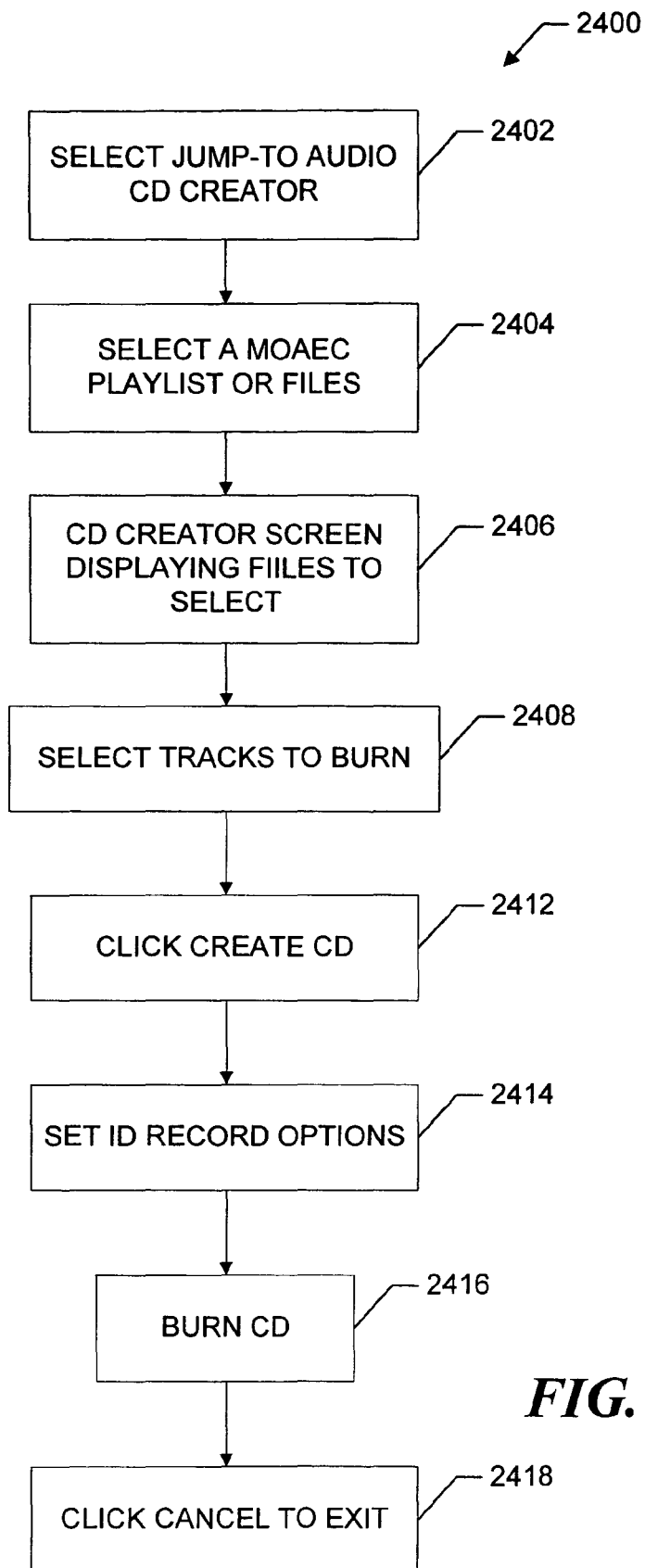


FIG. 58

**FIG. 59**

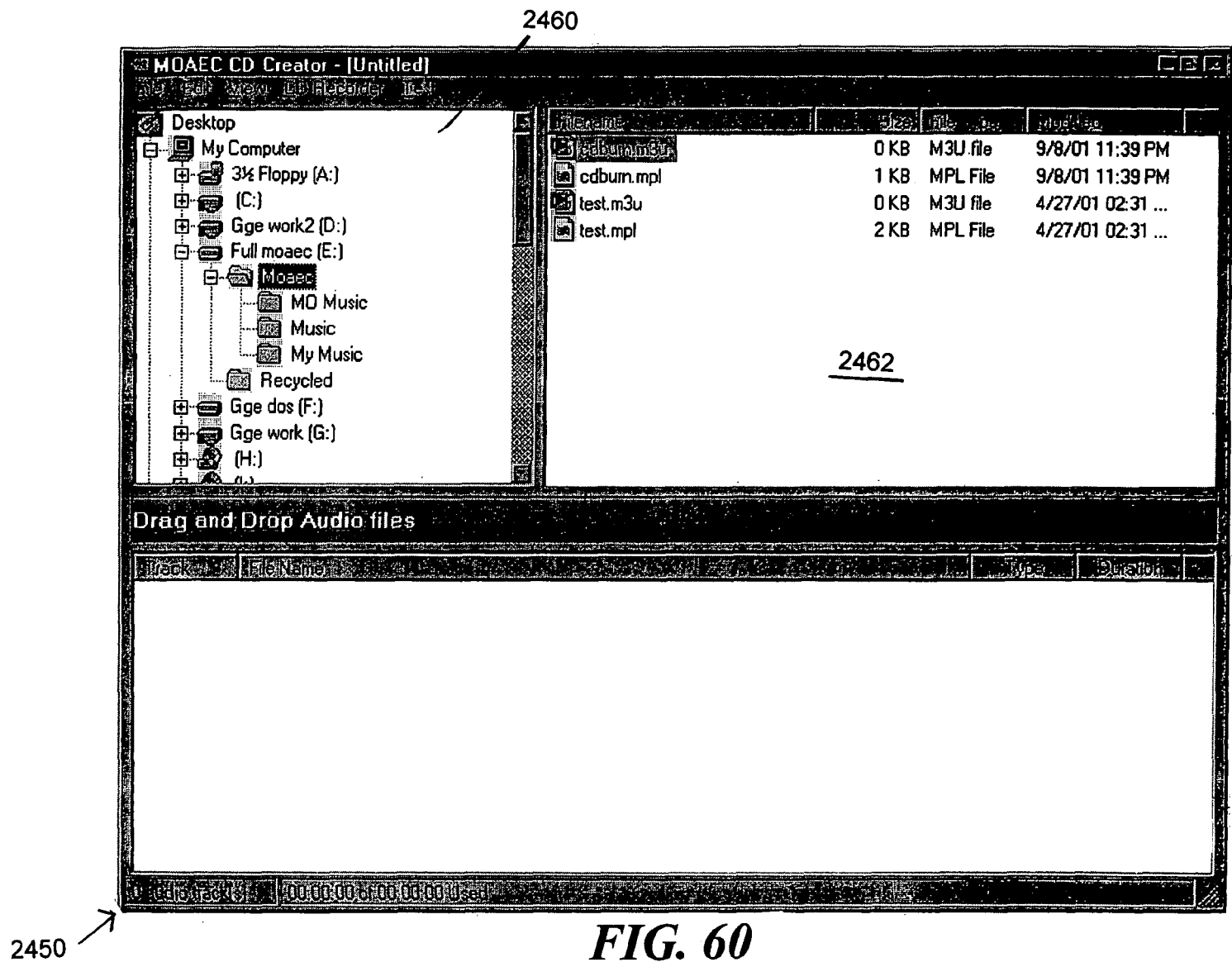


FIG. 60

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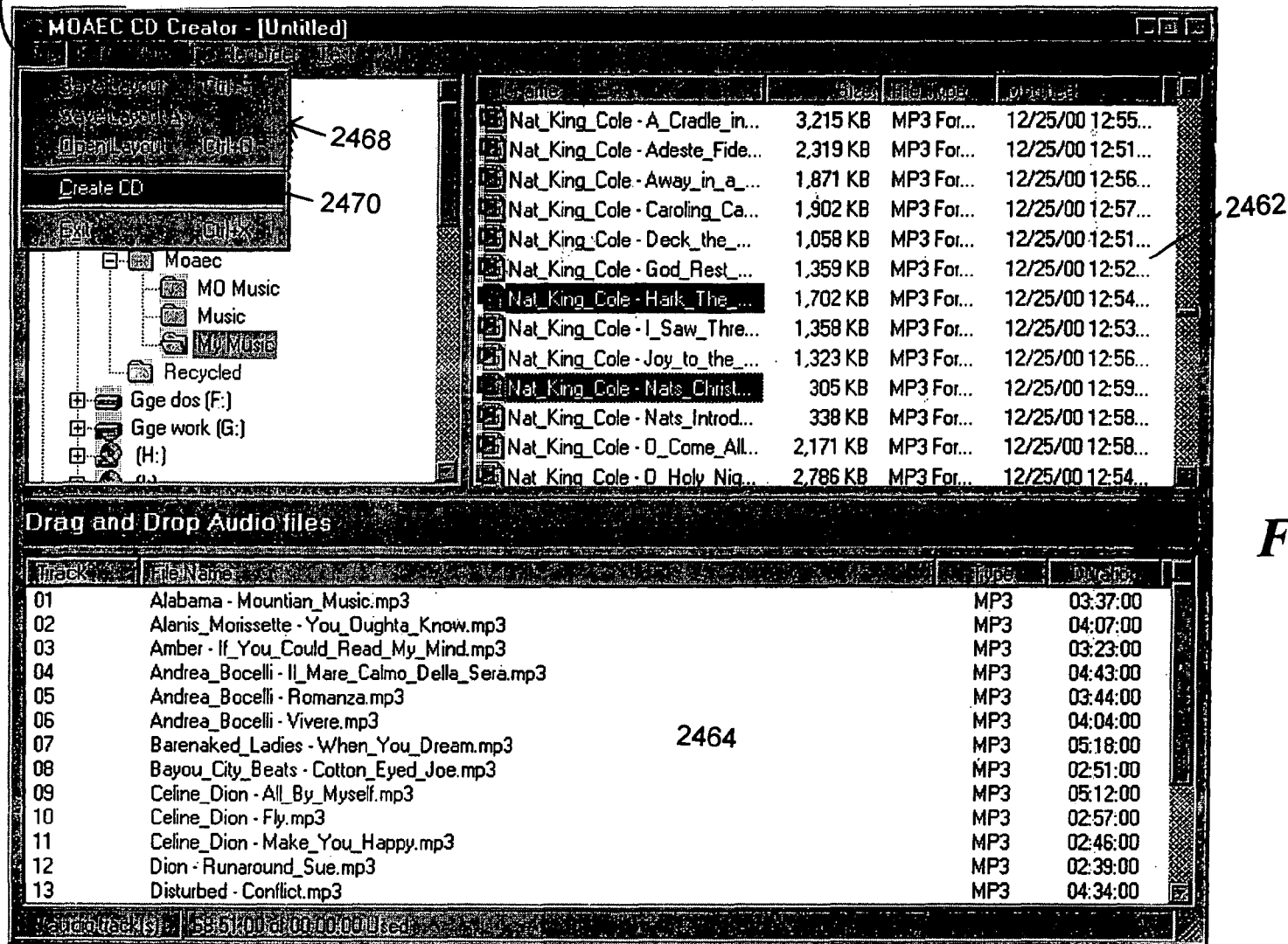


