



US 20090005171A1

(19) **United States**  
(12) **Patent Application Publication**  
**Rehkemper et al.**

(10) **Pub. No.: US 2009/0005171 A1**  
(43) **Pub. Date: Jan. 1, 2009**

(54) **INTERACTIVE MULTI-PLAYER AUDIO GAMING DEVICE**

**Related U.S. Application Data**

(60) Provisional application No. 60/913,036, filed on Apr. 20, 2007.

(75) Inventors: **Steven Rehkemper**, Chicago, IL (US); **Daniel Kim**, Portland, OR (US); **Jackson Wilson**, Evanston, IL (US)

**Publication Classification**

(51) **Int. Cl.**  
*A63F 9/24* (2006.01)  
(52) **U.S. Cl.** ..... 463/42  
(57) **ABSTRACT**

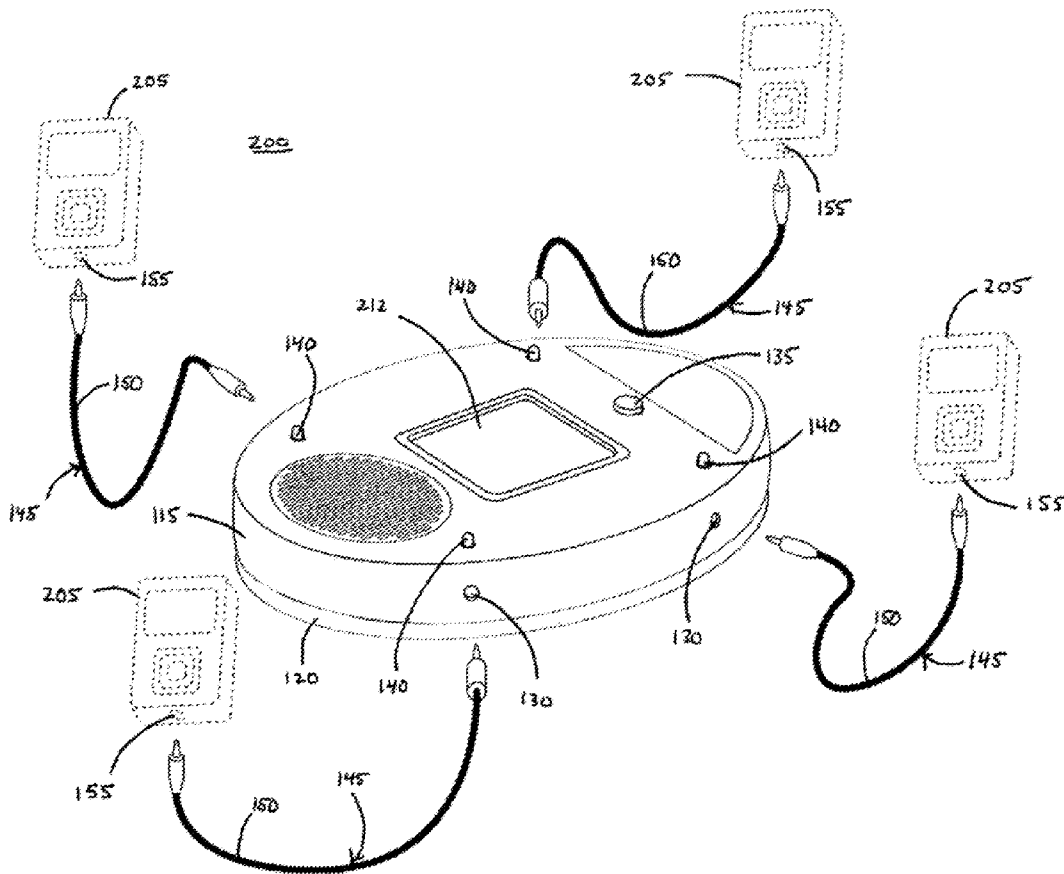
Correspondence Address:  
**ADAM K. SACHAROFF**  
**MUCH SHELIST FREED DENENBERG**  
**AMENT&RUBENSTEIN,PC**  
**191 N. WACKER DRIVE, SUITE 1800**  
**CHICAGO, IL 60606-1615 (US)**

An interactive gaming system, preferably including multiple interactive storage medium devices, such as digital audio players. The interactive gaming system enables multiple users to link digital audio players to a central unit, whereby game play is structured around the selection of audio data in accordance to preprogrammed gaming content. The interactive gaming system further comprises a speaker and circuit board assembly operatively connected to buttons and lights, whereby multiple users may compete to answer questions and/or statements regarding audio data included in the users' digital audio players.