FIG. 61

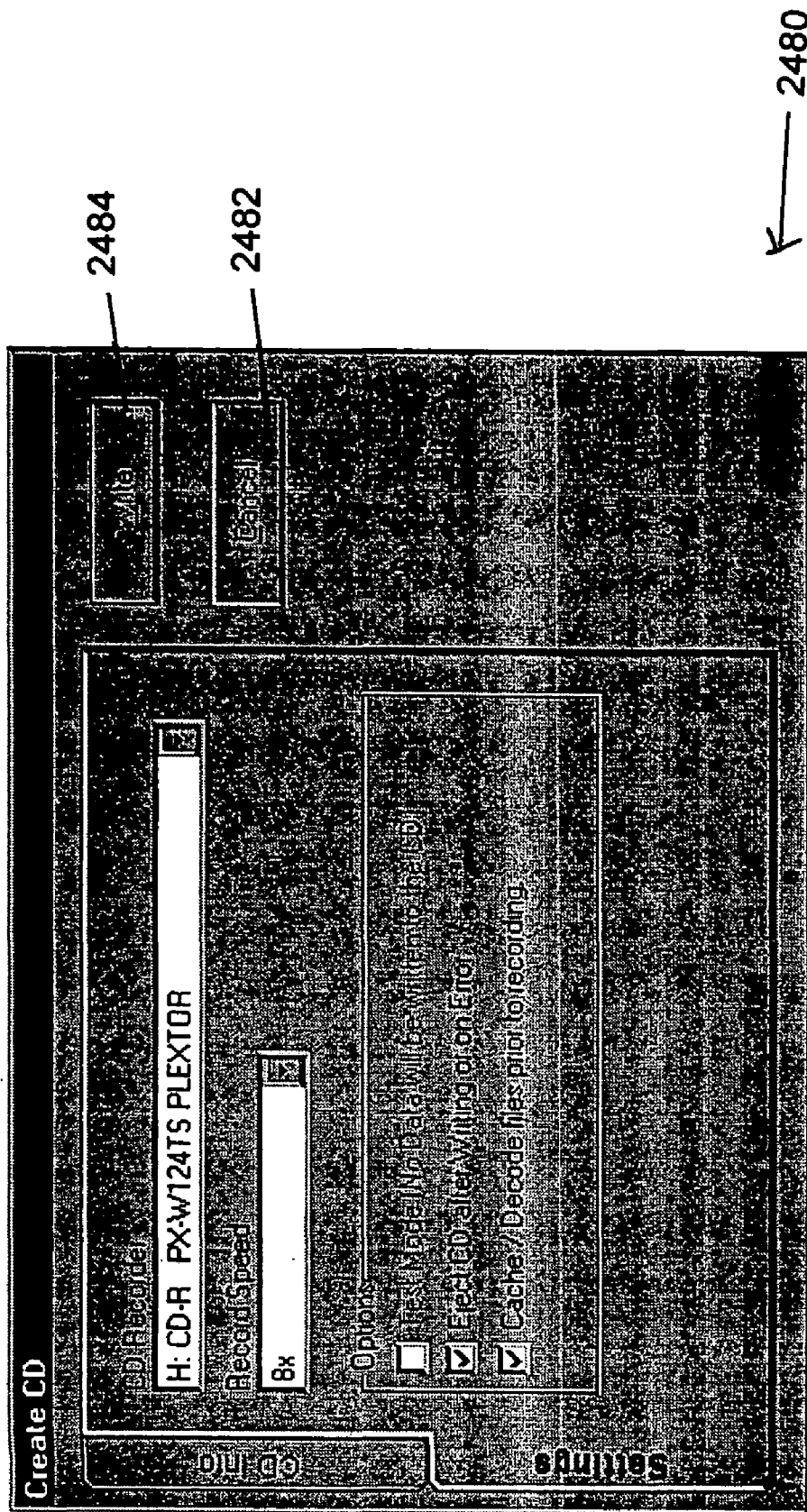
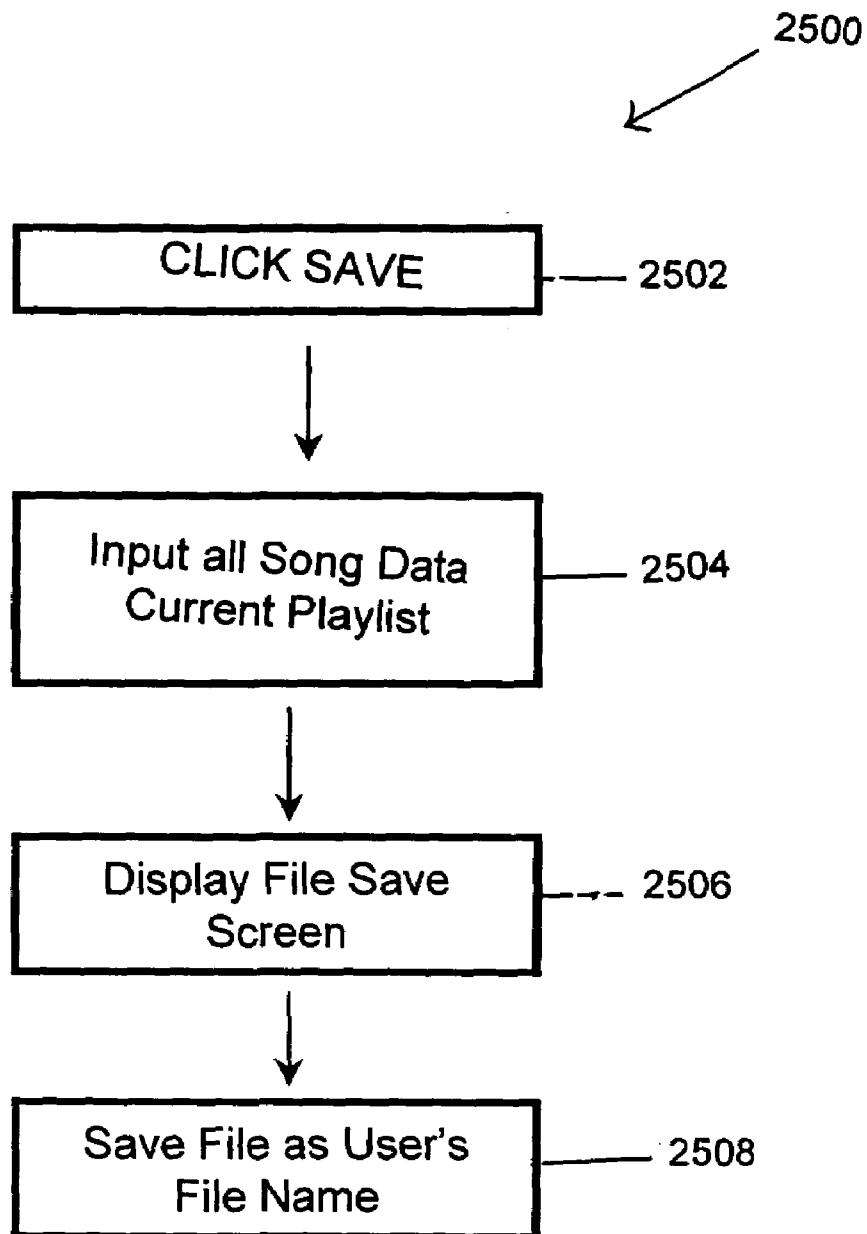


FIG. 62

**FIG. 63**

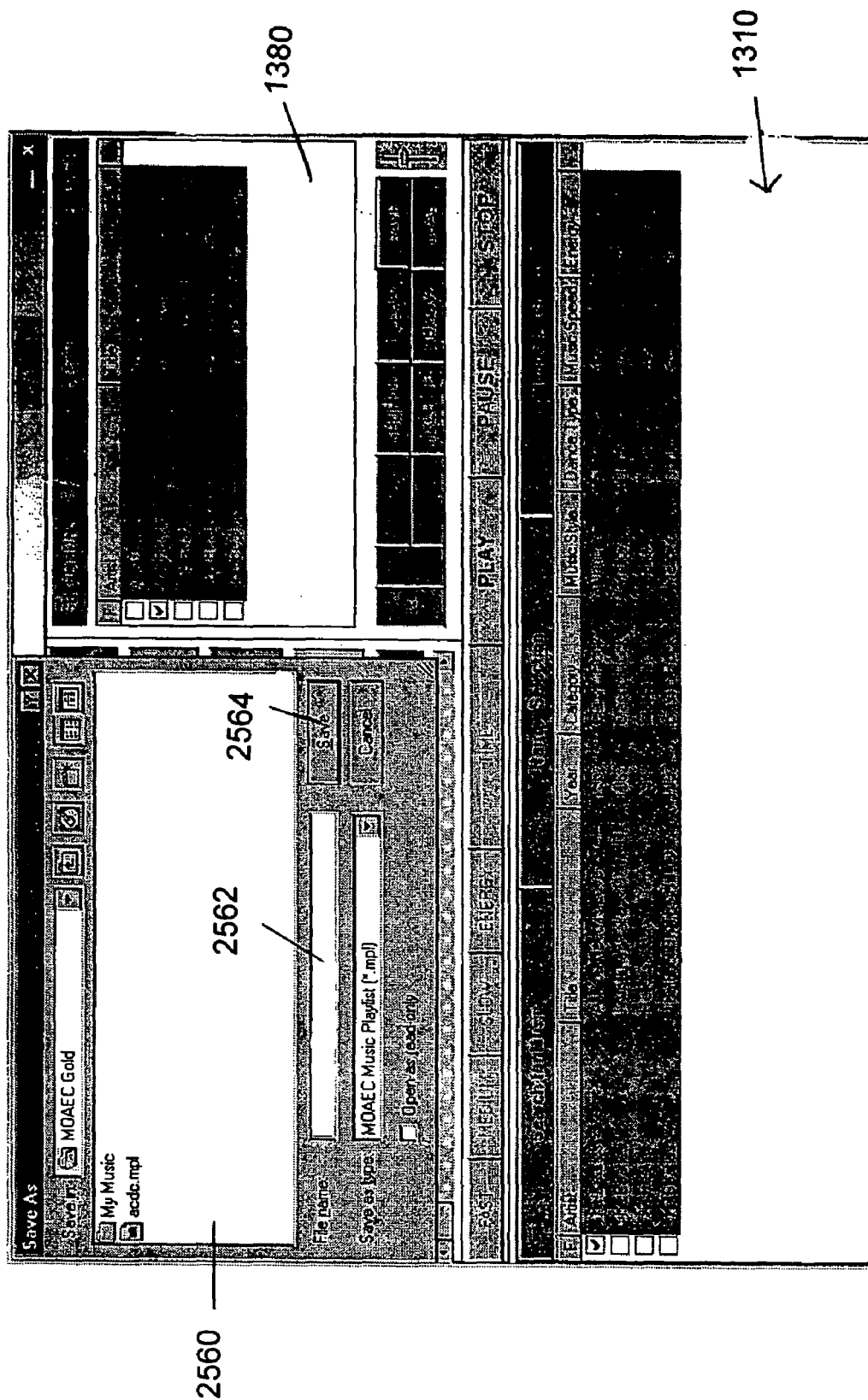


FIG. 64

MEDIA ORGANIZER AND ENTERTAINMENT CENTER

CROSS-REFERENCE TO RELATED APPLICATION

The present application is a continuation of commonly assigned U.S. patent application Ser. No. 09/951,040, which was filed on Sep. 12, 2001, by Brian M. Looney, et al. for a MEDIA ORGANIZER AND ENTERTAINMENT CENTER, now U.S. Pat. No. 6,953,886, which is a continuation-in-part of U.S. patent application Ser. No. 09/855,858 filed May 15, 2001, now abandoned, which is a continuation of U.S. patent application Ser. No. 09/419,559 filed Oct. 18, 1999, now U.S. Pat. No. 6,232,539, which is a continuation of U.S. patent application Ser. No. 09/098,843, filed Jun. 17, 1998, now U.S. Pat. No. 5,969,283. Each of these related applications and issued patents is incorporated herein by reference.

FIELD OF THE INVENTION

This invention relates to media/data (music, books, movies, etc.) organization, playback and recording systems, and more particularly to a system that enables organization, storage, playback and recording of a wide range of individual music selections/songs according to user-defined or pre-programmed list of categories.

BACKGROUND INFORMATION

The storage of music on digital media has presented a number of opportunities to miniaturize storage devices for music, thus enabling larger amounts of music to be stored in one place, and to radically alter the presentation of this music. In addition to the actual music sound data, new data related to certain characteristics of the music can now be overlaid in the storage media. This enables a listener to organize and playback music in a highly customized manner. It is no longer strictly necessary to store music in one format (e.g., a single disc or record) and playback individual selections from this disc or record according to a strict organization scheme. Likewise, advances in data compression and storage technology have enabled much larger quantities of digital data to be stored on magnetic disc and optical media than previously. The "Red Book" format common to music compact discs is somewhat inefficient due to its slow sample rate, and a much larger amount of data can be compressed on a standard data optical disc (CD-ROM), and decompressed and replayed using any number of readily available playback software routines.

In addition, most computers and data processing devices are now equipped with multimedia programs and advanced high-fidelity sound.

It is, therefore, an object of this invention to provide a media organizer and entertainment center that takes advantage of the latest advances in media data compression, storage and data processing capabilities. It is a further object of this invention to provide a user with the ability to fully customize playback of media/data according to a variety of parameters including categories. The graphical presentation of playback and storage controls should be easy to use and learn, and should take advantage of color and other visual aids.

SUMMARY OF THE INVENTION

This invention overcomes the disadvantages of the prior art by providing a media organizer and entertainment center that enables customized playback of music or other media/data such as movies, films, books, tape, etc. having a variety of predetermined categories that are provided, typically, ahead of time by a service provider, but can also be customized and edited by a user. Media/data is played back in any desired order based upon categories from an onboard or remote database that can include a large number of songs, titles, artists, producers, etc.

The media organizer and entertainment center provides a center having a micro-processor, sound card functions and high-volume data storage and retrieval units for playing back media/data according to a variety of predetermined categories or categories determined by the user. Media/data can be played back in random form or can be played back according to a particular pre-selected order. The categories used are provided by a service provider or the end user. The service provider or the end user deliver media/data into the system. The media/data is typically loaded using a custom CD-ROM provided from the service provider or the end user (digital files, audio cds, dvds etc.). The media/data is provided in data-compressed form or audio format which is later compressed. The media/data is then later decompressed and processed through a sound card during playback. The categories can include a variety of parameters such as title, artists, producer, date, speed, dance characteristics, energy level and style, type, etc.

The user selects between a variety of graphical user interface screens that are arranged on a display. The display can comprise a touch screen, or can include a variety of cursor-moving functions for operating different display "buttons" defined on the screen. Alternatively voice recognition software can be used to provide a voice operation capability to the user. Likewise, voice synthesis can be used to inform the user of various system operations.

The interface can be organized according to various categories (i.e. music, movies, books, etc.) that each appears as buttons, or other selection mechanisms which are not limited to size or shape. Within each button can be contained sub-categories for further organization. All categories are cross indexed with categories that are predefined within various fields of the database that stores the data for each song in an appropriate file having the various category flags appended thereto. Conventional database software such as Microsoft Access® can be used in forming the database for compressed media/data and categories. The media/data is preferably compressed using MPEG3 (although other compression technologies can be used). A standard sound card, typically having high-fidelity characteristics is used to playback the decompressed media/data. The media/data is stored in a hard drive or other high-volume storage medium on the system in compressed form. Compression of the media/data, as well as loading of appropriate category flags, can be accomplished at the service provider's facility or by the end user. Orders can be taken by the service provider and filled electronically, via the Internet, satellite, etc. Alternatively, oral orders can be made, that are filled by preparing a CD-ROM containing the selected media/data in compressed or decompressed form. A master list can be contained on the database of the service provider and/or users' system. This master list can be used to select the various media/data from the service provider. The CD-ROM can include updates to the master list that are loaded along with the media/data.

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The CD-ROM and/or individual media/data can include a special code or identification that is keyed to the user's system's code. In this manner only the user's system can load the media/data on its hard drive. A docking mechanism can be provided to all or part of the system to allow media/data to be moved to different playback devices (i.e. hard drives, flash sticks, memory cards, microchips, etc.). In this manner the user can have a library of media/data to organize, playback, and record into a variety of portable and fixed base units, such as boats, airplanes, automobiles, commercial and residential applications.

One of the categories provided to selections can be ratings. Ratings are typically provided ahead of time by the service provider, but are user editable, and are appended to the overall database of categories. The user has, in the center, a facility for blocking out any media from being listed, searched, played or recorded that exceed a predetermined rating category. A password is used to control the block-out function. This password is initially entered by the user or is provided ahead of time by the service provider. It must be entered in order to control the block-out function.

The center can also be provided with an auto exit function. When an initial screen is called, the user can indicate how many minutes he or she wishes the center to playback media/data. When that number of minutes has elapsed, the center automatically shuts off.

It is contemplated that with appropriate data storage techniques and playback facilities, the center can organize, playback and record video and image data as well as music data.

In one embodiment of the invention, a user can import, categorize and organize media/data from audio compact discs or media/data resident on a storage device to a database. The organization of the media/data is according to user defined categories that are assigned manually or automatically at time of import or at a later time. The database and/or media/data can be resident on the center's hardware or located at a remote location.

In one embodiment, categories such as music speed, music style, and dance type are determined by scanning the song in real time and determining a beats per minute value of the song.

The alternate center also advantageously allows a user to substantially control all the function of the center from one screen.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other objects and advantages of the invention will become more clear with reference to the following detailed description, as illustrated by the drawings in which:

FIG. 1 is a perspective view of an exemplary media organizer and entertainment center according to an embodiment of this invention;

FIG. 2 is a perspective view of an exemplary media organizer and entertainment center designed for portability according to an alternate embodiment of this invention;

FIG. 3 is a schematic block diagram of the hardware architecture of an exemplary media organizer and entertainment center;

FIG. 4 is a schematic flow diagram illustrating a basic control data path for the media organizer and entertainment center of this invention;

FIG. 5 is a schematic flow diagram illustrating the use of a graphical user interface screen selected according to the flow diagram of FIG. 4;

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FIG. 6 is a schematic flow diagram showing the selection of a graphical user interface screen selected according to the flow diagram of FIG. 4;

FIG. 7 is a schematic flow diagram showing the selection of a graphical user interface screen selected according to the flow diagram of FIG. 4;

FIG. 8 is a schematic flow diagram of a graphical user interface screen selected according to the flow diagram of FIG. 4;

FIG. 9 is a schematic flow diagram of the playback process using the graphical user interface screens selected according to the flow diagram in FIG. 4;

FIG. 10 is a schematic flow diagram showing the saving and loading of play lists using the media organizer and entertainment center according to this invention;

FIG. 11 is a plan view of a first graphical user interface screen;

FIG. 12 is a plan view of a second graphical user interface screen;

FIG. 13 is a more-detailed plan view of the second graphical user interface screen of FIG. 12;

FIG. 14 is a more-detailed plan view showing the saving of music play list selections using the graphical user interface screen of FIG. 12;

FIG. 15 is a more-detailed plan showing the loading of a music play list using the graphical user interface screen of FIG. 12;

FIG. 16 is a plan view of a third graphical user interface screen;

FIG. 17 is a plan view of a fourth graphical user interface screen;

FIGS. 18 and 19 are perspective views of an exemplary media organizer and entertainment center according to an alternate embodiment of this invention utilizing a base unit and docking principle;

FIG. 20 is yet another alternate embodiment of a media organizer and entertainment center utilizing a docking principle for a main hard drive;

FIGS. 21 and 22 are perspective views of yet another exemplary media organizer and entertainment center for use in mobile environments including, for example, the docking element shown in FIG. 20;

FIG. 23 is a plan view of the graphical user interface screen of FIG. 12 detailing a favorite hits function;

FIG. 24 is a plan view of the fourth graphical user interface screen showing a display of the service provider's available library;

FIG. 25 is a plan view of the graphical user interface screen of FIG. 24 showing the use of a rating category;

FIG. 26 is a plan view of the graphical user interface screen of FIG. 24 showing a password entry window for retrieving rated music;

FIG. 27 is a plan view of a modified first graphical user interface screen according to another embodiment of the invention, including an auto-exit function;

FIG. 28 is a plan view of the graphical user interface screen of FIG. 27 showing a shut-down time control window;

FIG. 29 is a schematic block diagram of the hardware architecture of an alternate exemplary media organizer and entertainment center;

FIG. 30 is a schematic flow diagram illustrating a basic control data path for the media organizer and entertainment center of FIG. 29;

FIG. 31 is a plan view of a Search and Play Main Interface Screen of the center;

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FIG. 32 is a plan view of Search and Play Main Interface Screen illustrating a further operation mode;

FIG. 33 is a plan view of the Modify Category Screen;

FIG. 34 is a schematic flow diagram illustrating a basic control path for adding new categories;

FIG. 35 is a plan view of the screen of FIG. 31 in a further operation mode;

FIG. 36 is a schematic flow diagram illustrating a basic control path for the category and organization and deletion functions.

FIG. 37 is a plan view of the Order Categories Screen;

FIG. 38 is a plan view of the screen of FIG. 31 in a further operation mode;

FIG. 39 is a schematic flow diagram illustrating a basic control path for the Audio CD import process;

FIG. 39A is a plan view of an Import Options screen superimposed on a Search and Play Main Interface Screen;

FIG. 40 is a plan view of a Music Import Screen;

FIG. 41 is a plan view of the Music Import screen in another mode;

FIG. 42 is a plan view of the Music Import screen in a further mode;

FIG. 43 is a schematic flow diagram illustrating a basic control path for the MP3 import process;

FIG. 44 is a plan view of the Music Import Screen in another mode;

FIG. 45 is a plan view of a Music Listing Screen superimposed on the screen of FIG. 44;

FIG. 46 is a plan view of the Music Import Screen in another mode;

FIG. 47 is a schematic flow diagram illustrating a basic control path for the Automatic Music Style, Music Speed and Dance Type Categorization Program;

FIG. 48 is a plan view of a Scanning screen superimposed on the Import Screen of FIG. 41;

FIG. 49 is a schematic flow diagram for a search routine;

FIGS. 50–52 are plan views of the screen of the Search and Play Main Interface Screen with various search screens superimposed thereon;

FIG. 53 is a schematic flow diagram for an alternate search routine;

FIG. 54 is a schematic flow diagram for a narrowing search routine;

FIG. 55 is a plan view of the screen of the Search and Play Main Interface Screen with a Music Library Screen superimposed with a Music Library screen superimposed thereon;

FIG. 56 is a schematic flow diagram for interfacing with the music library and editing the song information database;

FIG. 57 is a plan view of a song editor screen superimposed on a Search and Play Main interface.

FIG. 58 is a plan view of a Search and Play Main Interface screen, illustrating a song information editing interface;

FIG. 59 is a schematic flow diagram illustrating an audio CD create routine;

FIGS. 60 and 61 are plan views of a CD Creator screen;

FIG. 62 is a plan view of a Create CD screen;

FIG. 63 is a schematic flow diagram for creating and saving play lists files; and

FIG. 64 is a plan view of a Save File Screen superimposed on a Search and Play Main Interface Screen.

DETAILED DESCRIPTION OF AN ILLUSTRATIVE EMBODIMENT

A generalized embodiment of a media organizer and entertainment center 50 is detailed in FIG. 1. For the purposes of this description the term “center” will be used to

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describe any of the media organizer and entertainment center systems described herein. Media includes music or songs, video, films, books, etc. Music or songs will be described in the embodiments, but it is understood other types of media could be used. The center 50 is a stand-alone unit powered by household current using a conventional power cord 52. According to a basic embodiment it can be a personal computer, as evidenced by the conventional components to be described below. Alternatively it can be a custom unit as also described below. The chassis 54 of the center includes at least two integral speakers 56 to provide stereo sound. A variety of horn-folding and acoustic enhancement techniques can be used to increase the performance of the speakers. Alternatively, separable speakers can be used, placed at remote locations in a room. The front panel 58 of the center can include a variety of knobs, switches and displays. In this embodiment, a basic LCD display 60 is shown and a retractable tray mechanism for receiving an optical data or music compact disc is also provided 62. This tray 62 is conventional according to this embodiment, extending outwardly and retracting inwardly based upon a switch 64. The transport mechanism and reading mechanism can be conventional. The center includes a flip-up type display 70 according to this embodiment. The display is located on the top 72 of the center and is retractable into a recess 74. A large button 76 is provided to support the display 70 in an upright position. This button can be spring-loaded. When it is pushed downwardly, it allows the display to be adjusted into different position. A latch mechanism 78 can be provided to the display 70 and to the recess 74. The latch mechanism allows the display to be locked into a close position, or, alternatively, released for deployment as shown. The display, itself, includes a screen 80 having any acceptable size, format and display technology. For example, a color active-matrix screen, such as that found in a laptop computer can be used. The pixel dimensions are generally comparable to those of a laptop computer display. The display itself includes a graphically user interface “buttons” 82 that can be actuated using a touch-screen layer applied to the display 80. The touch-screen hardware and controller software are conventional and commercially available. Alternatively, a mouse or other cursor-moving mechanism, such as a track ball, can be provided to the chassis 54.

With reference to FIG. 2, an alternate embodiment of a center 90 is detailed. This center comprises a laptop arrangement having a base 92 and a foldable display section 94. This center can comprise, in essence, a modified laptop computer with all the basic components of a modern multimedia computer system. Certain personal computer components not specifically required for the purposes of this embodiment can be omitted. For example, a display 96 having buttons 98 as described above can be provided. A plurality of speakers 100 can also be provided representing base, midrange, tweeters, etc. Volume and screen display controls 102 can also be provided as well as a basic alphanumeric keyboard 104 of conventional design. A retracting compact disc tray and reader 106 can also be provided. An onboard battery (not shown) provides power while an AC/DC converter 108 recharges the unit based upon household current provided by a power cord 110. Note that automotive DC current can also be used.

The generalized architecture of a center is further detailed in FIG. 3, complete with optional components. The “heart” of the center is its central processing unit or CPU 130. The CPU, in a preferred embodiment comprises a Pentium® II

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microprocessor having an operating speed of 266 MHz or greater available from Intel. The architecture of this microprocessor is well-known. It is adapted to accept inputs from a variety of hardware components. These hardware components are, themselves, commercially available and can be interfaced with the CPU 130 by those of ordinary skill. In summary, the components involved in a complete center will now be described.

A random access memory (RAM) 132 is provided to support the CPU 130. This RAM typically provides twenty megabytes of storage or greater. A keyboard and/or cursor-moving mouse interface is also provided. The keyboard 134 can be omitted in certain embodiments where a touch-screen is used for all onboard functions. For example, the touch-screen, shown as a touch-screen interface 136, and used in conjunction with the monitor screen 140, can include a touch-keyboard thereon for entering alphanumeric characters. Where a monitor 140 is used, a video driver card 142 of conventional design is provided. A conventional television can also be utilized. Where a television screen is used for displaying data, a scan converter 146 can be provided. The scan converter 146 can be used for output 150 to the television screen and/or input 152 from, for example, a television remote control 154. In this manner both input and output via a television and/or computer monitor can be accomplished. A microphone 160 and appropriate voice recognition card 162 can also be provided in conjunction with the CPU. Additionally, a CD-ROM, with appropriate driver card 170 can also be provided. For output, a sound card, available from a variety of commercial sources such as the Soundblaster® driver 180 can be employed and appropriate amplifiers and speakers 182 can be provided. The amplifiers and speakers are conventional and receive inputs from the sound card in the form, typically, of analog audio signals.