(73) Assignee: **REHCO LLC**, Chicago, IL (US)

(21) Appl. No.: **12/106,829**

(22) Filed: **Apr. 21, 2008**



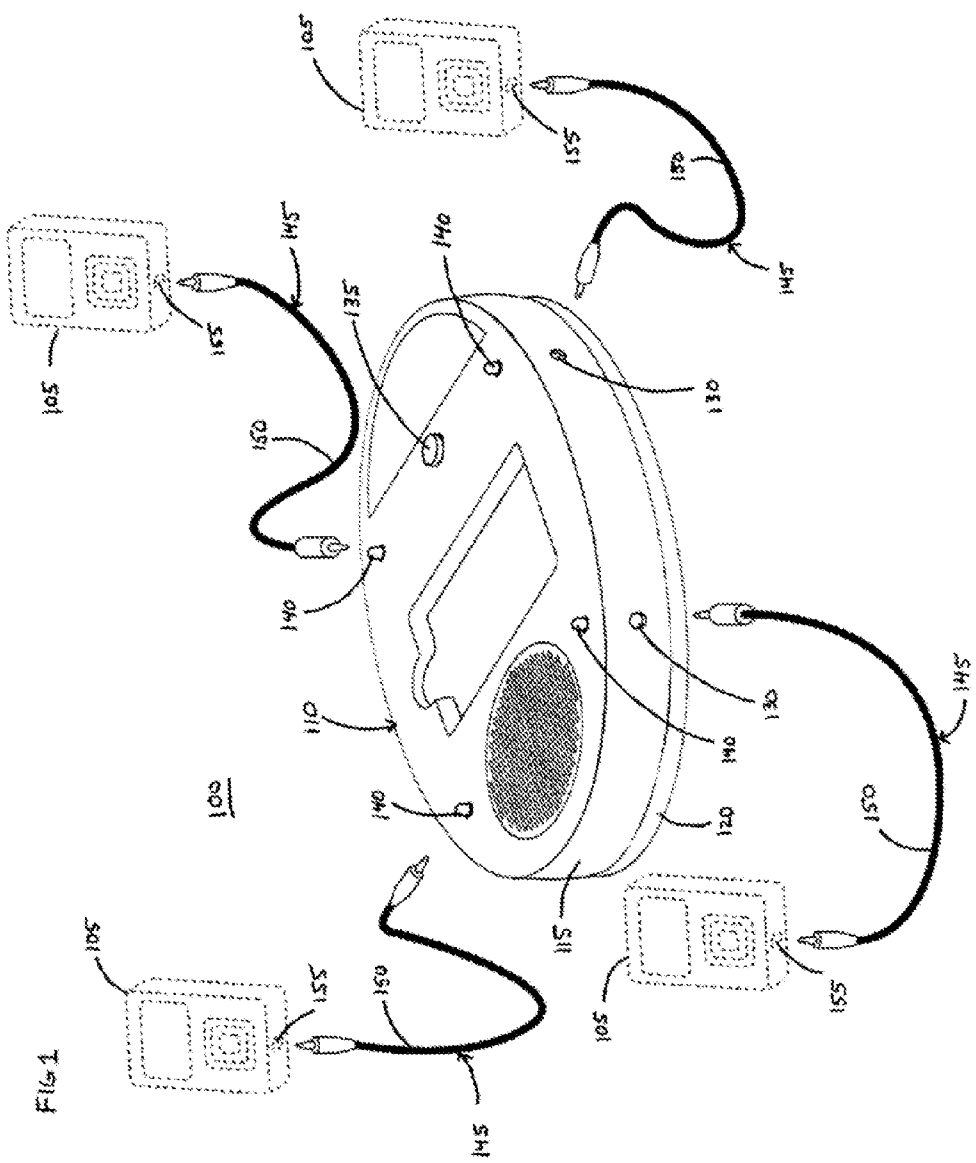
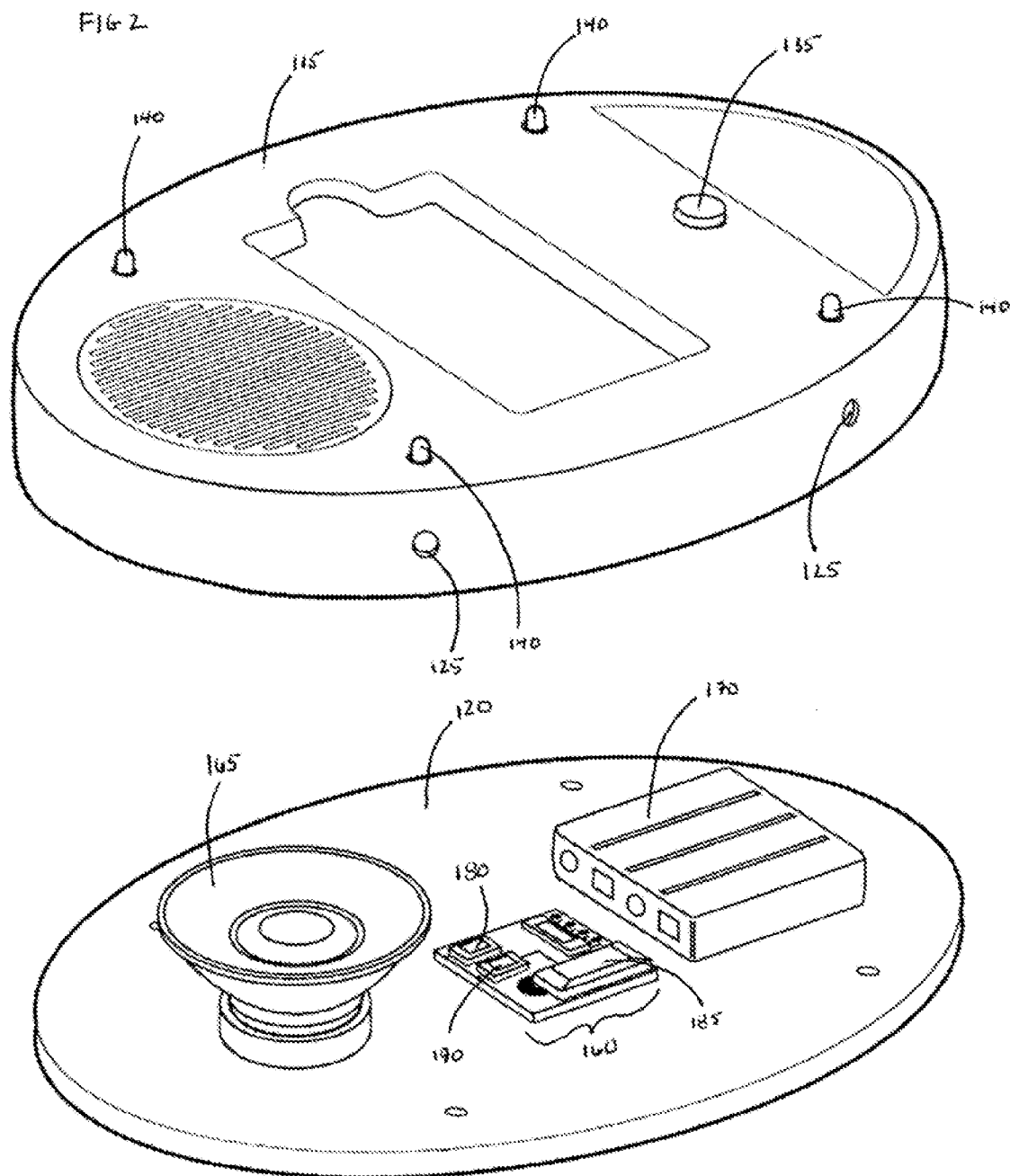