Input/output exchange of data is provided through a hard drive storage 190, also of conventional design. As will be described further below, the hard drive storage interacts with the CPU 130 using onboard software. This software includes a speech recognition software block 200 a sound decompression software block 210, a sound information database 220 the center's proprietary speech vocabulary 230 and the center's search and play interface 240.

A significant feature of the center, to be described in greater detail below, is the organization of media/data, such as individual songs or selections, according to specific categories, that are determined ahead of time, on a partially subjective basis, by the service provider. These categories are carried in a database, along with the raw digital music data, and allow the user to playback each of the individual selections based upon specific categories in a random or ordered manner. The use of categories for storage and playback empowers the user in an entirely new way. Songs can be chosen based upon a specific desire or mood that relates to categories such as music age, energy, speed, style, dance, or rating. Experienced listeners can enjoy new convenience in music playback. Newer listeners typically find their use of the center to be highly educational, as they quickly learn to associate certain types of categories with specific selections, artists and songs, and can enjoy the benefit of a full display of the song data via the center's screen.

With reference to the above-described architecture, the procedure by which individual songs become categorized and eventually made available for a user to playback according to particular categories will be described in summary:

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1. Musical source material is first purchased or otherwise acquired by the service provider that services the music organizer and entertainment center of this invention. This music is typically obtained in standard Red Book compact disc format on individual music albums and singles.

2. A standard compact disc player, DAT or other audio playback medium is used by the service provider in conjunction with a main computer having a large database. A hard drive rated at five gigabytes or larger is used in conjunction with the database.

3. Music is played by the playback device into a data compression card commercially available from, for example, Dialog Four™. This data compression card compresses the music into the commercially available MPEG3 format. A CPU, similar to that shown in FIG. 3 stores the music in the hard drive of the service provider in compressed form. Individual songs are each given their own file identifier for later processing.

4. Compressed music is subsequently catalogued using a conventional database program such as Microsoft Access® 2.0 in this embodiment. The following categories, among others can be used in conjunction with the database program to catalog each individual musical selection-song title, artist, date, main music category, sub-main music category, special music category, sub-music category, music style, dance type, music speed and a subjective music "energy level" determined by the service provider. These categories are used subsequently by the center's operating system as described below. All categories are stored in the service provider's hard drive for subsequent retrieval.

5. A master list of available music, in the form of individual selections or songs, is compiled by the service provider. Individual customers or subscribers are solicited to select songs or groups of songs or selections from a service provider. According to a preferred embodiment, the selected songs are copied from the service provider hard drive to a writable data compact disc in MPEG3 compressed format. The center operating system software and Access® 2.0 database program available from Microsoft, Inc. of Redmond, Wash. can also be loaded onto this compact disc when the playback device does not already contain these software packages.

The package of data compressed songs and other software if applicable, is tagged with a distinct serial number or other identifier and/or format that matches a pre-loaded serial number or format in the subscriber's particular center. This serial number or format has been pre-loaded in the center from software made available by the service provider. For example, a commercially private or public key encryption algorithm can be provided to the subscriber. The data in the compact disc includes an appropriate encryption key that matches one already present in the center. Compressed data can be decrypted and "unlock" based upon a match between the key provided by the service provider and the key provided by the center. In any case, a technique for locking information so that only a desired center can read the information and, hence, play the songs, is provided. This prevents copyright infringement and unauthorized playback of songs by other units that have not paid appropriate license fees for receiving the music.

6. As noted above, a formatted, data-compressed disc is provided to the subscriber via a physical transfer of the disc. In other words, the disc is mailed or otherwise delivered to the subscriber. It should be noted that, while an optical disc is the preferred form of data transfer according to an embodiment of this invention, another form of storage media such as tape, hard drives, flash sticks, microchips,

memory cards, circuit chips, removable hard drive, or any other acceptable high-volume data storage can be used to transfer song data. Likewise, the formatted compressed data can be transferred via a radio, satellite or telephone network link, naturally including various file transfer techniques using the well-known Internet, assuming that appropriately wide bandwidths is available to enable the transfer to occur in a sufficiently short period of time. All these techniques of transferring formatted, compressed, customized song data are expressly contemplated according to this invention. It is desired primarily that the data include various categories as described above with reference to step 4.

When the subscriber receives the customized song data on the disc or other medium, the customer installs the disc in his or her center by following conventional installation and instructions provided with the disc. As noted, the center either includes well known CD-ROM installer routines, such as those found in popular Windows® operating system available from Microsoft or, alternatively, specialized installation software is included with the disc transferred from the service provider. All data on the disc is typically transferred into the high-volume hard drive or other storage media provided with the center. The song data, therefore, resides in the center formatted in the Access® 2.0 is database as described above. The categories appended to each song as part of the database program also reside in the center's hard drive at this time.

7. The center's software loads data related to individual song selections and categories into appropriate database locations.

8. The center polls data in the downloaded disc to determine whether the appropriate identification code and/or serial number, matching that of the center is present. If not, then the downloading process is terminated, and the user is advised to contact the service provider.

9. If downloading of song data is completed successfully, then the data becomes resident on the center's disc drive or other high-volume random access memory storage unit. New songs are appended to a list that contains any previous songs. This information is displayed in a manner to be described further below.

10. The CD-ROM is subsequently removed from the center and stored for backup purposes. At this time, the user can select various songs downloaded in the previous steps using various graphical user interface and/or voice commands to be described further below.

11. Upon playback, song data is decompressed from its stored format using MPEG3 data compression. The decompressed song data is then played in a standard "wave" format using, for example, Winplay 3® available from Microsoft, or another data-to-sound software procedure. It is contemplated that the software procedure be compatible with an appropriate sound card, as described above. Speakers and an amplifier are used to deliver music to the user, as also described above.

Reference will now be made to the flow diagrams illustrated in FIGS. 4-10, and corresponding graphical user interface display screen illustrations will also be referenced. These display screens are shown in FIGS. 11-17.

Referring first to FIG. 4, the user initializes the program in a program start step 300. A title screen, not shown, is displayed 302. Any acceptable title screen can be used. The title screen prompts the user to enter the program in step 304. If the user does not desire to enter the program, it ends in step 306. If the user enters the program, then Screen1 is entered in step 308. Screen 1 is shown in the display 310 in FIG. 11. Note that the various screens, entitled Screen1,

Screen2, Screen3 and Screen4 are denoted respectively by buttons S1 (312), S2 (314), S3 (316) and S4 (318). These buttons appear on the bottom of all display screens used herein so that a user can quickly select between different control screens. The blank control fields are displayed in step 320. Based upon these fields, a user selects between Screen1 controls in step 322, Screen2 controls in step 324, Screen3 controls in step 326 and Screen4 controls in step 328.

Note that the Screen2 display 330 is shown in FIGS. 12, 13, 14 and 15. Likewise, Screen3 displays 332 are shown in FIG. 16 and Screen4 displays 336 are shown in FIG. 17. These screen displays will be described further below.

With reference to Screen 1, as shown in FIG. 11, various media channels for playing back music can be established. In this example, Channel1 340 and Channel2 342 are provided. Each channel includes an individual set of speed and playback buttons 344 having conventional control symbols allowing, for example, play, stop, pause, forward and reverse. Additional controls 346 can also be provided for the channels and can be used, for example, for specialized functions such as mixing of songs and overriding of songs using, for example, external microphone inputs. Note that, in particular, a fade control 348 is provided.

FIG. 5 details user operations utilizing Screen2 after branching from step 350. Screen 2 is shown generally in FIG. 12, as noted above. By branching to the searching step 352, a user can search the main categories of music recognized by the system. The Begin Search button 354 (FIG. 12) controls the searching of main categories. As noted, a variety of categories such as artists, as shown in FIG. 12, can be searched. The selection of an appropriate category is noted in block 358. Various text can be entered using a keyboard 360 (FIG. 12) according to the block 362. The particular element being searched as shown in the window 364 causes the system program to access a main song database entitled MyData in block 364. The request can be canceled in block 370, which causes a branching back to the initial screen block 350. The button 372 enables cancellation.

If no cancellation occurs, then block 374 determines whether the requested category and text within the category exists. In addition, categories and information can be characterized according to a variety of colors, as displayed in the partial window of categories 380 and the more complete window, as shown in FIG. 13 as window 382. If the particular category and/or text does not exist, then block 388 notes its absence and suggests ordering the desired music. This block then branches to the cancellation block 370. Conversely, if the particular categories and/or text exists, then the appropriately organized songs are displayed according to block 390 in the window 392.

Screen2 acts generally, as a main control screen for searching and playing any selections within the center. The illustrated window 382 in FIG. 13 shows some of the possible categories that can be organized by the service provider and cross-referenced within the database with respect to each individual selection. "Other category" buttons 400 are provided for future expansion. If one of the main category buttons in the window 382 is selected, as shown in block 410, then the routine determines whether a single or double "click" of the user interface has occurred. If a single click occurs as shown in block 412, then the system prompts the user to select a music "speed" in block 414 according to Screen button 416. The user is then prompted to input an appropriate time duration within which music will be played in block 418 based upon button 420. Given these parameters, the system accesses the database in

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step 422 to determine music matching, the selected criteria for time and category. Songs are entered in a play list according to the categories based upon blocks 424, 426 and 428. In particular, according to block 428, the songs can be randomized after the time and category criteria have been met to provide a “disc-jockey” type playback, which is somewhat arbitrary. The play list for the given time is detailed in window 430. The number of songs in the play list currently remaining as shown in window 432 and the time remaining is shown in window 434. Time values are based upon pre-entered time values provided by the service provider in the original database. Like other criteria, time of a song can be determined as an individual criteria. Conversely, the time of song can be measured based upon the size of the data file and upon other criteria well known to those of ordinary skill.

At any time, a portion of the current search list 451 is displayed, showing the various depicted categories such as title, artist, publication date, music category music style, dance type, music speed and energy in row-and-column form. The search list represents the selections located by pressing one or more category buttons. Songs from the search list can be appended to the end of the play list 430 by, for example clicking on their entry in the search list 451.

Once a selected play list is created, the user has the option to load and/or save the play list using respective buttons 438 and 440. If the save button 440 is pressed, then a confirmation window 450 is displayed as shown in FIG. 14. This particular play list is assigned a name and can be replayed at any give time by calling up the particular play list from a menu.

A set of buttons of particular interest are used to organize the search list 451 so that the song titles therein are displayed in a desired manner. The Organize button 453 allows displays to be refined. In particular, by pressing either ascending or descending buttons 455 and 457, respectively, the search results can be displayed in corresponding order.

Another button of interest as detailed in FIG. 13 is the Dance Mix button 452. This button is a default selection button that selects and searches for dance music having a particular speed. In a preferred embodiment, this function specifically selects, at random from the MyData database, three dance category songs with a fast speed category followed by two dance category songs having a slow speed category. These songs, the order three fast and then two slow are placed in the music play list for playback at the earliest available time.

FIG. 15 shows a file listing window 460 having a four separate play list files 462 that can be selected. The selected play list file 462 can be transferred to the main music play list window 430 by pressing the open button 464 within the window 460.

Before discussing the system procedure further, it is noted that pressing the Category button as detailed in step 410 (FIG. 5) twice (e.g., “double click”) as shown in block 470, causes the particular Category button to display Screen3 480 (FIG. 16). The display of Screen3 is detailed in block 472. Screen 3 provides a window 482 with sub-categories that fall under a particular music category. The sub-categories are listed as individual buttons 484. These categories can comprise a variety of parameters such as time frame, special occasions, type of music, etc. In addition, the basic categories such as speed or “energy” can be included as sub-categories under a particular category.

Further reference is made to FIG. 6. The controls for screens 2 and 3 will be described first, in further detail. When a particular song in a play list is selected by, for

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example, highlighting a song with the cursor as detailed in block 500, the song can be played immediately by pushing the Now button 502 as detailed generally in block 504. Any current song being played is interrupted in block 506 and the selected song is played instead. Subsequently, the play list begins playing songs in the prior order in block 508. Conversely, if the sort command is given in block 510, then songs are sorted in ascending or descending order according to a selected category in block 512. A song in the search list is selected in block 514. The song selected can be played according to the Now block 504. Alternatively, the pick block 516 can be used to put the searched song at the end of a given play list as shown in block 518. If the play list song is “clicked” twice as shown in block 519 then the search list song selected is placed to the top of the play list in block 520. In addition, a listing of favorite hits/selections can be requested by the user in block 524. This causes the search list to be filled that have been pre-selected in block 526 and a song from the search list is selected in block 514. Block 514 then branches to the now block 504 and continues as described.