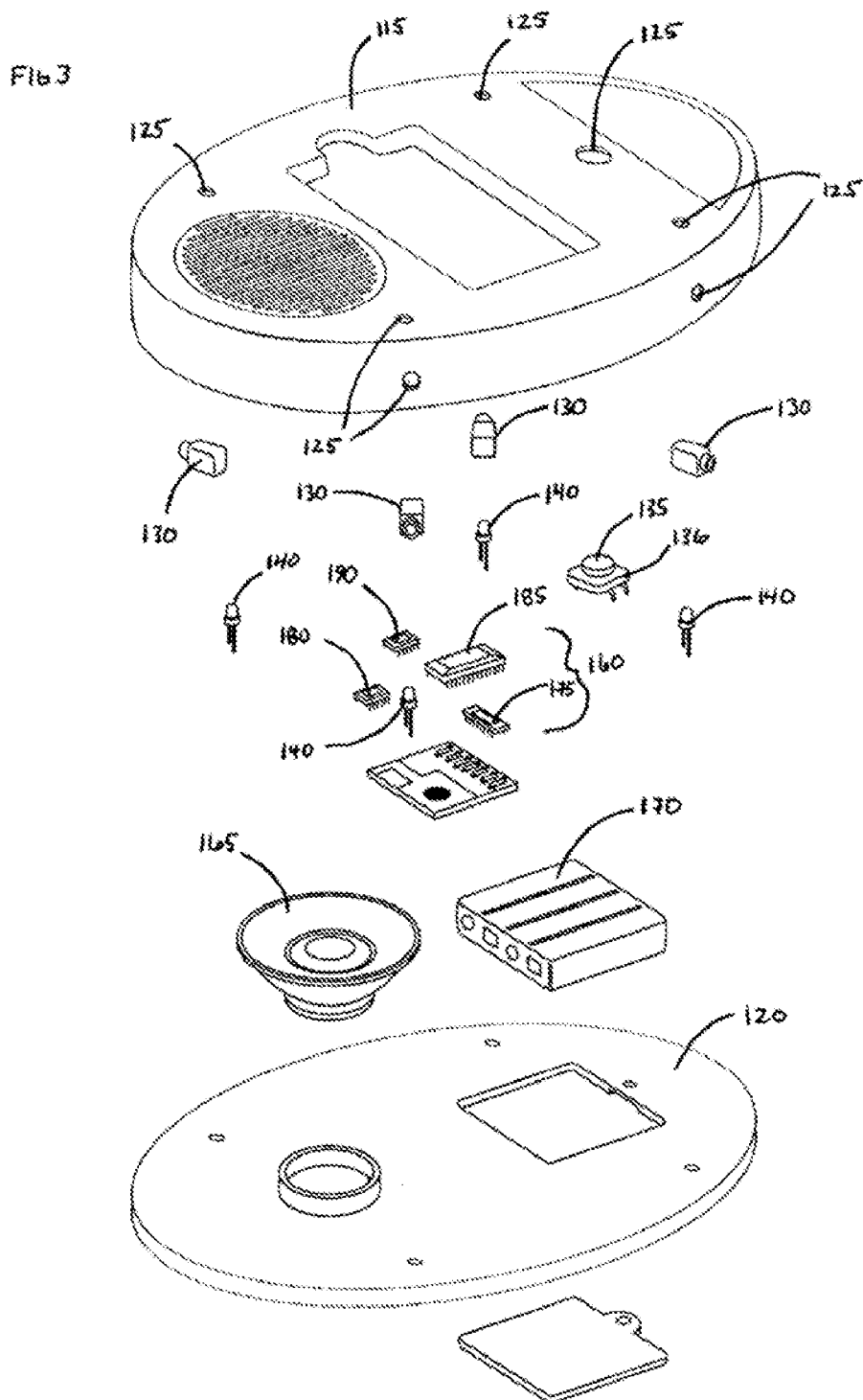
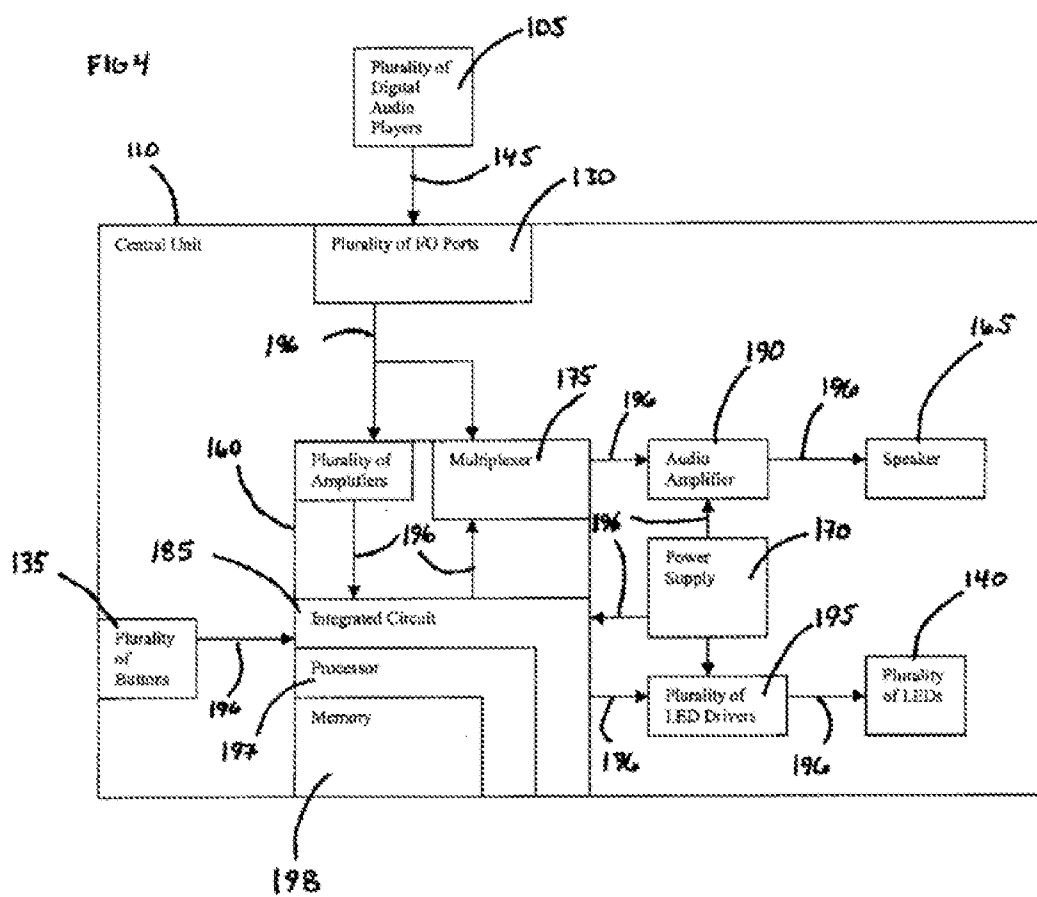


FIG. 1







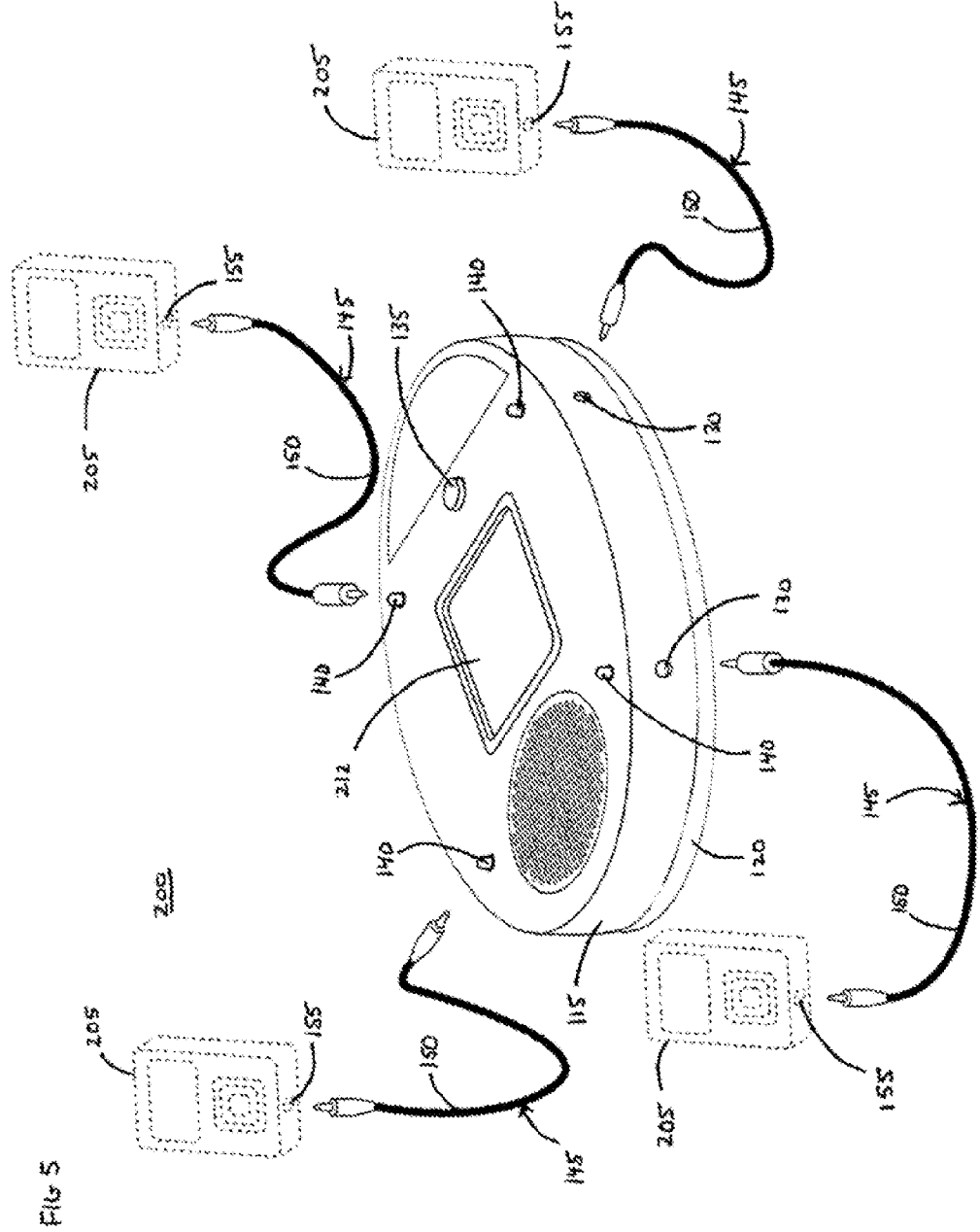
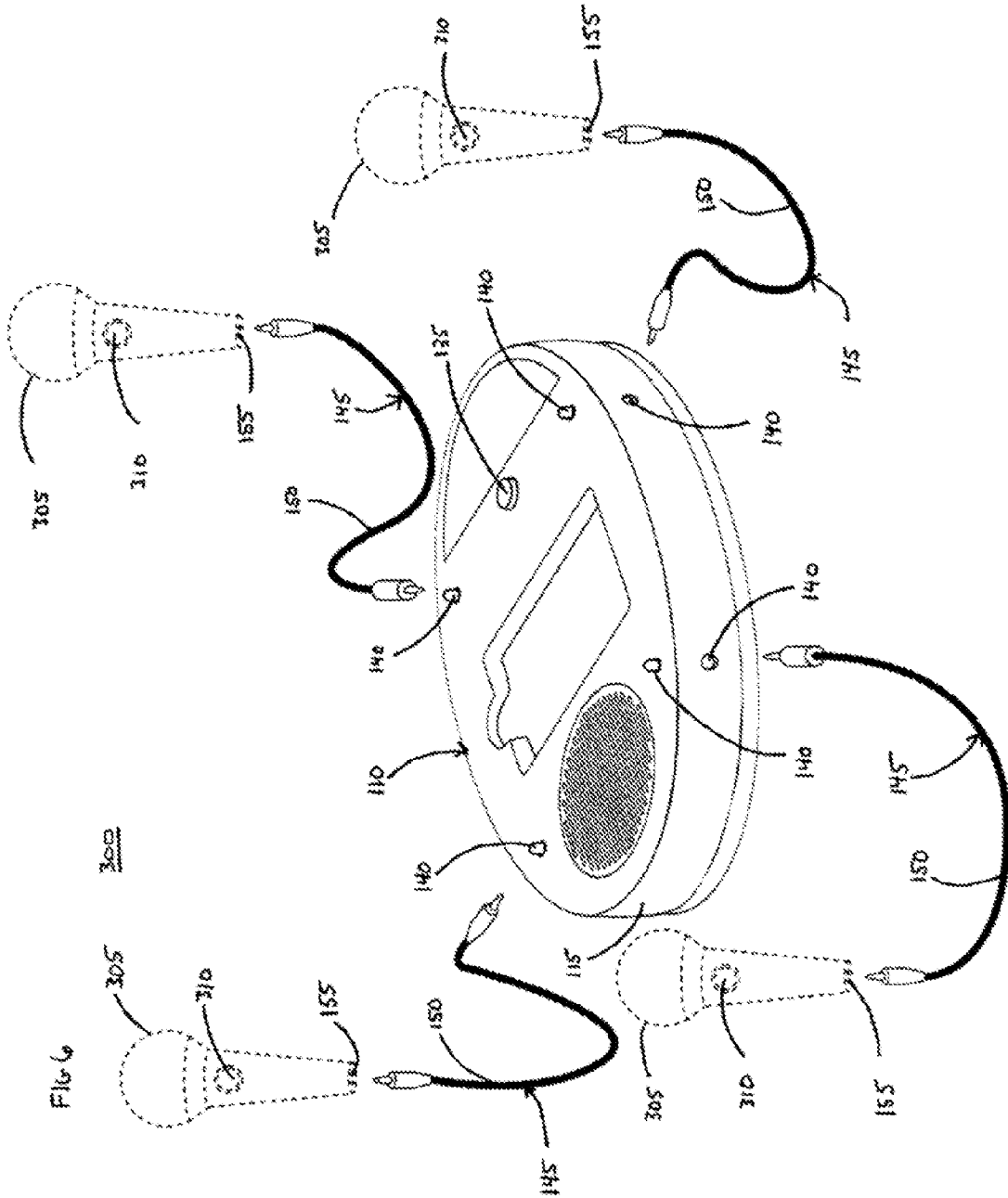