Referring again to block 520, if a song is placed at the top of the play list the song is updated in Screen1 in block 530. The song is then played based upon the play block 532. If the mix up command is entered by the user in block 540, then songs in the play list are randomly mixed in block 542 and Screen1 is updated in block 530. As described above, the play command 532 causes songs to be played in the play list order selected in block 508.

The selection of Screen3, shown in block 560, then the system determines whether a main category was selected in block 562. If not, then an error message is displayed in block 564 and the original screen is re-displayed in block 566. If a main category is selected in block 562, then the system accesses the MyData database of songs and categories in block 568. Any appropriate sub-categories are listed based upon that particular main category in block 570. Sub-categories are sorted and displayed on appropriate default sub-category buttons 572 shown in the window 482 in FIG. 16. The user can select appropriate sub-category buttons by “clicking” on them as shown in block 574. The MyData database is accessed in block 576 based upon the selected sub-categories and all songs that match the main and sub-category selections are listed in block 578. This listing is shown in the search window 332. Note that the search window 332 displays various category information such as title, artist, date, music category, music style, dance type, music speed and energy. Of course, this can also be included as desired by the service provider who originally formats such categories. In addition, custom category information can be included based upon the user’s desires.

FIG. 8 relates to the selection of Screen4 as shown in block 550. Screen 4 is also illustrated generally as the display 336 in FIG. 17. The display is organized to display all songs within the user’s library and the broader service provider’s library. The display 336 includes columns showing data test status 552, song identification number 554, disc number (e.g., the disc on the service provider on which the song resides 556) the catalog song number 558, the title 590, the artist 592, the music style 594, the dance type, if any, 596, the speed 598, the time in seconds 570, the energy level, if any, 572 and any other appropriate category.

The entire library of the service provider can be provided in this format to the users, so that the user can select the songs that it wishes to order at later times. A series of buttons can be provided within Screen4. The first button, Button1, shown in block 580 instructs the user to insert an appropriate

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CD-ROM containing music and category data in block 582. The user is then prompted to use Button2, shown in block 584. This button lists all compressed data files based on the particular disc and directory selected in block 586. The user is then prompted by Button3 in block 588. Activating this button causes the copying of all compressed files from the disc over to the directory if these files are not already present in block 560. The user is then prompted by Button4 in block 562. Activating this button accesses the main database in block 564. Songs on the CD-ROM are compared to the data records within the center in block 566. The MyData database is updated with new songs in block 567. At any time, the canceled button can be pressed as shown in block 598, which returns to the Button1 prompt of block 580.

Reference is now made to FIG. 9. If a Play (see button 601, FIG. 14) or Now button on the screen is selected in block 600, Screen1 is displayed showing the various playback controls in block 602. The MyData database is accessed in block 604. The file MID that matches the selected song is searched for by the system in block 606. The file is loaded from the disc in block 608. Again, this file is retrieved from the disc in MPEG3 data compressed format. A particular color for the song, which may correspond to a given set of categories, as well as a title and other data are provided to one of the media channels in Screen1 in block 610. The song begins playing in block 612 as soon as the data is ready. A time countdown for the song is initiated using known techniques in block 614. If a pause, stop or mixed command is received in block 616 then these steps, is described above, are carried out. In particular, a pause or stop ends playing of the song either temporarily (e.g., until pause is pressed again) or permanently, in case of a stop command.

Volume adjustment and other equalizer values can be provided according to block 618 and 620. These act upon the playback of a song using known techniques. When the particular song has ended in blocks 622 the system checks whether it has reached the end of the current play list in block 624 if not, media channels are switched in block 626 and the next song on the play list is located in block 628. This song information is transferred back to block 604 and the name of that new song is located in block 606. The process continues as described above.

If the end of the play list is reached in block 624, then Screen1 controls are cleared in block 630. The system awaits further instructions at this time.

FIG. 10 describes the saving and loading of play list in more detail. If a save command is initiated by the user in block 650, then all song data and associated colored data for the display from the current play list is collected 652. The file save window is placed on the screen in block 654. The user can select an appropriate file name for saving the particular play list file in block 656. Again, the display for this procedure is detailed in FIG. 14

If a load command is entered by a user as shown in block 660, then the file load window is displayed in block 662. The display for this window is shown in FIG. 15.

Song and color data are read from the selected file in block 664 and the current play list is updated and/or replaced with all song in color data from the loaded file in block 666.

It is specifically noted that category information is provided by the service provider appended to each song in the database. The accessing of songs having such data appended thereto occurs according to applicant's unique graphical user interface based upon provider categories. The association of various database identifiers to each song is implemented using conventional database programs such as the above-

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described Microsoft Access® 2.0. The association of category objects to song data should be conventional to those of ordinary skill. The storage of MPEG3 data compressed song files is accomplished in the same manner as other data stored as files in a database. The Micro-fiche Appendix included in the prior related applications pursuant to 37 CFR 1.96(c) contains a listing of program commands in the commercially available Visual Basic language for implementing various functions of the center according to this embodiment.

Using the hardware and software elements described above, FIGS. 18 and 19 detail a docking mechanism in which music is stored on a hard drive or other electronic medium in a main data handling unit 700 with a flip-up display 702 and associated keyboard 704 that can include playback controls 706 (e.g., play, stop, pause, forward and reverse). The unit 700 can be "docked" to a base unit 708 that includes a connector 710 for interfacing with an associated connector in the unit 700. A cable 712 can interconnect the base unit 708 with appropriate speakers or amplifiers. The unit 700, hence, can include the music data for the system and can be moved from location to location so that there is no need to purchase additional playback units to play music provided from the service provider with the particular code.

FIG. 20 illustrates and alternate embodiment for docking unit in which a base unit 730 includes speakers 732, a power coupling 734, a flip-up display 736 and a removable memory storage device, such as a compact hard drive 738. The hard drive is shown removed in phantom 740. A connector 742 can interface with an associated connector (shown in phantom) 744 on the base unit. The hard drive, itself, it moved from base unit to base unit so that, again, there is need to purchase music only once, and that music is identified to a particular hard drive. The base unit can also include a CD-ROM shelf 748 for reading music during the original loading process. In certain remote units, the CD-ROM may be omitted, since all music is contained on the hard drive and loading of music is accomplished with the base unit 730. A motherboard 750 controls the operations of the unit.

FIGS. 21 and 22 illustrate a mobile playback system according to this invention. The above described docking units in FIGS. 19 and 20 can be utilized in conjunction with this unit. In other words, an entire hard drive or unit can be interfaced with an onboard automotive base unit to enable music in the hard drive or docking unit to be played within a car or other vehicle. In this embodiment, the automotive interior 760 is provided with a main audio system 762. Various cords 764 interconnect the main system to a contact display unit 766 that, in this embodiment, is located on the sun visor 768 where the driver 770 can easily access it. It is contemplated that the display unit can be located at any acceptable location. Alternatively, the unit can be entirely operated by voice commands, with no display unit, and instead, a voice response system implementing conventional voice-generating software. With further reference to FIG. 22, the sun visor 768 is lowered to reveal the display 766 having a screen 780. The wires 764 interconnect the display with a power source 782, that can be part of the main audio system 784 or can be separate. The wires also connect the display 780 with the main audio system 784, or alternatively, can be routed directly to the vehicle's onboard database reader 786. The database reader is any microprocessor-based system as described above. It can be exclusively a disc drive or other high-volume data reader or can include many of the processing functions performed by the center. Alternatively the processor functions can be performed within the display

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766. The display **766** includes a microphone **788** for voice activation. As described above, conventional voice-recognition software can be used in conjunction with the center. A hand grip **790** is provided for moving the display to an acceptable position. The database reader interfaces with an onboard docking unit or disc **792**, as described above. This can be removed when not in use for placement in another database reader, such as the base unit **730** shown in FIG. **20**. Music is routed from the database reader **786** or the display **766** depending upon where the microprocessor are located, back to the main audio unit **784** where amplification occurs. The music is played back on appropriate speakers **794**.

Reference is now made to additional features that can be implemented according to certain embodiments of the invention. FIG. **23** details a favorite hits function that can be applied to Screen**2**. The display **795** includes a favorite hits Category Creation button **796**. Favorite hits, when identified by a user on the current play list **797** can be flagged by "clicking" on the individual titles. A colored flag **798** appears next to flagged songs. Unflagging can involve a second click on a flagged song or a separate Delete button on the screen. The flagged songs **799A** appear as top selections **799B** on the current search music categories list **803**. By clicking on the Create Favorite Hits button **796**, these favorites can be saved, so that they always appear at the top of the search categories list **803**. In this manner, they can be retrieved to place on the play list within seconds. Again, any song on the search categories list **803** can be transferred to the play list for playback in a desired order (typically first-in-first-out) by simply clicking or-double clicking on the specific search list song entry.

FIGS. **24**, **25** and **26** detail an alternate view of Screen**4**, as discussed above. The display **800** includes an overall listing of the selections available from the service provider. A list of over one hundred thousand titles can be included in the MyData database, as selections are delivered from the service provider. The category fields described above are provided for each title **801**—namely, artist **802**, date of publication **804**, specific music category **806** (e.g. "rock," "jazz," "alternative," etc.), music style **808**, dance type **810**, music speed **812** and energy **814**. In addition, an ownership column **816** is provided that indicates whether the music data accompanying the title is present in the user's own database. If so, the entry states "yes," otherwise a "no" indication is provided to the column **816** next to the particular title. In addition a rating column **818** is now provided with an appropriate entry field in the database. In this example songs that the service provider may not think are suitable for certain listeners due to content are appended with a rating, as appropriate. In this example, all songs not rated are acceptable to all. A specific rating letter such as "G" can also be placed next to such songs in the column **818**. Higher rated songs can include the rating letter PG, or stronger rating letter R, on their particular title row. The depicted ratings are exemplary only. The actual song titles shown should not be taken to have these actual ratings. The music selection list of Screen**2** would also display ratings when they are used. Note that a variety of levels of rating and rating criteria can be used. In general such ratings are defined and appended to individual songs be the service provider.

FIG. **25** illustrates the activation of Screen**4**'s rating button **820**. This button calls a window **822** that prompts the blocking of R and/or PG-rated songs. In this manner, higher rated song titles cannot be viewed or played. This function is enable and disabled using a password that is entered after striking the Password button **824** in the window **822**. This

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button calls a password-entry window **826**, detailed in FIG. **26**. Once an initial password is entered, it must be reentered to change the rating blocking function or to change the password itself.

FIGS. **27** and **28**, finally, illustrate an auto-exit option appended to the display **850** of Screen**1** in this embodiment. An Auto-Exit button **852** can be clicked to call an automatic shut-down window **854**. By clicking a Yes button **856** in this window, the center calls another window (FIG. **28**) with an auto-shutdown keyboard **860**. The window **860** includes a numeric keyboard **862** for entering shutdown time in minutes. A time box **864** indicates the selected time. Pressing the "OK" button **866** causes the shutdown time to be acted upon. Playback will occur until the time has been elapsed. At any time, the Cancel button **870** can be activated to cause the shutdown routine to cease and/or the window **860** to be removed from Screen**1**.

The architecture and database storage techniques, as well as the various graphical user interface functions described above can be readily adapted to handle images and full motion video as well. The primary addition to the above-described embodiments would be a screen capable of playing back video of appropriate size interconnected to the center's processor by an appropriate video driver card that is typically commercially available. In addition, appropriate data compression/decompression routines applicable to full motion video and/or images is desirable. In substance, the data for video packages is stored with various categories similar to or the same as those applicable to music described above. The graphical user interface is organized identically, as is control and manipulation of playback. In the case of movies, videos, books or other media custom categories can be created.

A sufficiently large hard-drive can be used to store a large database of movies, books and/or other video data. Where storage is problematic, one example contemplates that the center's processor can interface with a commercially available, multi-disc CD-ROM or DVD (Digital Versatile/Video Disc) drive. The drive is interfaced to the processor using commercially available interface hardware. The raw video data can be retrieved as needed from the play-ready optical discs according to a request by the user entered via the MyData database which carries the underlying video category data associated with each video title in its list. Any titles not currently held in the optical unit, can trigger a load-optical-disc message, prompting the user to load-in the optical disc containing the desired date. Of course, this is only one example of a system that handles video data using the underlying interface and organizational structure of the present invention.

Note that the graphical user interface herein has been described in terms of its primary functions. Any buttons on the display screens detailed herein not expressly described can be assumed to perform functions that are straightforward, and particularly noted on the buttons themselves, such as "OK" and "Cancel." All functions not specifically described should be clear to those of ordinary skill.