Fig. 5



**INTERACTIVE MULTI-PLAYER AUDIO GAMING DEVICE**

**CROSS REFERENCE TO RELATED APPLICATIONS**

**[0001]** The application claims priority to U.S. Provisional Application Ser. No. 60/913,036 entitled "Interactive Multi-Player Audio Gaming Device" filed on Apr. 20, 2007.

**FIELD OF THE INVENTION**

**[0002]** The present invention relates to an interactive gaming system, and in particular to a system where multiple users link audio players to a central unit, whereby game play is structured around the selection of audio data in accordance to gaming content.

**BACKGROUND OF THE INVENTION**

**[0003]** Interactive gaming systems are well known in the industry. Such systems include a variety of attributes that trigger game play. For example, the Giga Pets Explorer by Tiger Electronics combines a portable hand held gaming device with a TV for expanded play. "SIMON" is a well-known electronic version that combines lights and sound to enhance a user's gaming experience. While these gaming systems are well known, there is always a continuing need for improvements or changes in the gaming experience.

**SUMMARY OF THE INVENTION**

**[0004]** In one embodiment of the present invention, there is provided an interactive gaming system that includes a central unit having an upper and lower housing to accommodate a plurality of buttons, a plurality of input/output ports and a plurality of light sources. A circuit board assembly is positioned within the central unit and mounted to the lower housing and includes a processor in electrical communication with each light source, each button and each input/output port. The interactive gaming system further includes a means to operatively connect to the plurality of input/output ports to a plurality of storage medium devices and a means to transfer data from the storage medium devices to the processor. The pre-programmed gaming content when activated by the processor facilitates the receipt, organization and transfer of data received from the plurality of storage medium devices. This data is used in accordance with the pre-programmed gaming content to trigger game play and prompt user responses.

**[0005]** The means to transfer data from the plurality of storage medium devices to the processor may further include having each I/O port in electrical connection with a corresponding storage medium device to receive data from the storage medium devices. Each I/O port would also be in electrical connection with an amplifier and a multiplexer for data transfer. The amplifier is able to receive and convert the data into digital signals for suitable input to the processor, such that when the processor utilizes the preprogrammed gaming content to select one of the digital signals based on parameters included in the preprogrammed gaming content it can activate one or more of the plurality of light sources in accordance thereto. In addition, the processor may further direct the multiplexer to transfer the selected digital signal to an audio amplifier for output via a speaker. In addition, one of the parameters included in the preprogrammed gaming content can direct the processor to select the digital signal first received by the plurality of amplifiers for output to the

speaker. Yet further, when a user presses one of the plurality of buttons, a second parameter included in the preprogrammed content directs the processor to select the next digital signal received after the digital signal first received for output to the speaker. The system may also include a means to prompt user interaction by incorporating cards with questions and/or statements to direct a user to send data from a user's storage medium device to the processor via the means to transfer data in accordance with the preprogrammed gaming content.

**[0006]** The system may further include an LCD, questions and/or statements for display on the LCD, and means to prompt user interaction by incorporating the questions and/or statements displayed on the LCD to direct a user to send data from a user's storage medium device to the processor via the means to transfer data in accordance with the preprogrammed gaming content.

**[0007]** For use with the system, the storage medium device may include digital audio players.

**BRIEF DESCRIPTION OF THE DRAWINGS**

**[0008]** A fuller understanding of the foregoing may be had by reference to the accompanying drawings, wherein:

**[0009]** FIG. 1 is an illustrative view of a first embodiment of an interactive gaming system;

**[0010]** FIG. 2 is an illustrative view of the internal components of a first embodiment of an interactive gaming system;

**[0011]** FIG. 3 is an exploded view of the components of a first embodiment of an interactive gaming system;

**[0012]** FIG. 4 is a block diagram of an interactive gaming system for a first embodiment;

**[0013]** FIG. 5 is an illustrative view of a second embodiment of an interactive gaming system.

**[0014]** FIG. 6 is an illustrative view of a third embodiment of an interactive gaming system.

**DETAILED DESCRIPTION OF THE EMBODIMENTS**

**[0015]** While the invention is susceptible to embodiments in many different forms, there are shown in the drawings and will be described herein, in detail, the preferred embodiments of the present invention. It should be understood, however, that the present disclosure is to be considered an exemplification of the principles of the invention and is not intended to limit the spirit or scope of the invention and/or embodiments illustrated.

**[0016]** Referring now to FIGS. 1 and 2, in accordance to a first embodiment, there is illustrated an interactive gaming system 100 that includes a central unit 110 capable of being connected to a plurality of interactive storage medium devices 105. The central unit 110 has an external housing that includes an upper housing 115 and a lower housing 120. The upper housing 115 includes a plurality of apertures to accommodate a plurality of input and/or output ports (I/O ports) 130, one or more buttons 135 and a plurality of lights 140.

**[0017]** There are several types of interactive storage medium devices known in the art, including audio players (both digital and analog), digital cameras, PDAs, etc. Virtually any type of interactive storage medium may be used with the interactive gaming system 100 without deviating from the spirit of the invention. In accordance to a first embodiment, the interactive gaming system 100 is shown and described using one or more digital audio player(s). As known in the art, digital audio players have the capability to store and play



audio data, along with several other features, including the capability to synch with a PC to download and upload audio data. The use of “digital audio players” herein is not meant to limit the scope of the types of interactive storage mediums. Those in the art will understand that a variety of interactive storage mediums may be utilized with the present invention.

**[0018]** The external housing may take on several different three-dimensional geometric shapes. Virtually any three-dimensional shape may be used without deviating from the spirit of the invention as the outside appearance of the external housing is not meant to limit the scope of the invention. In accordance to a first embodiment as illustrated in FIGS. 1-3, the external housing is in the shape of a three dimensional oval.

**[0019]** An integrated circuit (IC) (described below) housed in the central unit **110** generates content in accordance to a program or programs and/or in accordance to the input received from the digital audio players. The generated content would be considered interactive or evolving with a play pattern designed in the programming. The generated content may include graphic and/or audio information or data. The information or data may be generated or converted into any type of signal or format needed for playing the content, such as, but not limited to digital, analog, wav, mpeg, mov, etc. The content would include audio data for emitting through a speaker (or headphones) and digital data for display on an integral display (as shown in a second embodiment described below). The content may also include vibrations or other motorized movement (such as that found in email alerts or more sophisticated gaming systems).