The foregoing has been a detailed description of a preferred embodiment of the invention. Various modifications and additions can be made without departing from the spirit and scope of this invention. For example, a variety of colors can be used for different keys and buttons, categories can be identified based on certain colors. Voice recognition and voice-playback functions can be provided to any of the embodiments described herein. Various interface devices can be used, such as touch screens, light pens and the like. In addition, the database, data compression and playback

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systems and software described herein can be substituted for any other acceptable system or software. The particular layout the graphical displays and content of various buttons in the display can also be varied. Again, it is expressly contemplated that particular Category buttons on Screen2 are displayed in different colors, shapes, sizes or descriptions and that specific colors can be used to highlight certain windows or underlying selections in a display, as well as the status of various functions. Accordingly, this description is meant to be taken only by way of example and not to otherwise limit the scope of the invention.

The generalized architecture, similar to FIG. 3, of an alternate center 1000 is further detailed in FIG. 29, complete with optional components. The "heart" of the center is its central processing unit or CPU 1130. The CPU, in a preferred embodiment comprises a Pentium® II microprocessor having an operating speed of 450 MHz or greater available from Intel. The architecture of this microprocessor is well-known. It is adapted to accept inputs from a variety of hardware components. These hardware components are, themselves, commercially available and can be interfaced with the CPU 1130 by those of ordinary skill. In summary, the components involved in a complete center will now be described.

A random access memory (RAM) 1132 is provided to support the CPU 1130. This RAM typically provides sixty-four megabytes of storage or greater. A keyboard and/or cursor-moving mouse interface 1134 is also provided. The keyboard 1134 can be omitted in certain embodiments where a touch-screen is used for all onboard functions. For example, the touch-screen, shown as a touch-screen interface 1136, and used in conjunction with the monitor screen 1140, can include a touch-keyboard thereon for entering alphanumeric characters. Where a monitor 1140 is used, a video driver card 1142 of conventional design is provided. A conventional television can also be utilized. Where a television screen is used for displaying data, a scan converter 1146 can be provided. The scan converter 1146 can be used for output 1150 to the television screen and/or input 1152 from, for example, a television remote control 1154. In this manner both input and output via a television and/or computer monitor can be accomplished. A microphone 1160 and appropriate voice recognition card 1162 can also be provided in conjunction with the CPU 1130 can be provided. Additionally, a CD-ROM, with appropriate driver card 1170 can also be provided. Further an Internet Radio 1172 (or satellite) for output, a sound card, available from a variety of commercial sources such as the Soundblaster® driver 1180 can be employed and appropriate amplifiers and speakers 1182 can be provided. The amplifiers and speakers are conventional and receive inputs from the sound card in the form, typically, of digital or analog audio signals. Additionally, an output medium 1184 such as a hard drive, CD writer 1184 to burn compact discs, or a flashcard, can be provided to transfer media/data selections for use outside of the center 1000. (Media/data refers, as discussed above, to various types of media such as films, videos, music songs, books. The drawings and discussion below may refer to music or songs, but it is understood that other types of media may be implemented.)

Input/output exchange of media/data is provided through a hard drive storage 1190, also of conventional design. As will be described further below, the hard drive storage 1190 interacts with the CPU 1130 using onboard software. This software includes a speech recognition software block (not shown) a sound decompression software block 1210, a song information database 1220, the center's proprietary speech

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vocabulary (not shown), the center's search and play interface 1240, the center's Music library interface, 1250, the Internet song info database software (CDDB) 1260 and importation/categorization software 1270.

A significant feature of the center 1000, to be described in greater detail below, is the organization of individual media/data selections according to specific user-defined categories, that are assigned manually or automatically at time of import or at a later time. These categories are carried in a database, along with the raw digital media/data, and allow the user to playback each of the individual selections based upon specific categories in a random or ordered manner. The use of user-defined categories for storage and playback empowers the user to choose media/data based upon his specific desire or mood that relates to categories such as artist, title, producer, year, main category, energy, speed, style, type, rating or favorites.

With reference to the above-described architecture, the procedure by which individual media/data selections become categorized and eventually made available for a user to playback according to particular categories will be described in summary:

1. Media/data source material is first purchased or otherwise acquired by the user. This media/data is typically obtained by downloading over the internet or otherwise acquiring or purchasing or obtaining commercial compact discs or compression data files in standard Red Book compact disc format on individual albums and singles.
2. The media/data selections are then brought into (i.e. imported) to the database by one of several methods. For example:
 - A. A compact disc is placed in the CD-ROM. Media/data is played by the CD-ROM into a data compression card commercially available, such as Dialog Four™, which compresses the media into the commercially available MPEG ("MP3") format, or other compressed format. The CPU stores the media in the hard drive.
 - B. Digital media/data files, such as MP3 files, already resident on the hard drive (such as those downloaded over the internet) are selected by the user.
3. Compressed media/data selections are subsequently catalogued using a convention database program such as Microsoft Access® in this embodiment. The following categories, among others, can be used in conjunction with the database program to catalog each individual media/data selection—title, artist, producer, year, category, style, type, speed, energy and favorites. These categories are used subsequently by the center's operating system as described below. All categories are stored in the user's hard drive for subsequent retrieval.
4. The categorization software, as described further below, obtains and utilizes bibliographic data associated with a media/data selection, if provided, to automatically fill in appropriate database locations in the information database with this data.
5. The categorization software, as described further below, also scans the digital (MP3 or other) files to automatically determine categories related to the beats per minute of the media/data selection to automatically fill in appropriate database locations in the information database with this data.
6. The categories associated with each media/data selection can be changed by the user at any time.
7. Additional media/data selections can be imported and categorized at later times and the appropriate database

locations are filled in as described above. Media/data selections can also be removed from the database.

8. Upon playback, data is decompressed from its stored format using data decompression technology, such as MPEG3 technology. The decompressed media/data selection is then played in a standard "wave" format using conventional data-to-sound software technology. It is contemplated that the software procedure be compatible with an appropriate sound card, as described above. Speakers and an amplifier are used to deliver media/data to the user, as also described above.

Reference will now be made to the flow diagrams and corresponding graphical user interface display screen illustrations.

Referring first to FIG. 30, the user initializes the program in a program start step 1300. The program determines if a security code, such as a registration number or license key, etc. has been entered in step 1301. If a security code has previously been entered, the program is entered in step 1308. A security screen, not shown, is displayed 1302. Any acceptable security screen can be used. The security screen prompts the user to enter a security code in step 1303 the program in step 1304. If the user does not desire to enter the program, it ends in step 1306. If the user enters the program, then a Search and Play Main Interface Screen 1310 is displayed in step 1308. This screen 1310 is shown in FIG. 31.

From screen 1310, a drop down menu 1312 can be accessed by clicking on a Menu button 1314. (Clicking refers to using the keyboard and/or cursor moving mouse interface 1134 or using touchscreen functions 1136 in a conventional manner). A variety of routines 1315 can be accessed by clicking on routine buttons 1315A–G in the drop down menu 1312. Referring to FIGS. 30 and 31, the appropriate routine is selected by clicking on the routine buttons: Auto Off 1315A (step 1316), Categories 1315B (step 1317), Import and Categorize 1315C (step 1318), Jump To 1315C (step 1320), Load Music 1315D (step 1322), Program Settings 1315E (step 1324), Repair Database 1315F (step 1326), and Exit 1315G (step 1328 which ends the program in step 1306).

Additionally a Search and Play routine (step 1327) can be accessed. In this regard, screen 1310 also includes a plurality of main category buttons (for searching) 1340, mood buttons (for searching) 1350, a dance mix button 1351, favorites button 1352, Speed Buttons 1354, Energy button 1356, a Time button 1358, Playback buttons 1360, Search buttons, 1362, 1364, 1369, a Searchlist Window 1370 for displaying selections found in a search, a playlist window 1380 for displaying selections to be or being played, and play list buttons 1382 for controlling the order of playback and other playback functions. Thus substantially all the functions of the center 1000 can be controlled from one screen 1310.

As discussed above, the user can define or assign categories to be associated with the media/data selections. The category values or information are stored in the database in records for each selection. The user can define a main category by clicking on the Categories routine 1315B (FIG. 31) from the drop-down menu 1312. The main category refers to different media selections such as rock, folk, country, horror films, action movies, love stories, etc. Each main category has an associated main category button 1340 labeled with the name of the main category. As seen in FIG. 32, from this routine, the user clicks on an "add new" button 1410 causing screen 1420 to appear on the display (FIG. 33). According to the flow chart of FIG. 34, a new main category name can be written (step 1412) by typing on keyboard 1134

(all typing can be presumed to take place on keyboard 1132 unless noted elsewhere) in button label window 1422 of screen 1420. A button color can be selected (step 1414) by clicking the Button color button 1424 (similarly the font of the categories name can be selected by clicking on a Change Font button 1425. Additionally, though not shown, the font color of the main category name may also be similarly changed. If a Save Changes button 1426 is pressed according to step 1416, then a new main category button 1340 is added to the main screen 1310 bearing the main category name and color selected according to step 1418. If not (saved), the routine may be canceled according to step 1419 by clicking on the Cancel button 1429.

Existing main categories may be modified by right clicking on the Category button 1340 to be modified as seen in FIG. 35. A screen substantially identical to screen 1420 will be displayed when a Modify Category Properties button 1430 (FIG. 35) is clicked on. The only difference is that the button label window 1422 will have the preexisting category name. The name, color, and font can be changed in a procedure similar to the procedure outlined with respect to FIGS. 33 and 34.

The main categories can also be organized on the screen 1310 and elsewhere. When an Arrange/Delete button 1411 is clicked on in FIG. 32 (or an arrange/delete button 1411A in FIG. 35 is clicked on), an Order Categories Screen 1440 according to step 1470 is displayed (FIG. 37) which has a categories window 1441 in which all the categories are able to be listed (some scrolling may be necessary). When a main category is selected (step 1471) (by clicking on the main category in window 1441), several category organization routines are possible by clicking on one of several buttons on screen 1440. The Category buttons 1340 are listed in columns of four on main screen 1310. A conventional scroll bar 1342 allows various columns to be in the category window 1341. If a Move to the Top button 1441 is clicked on, the main category is moved to the top of the list in window 1442 according to steps 1472A, B and the main corresponding main category button 1340 is moved to the top of the first column. If a Move Up button 1444 is clicked, then according to steps 1474A, B the category is moved up one in the list. For example, if the Big Band category is selected in screen 1440 and the Move Up button 1444 is selected, the Big Band category would be displayed above the Anniversaries category. Similarly in FIG. 35, the Big Band category button 1340 would be placed about the Anniversary category button 1340. If a Move Down button 1446 is clicked, the main category is moved down one in the list according to steps 1476A, B. If a Move to Bottom 1448 is clicked, then the selected categories is moved to the bottom of the list according to steps 1478A, B and the associated category button 1340 is moved to the bottom of the last column in screen 1310. If a Delete button 1450 is clicked, the category button 1340 is deleted from the category window.

The Order Categories Screen 1440 also includes a plurality of check boxes 1452, each next to a main category name. If the check box 1452 is selected (i.e., checked by left clicking the cursor therein), the associated category button 1340 is visible in the category window 1341 according to steps A, B. If the check box 1452 is deselected (not checked), the associated category button 1340 is not displayed in the category window 1341 of screen 1310 according to steps 1484 A, B.

If a cancel button 1452 is clicked, the organization modifications are not saved accordingly, to step 1486. Clicking on an OK button 1454 saves the changes according to step 1488.

The center **1000** advantageously automatically imports and categorizes selections from compact discs ("CD") or digital (such as MP3) files for later search and playback. Referring to FIG. 38, the user clicks on the Import and Categorize button **1315C** from the drop down menu **1312**. If an Audio CD button **1501** is clicked, the import and categorization process can start for compact discs.

FIG. 39 illustrates a flow chart for a CD importation program **1600** for CD's from the importation/categorization software **1270**. First, according to step **1601**, a user inserts a CD into the CDROM **1170**. The user then selects to import the CD according to step **1602** by clicking on the Audio CD button **1501** as described above.

An importer screen (not shown) is then displayed, according to step **1604**. If the system **1000** is connected to the Internet, according to steps **1606**–**1608**, the Internet song Info Database software **1260** accesses an offsite database (such as CDDb Gracenote). The software **1260** automatically retrieves information (artist, album title, song length, track title, year, genre) from the offsite database for the selections on the inserted CD and downloads it to the system **1000** according to step **1610**.

The import process **1600** then, according to step **1612**, looks to see if the user has preset the values of any of the category information such as style, speed, year, main category, energy and insert these values to modify the values received from the offsite database. The user can preset these values by accessing an Import Options screen **1599**, seen in FIG. 39A. The screen **1599** is accessed by clicking on the Program Settings routine button **1315E** from the drop down menu **1314** (FIG. 31) and clicking on a "mp3 settings" button not shown and going to an advanced settings option on a screen (not shown). Each individual track (or selection) **1651** with its accompanying (category) information is displayed in an Importer Screen **1650**, such as shown in FIG. 40 according to step **1614**. According to step **1616**, the information of individual track **1651** can be edited by clicking on the track **1651** to be edited, and then clicking again on the particular information to be modified (i.e. title, track, artist, genre). According to step **1618**, the user selects individual track(s) **1651** to import from those listed on the screen **1650** by clicking on a box **1652** next to each track or clicking on a SELECT ALL button **1654** to select all the tracks listed on the screen **1650** to import the user then click on a FINISH button **1656** (Step **1620**) which causes the information for the tracks to be imported and saved to the database **1220**. The genre categories field is given the name of the saved to the main category field. If there is no main category with the same genre name, the category field is defaulted to OTHER. The CD audio file(s), of each selected track of the CD, are then sequentially extracted from the CD and converted to a "wave" or similar file and then compressed to a digital file (i.e. MP3, etc.) format according to step **1624**. The importer screen **1650** (FIG. 41) is displayed with an import report during steps **1622**–**1624**.

If the system is not connected to the Internet, the information can be manually entered by the user. Rather than go from step **1606** to **1608**, the program, an import screen is **1650** such as shown in FIG. 42 will be displayed. The user can type in artist, album title, and year information in the spaces provided **1660 A–C** for all tracks and double click on individual tracks to provide title, genre (main category) or artist in the same manner as step **1616** described above. The program **1600** then goes to step **1612** and continues in the same manner as when connected to the internet.

The software **1270** also can import digital (i.e. MP3, etc.) files already residing on the hard drive **1184** or other storage

mediums such as flash sticks, etc. FIG. 43 illustrates a flow diagram of a digital MP3 importation process **1700**. The user first clicks on the Import and Categorize button **1315** from the dropdown menu **1314** and then clicks on a MP3 Files button **1502** (FIG. 38) according to step **1702** which, according to step **1704**, causes the Music Import screen **1650** in FIG. 44 to be displayed. By clicking on a select button **1750** the user causes the program to display, as shown in FIG. 45, a Music Listing Screen **1780** to be superimposed on the Music Import Screen **1650**. The screen **1780** lists, according to step **1706**, MP3 files **1782** of musical selections which can be selected to be imported by clicking an individual file **1782** and then clicking with the shift key depressed to respectively highlight individual and multiple MP3 files **1782** and then clicking on an open button **1784** which causes the program **1700** to read category information (step **1708**) from an ID3 tag that is associated with each MP3 file including artist, title, year, genre. The import process **1700** then, according to step **1710**, looks to see if the user has preset the values of any of the category information such as style, speed, year, main category, energy and insert these values to modify the values received from the offsite database. The user can preset these values by accessing an Import Options screen **1599**, seen in FIG. 39A. The screen **1599** is accessed by clicking on the Program Settings routine button **1315E** from the drop down menu **1314** (FIG. 31) and clicking on a "mp3 settings" button not shown and going to an advanced settings option on a screen (not shown).

According to steps **1714**, **1716**, **1718** and **1720**, category information of the individual tracks may be modified. The tracks to be imported, according to steps **1714** and **1716**, then may be selected in the same manner as with of steps **1616** and **1618** the CD import program **1600** steps **1616** and **1618**. Once a Finish button **1754** is clicked (FIG. 46) (step **1620**), the general and category information for each selected track is saved to the database **1220** and the MP3 audio files, are imported and have a pointer in the database **1220** pointing to their location according to step **1722**.

Once the Music Import Process for Audio CD's and MP3 Files have been completed, the importation and categorization software **1270** can automatically determine music style, dance type and music speed based upon a beats per minute determination for each individual musical selection. FIG. 47 illustrates an automatic music style, music speed and dance type categorization process **1800**.

After encoding an audio CD to a digital (i.e. MP3, etc) file, or after a song is in a digital file (i.e. MP3, etc.) format, each song according to step **1802** is played in real time and sampled in three locations for a given time period, such as, 10 seconds. FIG. 48 illustrates a scanning screen **1850**, superimposed over the Import screen **1650**, which is displayed when the MP3 file is played and sampled according to step **1802**. The three separate samples are used to obtain an initial data element summary of volume ratings. The settings are defaulted to a total sample of 30 seconds per song. (Other total sample lengths, such as 15, 30, 45, 60 seconds per song, could also be used). Each data element in the scanned sample has a volume rating between 0 and 255, 0 being the softest volume and 255 being the loudest volume. The entire thirty second sample is then smoothed using a fast fourier transform mathematical algorithm designed by Cooley and Tukey and described in a paper they wrote "An algorithm for machine calculation of complex Fourier series", Math. Comp. 19 (1965), 297–301, which is hereby incorporated by reference. The algorithm is used to clean the data to make it more accurate and usable to work with.

All data elements in the sample are totaled to attain a total average of volume level information. (A data element is a value representing a volume level). The average of the data elements is used as a baseline to determine peaks and valleys. A peak is based on a volume level above the calculated average. A valley is based on a volume level below the calculated average. Beats are determined based on valid peaks. One beat equals one valid peak. A valid peak is the highest point above the baseline after a valid valley. A valid valley is the highest point above the baseline after a valid peak.

Once the beats per minute ("bpm") of the sample is determined. The program **1800** (FIG. 47) determines if the bpm is less than 95 (step **1804**). If so, the program assigns (step **1806**) a music style of "easy listening," a dance type of "slow" and music speed of "slow." If the bpm is not less than 95, the program **1806** determines the bpm is less than 119 (i.e. the bpm is between 95 and 118) (step **1808**). If so, the program assigns (step **1808**) a music style of "mellow," a dance type of "none" and a music speed of "medium." If the program determines that the bpm is not less than 119, it assigns (step **1812**) a music style of upbeat, a dance type of "fast" and a music speed of "fast." Each of the assigned values is saved to the database **1220** for the scanned musical selection.

It is understood that different bpm values (i.e. not 119 or 95) could be used to determine the music style, dance type and music speed. Additionally, as discussed later, the music style, dance type and music speed values can be user edited with a song editor to suit the user's taste.

It is contemplated that the importation process **1800** can be used to authenticate that the media being imported to the center is authentic. By comparing the peak and valley scans to, for example, scans resident on a database for original works, the user can tell if he is receiving an authentic version of the media he is importing.

The musical selections which have been imported to the center **1000** can be searched, organized and played back in a variety of methods. FIG. 49 details a user operation search routine **1900**. Referring to FIG. 31 and according to step **1902**, a user clicks on one of the main category buttons **1340**, one of the mood buttons **1350**, the dance music button **1351** or the favorites button **1352**. The routine **1900** then accesses the information database **1220** and finds all selections associated with the button clicked, according to steps **1904**, **1906**, **1908**. All selections found are displayed in the Searchlist window **1370**. For example, as seen in FIG. 51, when the Rock category button **1340A** is clicked on, all media/data categorized as ROCK are displayed in the search list window **1370**. If the play button **1360A** is clicked on, according to step **1908**, all media/data selections in the search list window **1370** (if their total playtime is less than 60 minutes) or media/data selections in the search list window **1370** which take up approximately 60 minutes of play time are mixed up and displayed in the play list window **1380** for immediate play.

Instead of clicking the play button **1360A**, the Time button **1358** can be clicked, which causes a drop down menu and an OK button (not shown) listing various play times. The desired play time can be clicked on by a user according to step **1913** and media/data from the play list **1370** that add up to the approximate desired time will be displayed in the play list window **1370** for immediate playback.

The mood button **1350**, the dance mix button **1351** and the favorite button **1352** are preferably rainbow colored and can include media/data from any main category. The upbeat, mellow, and easy listening mood buttons **1350** allows a user

to create a mood or atmosphere by bringing up all media/data selections respectively categorized as having upbeat, mellow, or easy listening styles.

Clicking on the favorites button **1352** allows the user to play all media/data selections he has characterized as a favorite (by a method discussed further below).

Clicking on the dance mix button **1351** brings all selections characterized as having a slow or fast speed to the search list window **1370**. Using the play button **1360A** or the time button **1358** to play these selections as described above, randomly causes media/data to be placed in the playlist window **1380** so the media/data will continuously be played in the order of three fast and two slow for the selected time period.

The user may, as seen in FIG. 49, narrow the media/data selections already found and displayed in steps **1906** and **1908** to have a certain speed or energy by optionally clicking on one of the fast, medium, or slow speed buttons **1354** or an energy button **1356** which will respectively cause only the media/data selections categorized as fast speed, medium speed, slow speed or as having energy to be placed in the play list window for play when the user clicks on the play button **1360A** or time button **1358**, as discussed above.

FIG. 53 details an alternative user operation search routine **2000**. Referring to FIG. 50 when the user clicks on a search button **1362** on screen **1310**, according to step **2002** which causes a search screen **2050** to be superimposed on screen **1310**. The screen **2050** includes a search area **2052** and a hideable touchscreen keyboard **2054**, accessible and hideable by clicking on a keyboard button **2056**. (Typing may be performed on the keyboard **2054** or the keyboard **1134** in search routing **7000**).

According to step **2004**, the user may type in a keyword or a year in spaces **2057**, **2058**, select from main categories, style, type and speed from drop down menus **2059**, **2060**, **2062**, and **2064** and may choose whether the media/data selection has energy or is a favorite by respectively clicking on boxes **2066**, **2068**.

After the search criteria has been input to screen **2050** and a search button **2070** is clicked on by the user, the program **2000** accesses the Info Database **1220** and determines if media/data selections with the entered characteristics exist according to steps **2006**–**2008**. If the media/data selections exist, their title, and other information are displayed (step **2010**) in the search list window **1370**. The media/data selections in the search list window **1370** may be further narrowed according to step **2011**, as discussed below, or may be selected and placed in the playlist window **1380** (step **2012**) for play by double clicking on a selection in the search list window **1370** or highlighting and dragging the selection into the play list window **1380**. Clicking the play button **1360A** will cause the selections in the play list window **1380** to be played (step **2014**).

If the selections in the list are too voluminous in step **2010** (FIG. 53), the user may invoke a narrowing routine **2015** shown in FIG. 54. The user narrows the selections by clicking on the "Narrow Selections" button **1364** (FIG. 51) from screen **1310** (step **2016**). This causes a narrow search screen **2100** similar to Search Screen **2050**, to be superimposed on screen **1310** (FIG. 51). The screen **2100** has a search area **2102** and a hideable touchscreen keyboard (not shown) similar to keyboard **2054**. The search area **2102** includes the same searchable characteristics as the Search Screen **2050** (and will not be further discussed). The user narrows the search by entering the characteristics (step **2018**) in the same manner as step **2004** and clicking on a Narrow Search List button **2090** which accesses the infor-

mation database 1220 (step 2020) which determines if the media/data selections already displayed in the search list window 1370 has the desired characteristics (step 2022). If media/data selections meeting these characteristics exist, they are displayed in the search list window replacing the media/data listed prior to the narrowing search (step 2024).

For example, the search list window 1370 in FIG. 51 includes media/data found when the main music category "Rock" was searched. When a "Mellow" style is used to narrow the search, only those (four) selections which have a "Rock" main category and a "Mellow" style are displayed in window 1370 (FIG. 52). The user then can select and play the media/data selections according to steps 2012 and 2014 of routine 2000.

The center 1000 also advantageously allows the user to edit media/data selection information (including category information) in the database 1220 (after is has already been imported and categorized) according to the user's tastes. The information can be updated via several methods.

Referring to FIG. 30, if the user selects the jump option, (step 1320) and clicks on Jump To button 1315D and then clicks on Music Library button 2200 (FIG. 55), a Library Screen 2202 will be displayed. FIG. 56 illustrates a Music Library and Editing routine 2250. Once the music library button 2200 is engaged, all the media/data referred to in the database 1220 are listed according to step 2252. (The files containing the raw digital media/data are preferably kept on the hard drive storage 1190, but it is contemplated that the media/data files could reside on a storage device at a remote location.) Media/data selection information is edited by highlighting media/data file and then clicking on an edit button 2204 which superimposes an editor screen 2300, as seen in FIG. 57, with the information regarding the highlighted media/data selection (step 2256). The editor screen 2300 allows a variety of categories to be edited, such as the artist, album, title, and year, etc. to be edited in boxes 2302, 2304, 2306 and 2308. The main category, style, type and speed can be modified by clicking on the appropriate characteristic listed in drop down menus 2310, 2312, 2314 and 2316. Additionally, the media/data selection can be categorized as having or not having energy by clicking on yes or no circles 2318, 2320. If an update button 2322 is engaged, the changes regarding the media/data selections are made to the database. If a cancel button 2324 is engaged, the editor screen 2300 is exited according to step 2260. The editor screen 2300 can also be accessed by the user, as seen in FIG. 58, by highlighting the media/data selection in the search list window 1370 by right clicking and then clicking on an edit details button 2350.

The Music Library interface also allows the user to delete records from the database by highlighting the media/data selection to be deleted in the Music Library Screen 2202 and pressing a Delete Button 2206 (FIG. 55) according to steps 2262 and 2264. The Music Library screen 2202 is exited when a close button 2208 is engaged (FIG. 55) according to step 2266.

Media/data selection information may also be edited by clicking on a favorites box 1317 next to a media/data selection description (FIG. 51) to place or remove a check-mark therein, when the media/data selection is displayed in the music library screen 2202, the search list window 1370 and/or the play list window 1380. When a check mark is placed in the box, the user has made the media/data selection a favorite, and this characteristic can be searched for, as described above.

The center 1000 also allows you to create or burn organized or unorganized selections to an audio CD or digitally

formatted CD (i.e. MP3, etc.). FIG. 59 illustrates an audio CD creator routine 2400 from the software 1240. From the drop down menu 1314, the "Jump To" button 1315D is clicked on, and then the "Audio CD Creator" button is clicked on (see FIG. 55) according to step 2402. This causes a CD Creator Screen 2450, as seen in FIG. 60, to be displayed listing any media/data file folders containing play lists or individual song located on the storage 1190 to be displayed in a file section 2460 of screen 2450. The user, according to step 2404, selects a media/data/play list or file by clicking on a folder. This causes, according to step 2406, all the files in the folder to be displayed in a Select File area 2462 of screen 2450. FIGS. 60 and 61 respectively illustrate a list of playlists and a list of individual songs displayed in area 2462 when a respective folder was clicked on. According to step 2408, a user can highlight and drag the playlist into a burn list area 2464 of screen 2450 which causes all the songs in the playlist to be listed in area 2464; or, as seen in FIG. 61, when area 2462 displays individual songs, the user drags and drops each song he wishes to burn into area 2464. The user then clicks on a files button 2466 which causes a drop down menu 2468 to be displayed. When the user clicks on a Create CD button 2470, a Create CD screen 2480, as seen in FIG. 62 is displayed. From screen 2480, the user can set the CD recording options, as necessary on screen 2480 (step 2414). The user then clicks on either cancel button 2482 (step 2418) or a Write button 2484 which creates the CD using the CD writer 1184 according to step 2416. When the CD is being burnt, a status screen (not shown) is displayed indicating the track being burnt.

Play list files can also be created by the center 1000 by a routine 2500 from the search and play interface software 1240 outlined in FIG. 63. Play list files are created by clicking on the save button 2550, as seen in FIG. 64, under the play list window 1380 according to step 2502. This causes all the media/data selections in the play list window 1380 to be placed in a file (step 2504) and a save file screen 2560 to be superimposed on screen 1340 (according to step 2506). The user then inputs the file name which the play list will be saved to in a file name box 2562 in screen 2560 and clicks on a save button 2564 according to step 2508.

The foregoing has been detailed description of a preferred embodiment of the invention. Various modifications and additions can be made without departing from the spirit and scope of this invention. For example, rather than simply having digital media/data selections resident on the local hard drive or accessed through a compact disc, it is contemplated that streaming digital medium can be used.

For example, users can connect their pc with the center 1000 software to an offsite pre-categorized database via satellite, cable, internet. The digital media may or may not be downloaded into the user's hardware device. Digital media files (i.e. Music, Movies, Books, etc.) are selected and streamed in packets (i.e. small pieces) with conventional streaming technology to the user's center. The digital media need not be downloaded into the users hardware device. As digital media packets (i.e. pieces) are received, they are not downloaded, but played immediately.

The user can categorize, search, organize, locate, play, create favorite play lists, create and burn custom audio or digital CDs while not storing any media/information on their hardware device, therefore not using any memory or storage space. The data/media, etc. may already be organized in the offsite library where the center is receiving the media streamlined via satellite/cable/broadband, etc. in a secure (i.e. encrypted) or non-secure (i.e. non-encrypted) format direct from the publishers libraries (such as, Vivendi/Uni-

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versal, BMG, EMI, Sony, AOL/Time Warner, etc.) or direct from the distributor's libraries (i.e. Tower Records, AEI, DMX, Muzak, Direct TV, Music Choice, Pegasus, AT&T Broadband, Looney Productions, LLC, etc.). The media/data/information, as discussed above, is not stored, but streamed and played, organized or recorded out of the customer's hard drive, flash card, memory stick, microchip or other portable or stationary device.

Alternatively, streaming digital, audio, video or other media can be downloaded into the center's hardware device. The digital media packets (i.e. pieces) can be organized or categorized prior to being received or after they are downloaded into the center's database.

It is also contemplated that the center software can be used in a network or multizoned environment where the library of media/data and software is shared by many users at the same time. For example, airplanes, automobiles, cruise ships, digital tvs, pcs, hotel rooms, boats, etc. each have a terminal (i.e. monitor (viewing screen), keyboard and speakers, etc.) in different locations for individually searching and playing music from a single library resident on one storage device located anywhere.

It is also contemplated, that a center may have speakers at various locations and the center software could control what media/data is to be played at what locations at the same time. For example, the center could allow jazz to be played in room (or zone) one, rock to be played in room two, folk music to be played in room three, love stories in a fourth room, action movies in a fifth room, and horror films in a sixth room, etc.

It is also contemplated that the center could also be used as a scheduler to start or stop playing media/data at any given time.

What is claimed is:

1. A media/data selection organizer and entertainment system comprising:

a storage device which stores a plurality of media/data selections, each of said media/data selections having associated therewith at least one of a plurality of category flags and at least one of a plurality of sub-category flags;

a user interface including a plurality of category selection buttons and a plurality of sub-category selection buttons selectable by a user;

a selector responsive to user activation of at least one of said category selection buttons and at least one of said sub-category selection buttons which automatically selects for retrieval from said storage device, and automatically generates, a playlist of those of said media/data selections having the user selected category and sub-category combinations; and

a playback device which plays the selected media/data selections on said playlist in sequence.

2. The system of claim 1 including a plurality of playback devices, and in which at least one of said playback devices is located in a different listening/viewing zone than at least one other of said playback devices.

3. The system of claim 2 in which said selector automatically selects for retrieval from said storage device, and automatically generates, a plurality of different playlists, each playlist having different user selected category and sub-category combinations, and in which different ones of said playback devices play the selected media/data selections of the different playlists.

4. The system of claim 1 in which said plurality of sub-category flags corresponds to different listener/viewer ratings for said media/data selections.

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5. The system of claim 4 in which said selector is adapted to prevent certain users from selecting media/data selections having associated therewith a sub-category flag corresponding to a predetermined one of the listener/viewer ratings.

6. The system of claim 1 in which said storage device is located remotely from said user interface and said selector, and further including a communication link for transmitting selected ones of said media/data selections from said remote storage device to said selector.

7. The system of claim 1 including a plurality of said user interfaces located remotely of each other.

8. The system of claim 2 in which said storage device is located at a first location, said user interface is located at a second location different from said first location and at least one of said playback devices is located at a location different from said first and second locations.

9. The system of claim 1 in which said media/data selections comprise music.

10. The system of claim 9 in which said plurality of category flags corresponds to different music styles.

11. The system of claim 1 in which said media/data selections comprise movies.

12. The system of claim 11 in which said plurality of category flags correspond to different movie categories.

13. The system of claim 9 in which said media-data selections further include videos.

14. The system of claim 9 in which said media/data selections further include images.

15. The system of claim 1 in which said user interface includes a display which displays said category selection buttons and said sub-category selection buttons.

16. The system of claim 15 in which said user interface includes a touch screen display which displays said category selection buttons and said sub-category selection buttons for activation by the user.

17. The system of claim 15 in which said display is a color display and in which each of said category selection buttons corresponding to a different one of said category flags is of a different color.

18. The system of claim 15 in which said display is a color display and in which each of said sub-category selection buttons corresponding to a different one of said sub-category flags is of a different color.

19. The system of claim 1 in which said storage device, said user interface and said selector are implemented in a personal computer.

20. The system of claim 1 further including a display which displays at least a portion of the playlist of the selected media/data selections along with their associated category flags and sub-category flags.

21. The system of claim 1 in which said user interface includes a plurality of time selection buttons, and in which said selector, responsive to user activation of one of said time selection buttons, automatically generates said playlist with a play duration corresponding to the selected time.

22. The system of claim 10 in which said plurality of sub-category flags correspond to different music speeds.

23. The system of claim 10 in which said plurality of sub-category flags correspond to different moods.

24. The system of claim 10 in which said plurality of sub-category flags correspond to different dance styles.

25. The system of claim 1 in which said plurality of sub-category flags correspond to different dates for the media/data selections.

26. The system of claim 1 further including a media/data selection categorizer which allows the user to associate

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category flags and sub-category flags with the media/data selections stored in said storage device.

27. The system of claim 26 in which said categorizer allows the user to associate a favorites flag with selected ones of the media/data selections.

28. The system of claim 26 in which said categorizer allows the user to associate an energy flag with selected ones of the media/data selections.

29. The system of claim 27 in which said user interface further includes a favorites button, and in which said selector, responsive to user activation of said favorites button, automatically generates said playlist of those of said media/data selections having the favorites flag.

30. The system of claim 28 in which said user interface further includes an energy button, and in which said selector responsive to user activation of said energy button automatically generates said playlist of those of said media/data selections having the energy flag.

31. The system of claim 26 in which said categorizer scans selected ones of said media/data selections to calculate a beats per minute value for said selections, and based on the calculated beats per minute value, associates one of said sub-category flags with said selections.

32. The system of claim 1 in which said media/data selections comprise books.

33. The system of claim 1 in which said media/data selections comprise images.

34. The system of claim 1 in which said media/data selections comprise videos.

35. A system for organizing media/data selections, and facilitating the generation of media/data selection playlists, comprising

an input device for receiving media/data selections from a remote source;

a storage device which stores said media/data selections together with a plurality of category flags associated with each of said media/data selections;

a media/data selection categorizer which allows a user of the system to associate with said media/data selections one or more of said category flags and to store said one or more category flags with their associated media/data selections in said storage device;

a user interface including a plurality of category selection buttons selectable by the user;

a selector responsive to user activation of at least one of said category selection buttons which automatically selects for retrieval from said storage device, and automatically generates, a playlist of only those of said media/data selections having the user selected category or categories; and

an output device which makes the media/data selections on said playlist available for sequential play on a playback device.

36. The system of claim 35 in which said media/data selections are selected from the group consisting of music, movies, books, images and videos.

37. The system of claim 35 in which said user interface further includes a plurality of time selection buttons, and in

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which said selector, responsive to user activation of one of said time selection buttons, automatically generates said playlist of said media/data selections having the user selected category or categories with a playlist duration corresponding to the user selected time.

38. The system of claim 35 in which said categorizer allows the user to associate a favorites category flag with selected ones of the media/data selections.

39. The system of claim 35 in which said media/data selections comprise music, and in which said categorizer allows the user to associate an energy category flag with selected ones of said media/data selections.

40. The system of claim 35 in which said media/data selections comprise music, and in which said categorizer scans selected ones of said media/data selections to calculate a beats per minute value for said selections.

41. The system of claim 40 in which said categorizer, based on the calculated beats per minute value for said selections, associates a speed, mood or dance type category flag with said selections.

42. The system of claim 35 in which said user interface includes keyboard search buttons, and in which said selector, responsive to user entry of a keyword with said keyboard search buttons, selects those of said media/data selections stored in said storage device which have the user entered keyword in one or more of their associated categories flags.

43. The system of claim 35 in which said media/data selections comprise music, in which said user interface includes a dance mix button, and in which said selector, responsive to user activation of said dance mix button, automatically generates said playlist with media/data selections of varying speeds, moods or dance styles.

44. The system of claim 35 in which said user interface includes a fader button, and in which output device arranges said media/data selections in said playlist such that an end portion of a first one of said media/data selections in said playlist fades out while a beginning portion of a second, succeeding one of said media/data selections in said playlist fades in.

45. The system of claim 35 in which said user interface includes a display which displays said plurality of category selection buttons for activation by the user.

46. The system of claim 45 in which said display is a color display and in which each of said category selection buttons is of a different color.

47. The system of claim 35 in which said input device, said storage device, said categorizer, said user interface, said selector and said output device are implemented in a personal computer.

48. The system of claim 35 further including a playback device that receives said playlist from said output device and plays said media/data selections on said playlist in sequence.

49. The system of claim 35 in which said selector stores said playlist in said storage device for later retrieval.

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