**[0020]** Continuing to refer to FIG. 1 and as mentioned in relation to a the first embodiment, digital audio players **105**, such as MP3 players, may be connected to the central unit **110** by a first means to communicate **145**. The first communication means **145** includes a wired communication. While not critical to the present invention, the first communication means **145** would include cables or wires **150** from output ports **155** on the digital audio players **105** to I/O ports **130** on the central unit that operatively connect the digital audio players **105** to the central unit **110**. Those skilled in the art will understand that the central unit **110** can operatively connect to the digital audio players **105** in a variety of forms. Therefore, a second communication means (not shown) in the interactive gaming system may include a wireless communication. The wireless communication would be facilitated by well known wireless components such as a transmitter/receiver. The components needed to facilitate either modes of communication are widely available and known in the art, such that further reference is not needed.

**[0021]** Once the one or more digital audio players **105** are connected to the central unit **110** the game may commence. In accordance to one gaming embodiment involving multiple players, the gaming content and user interaction can be described in the following “play pattern.” To start play, one or more users plug their digital audio players **105** into separate I/O ports **130**. A power switch (not shown) is triggered to activate the interactive gaming system **100**. A user then draws a card including a question from the deck provided (or in the case where there is an LCD integral to the central unit **110**, a question appears on the display in accordance with gaming content). Based on the content of the card, each of the users scroll through their digital audio players **105** to find audio data that satisfies the requested content. The users then press “play” on their digital audio players **105**. The corresponding

audio data is sent from the digital audio players **105** to amplifiers and a multiplexer (described below) via the I/O ports **130**. The amplifiers **180** convert the analog signal(s) to digital signal(s) and are then inputted to an IC. Simultaneously, the analog signals are sent to the multiplexer from the I/O ports **130**. The IC sends a signal to the multiplexer to identify which of the user’s audio signals were received first and the IC sends a signal to LED drivers to direct a LED corresponding to a digital audio player to switch to a light on phase. The first audio signal, here an analog signal, received will then be transferred to the audio amplifier, where the signal strength is regulated for output via the speaker. As the speaker emits the analog signal, the users may determine whether the song satisfies the requested content from the drawn card (additionally, the appropriate program may be included in the IC to identify whether a selected song meets the requested content). If the users determine that the selected audio signal is an appropriate answer, a point system may be utilized to keep track of each user’s score. If the users determine that the selected audio signal is not an appropriate answer, the next button **135** may be pressed to activate a switch. The switch sends a signal to the IC directing the IC to select the analog signal received second. This information is then transferred to the multiplexer which sends the appropriate analog signal to the audio amplifier, and then to the speaker. This process may be repeated until a user’s analog signal is found that satisfies the requested content of the card.

**[0022]** There is a virtually unlimited amount of play patterns that can be included in the gaming content. The example above is meant to be but one of the many and is not meant to limit the invention in any manner.

**[0023]** As illustrated in FIGS. 2 and 3, the lower housing **120** provides a base to mount the internal components to the central unit **110**, including a circuit board assembly (CBA) **160**, a speaker, **165**, and a power source **170**. For wired communication, the I/O ports **130** may be mounted to the upper housing **115**. These I/O ports **130** receive data, such as audio data, transferred from the digital audio players **105**. Utilizing an electrical connection (described below), the analog signals are transferred to a multiplexer **175** and to the CBA **160** where they are received by a plurality of amplifiers **180**. These amplifiers **180** convert the analog signals to a digital signal suitable for input to the IC **185**. The IC **185** then utilizes a program included in a memory (described below) to select one of the analog signals based on the program’s parameters. For example, when multiple analog signals are sent to the amplifiers **180**, a program may direct the IC **185** to select the first analog signal received from the amplifiers **180**. In this example, the IC **185** would then direct the multiplexer **175** to transfer the corresponding analog signal to an audio amplifier **190**. The audio amplifier **190** then adjusts the frequency level of the analog signal and transfers the analog signal to the speaker **165** for output.

**[0024]** Continuing to refer to FIGS. 2 and 3, a control button, such as a “next” button **135**, is in contact with a switch **136**, permitting a user to press the next button and trigger the switch **136**. The switch and next button **135** are mounted to the upper housing **115**. Further, the switch **136** is in communication with the IC **185** by an electrical connection that permits the transfer of information. When the next button **135** is pressed, a control signal is sent to the IC **185** via the electrical connection.

**[0025]** The processor(s) (described below) accesses game content (such as preprogrammed signals or audio content)

stored on a memory (described below) in the IC **185**. Further, the IC **185**, amplifiers **180** (described below), and plurality of LED drivers **195** are in communication with a power source to access power for activation and operation.

[0026] In the first embodiment, the interactive gaming system **100** includes a means to trigger game play and responses utilizing interactive storage mediums. An example of the triggered game play and responses is included in a “play pattern” example below.

[0027] Also, the interactive gaming system **100** includes a means to structure game play based on input from the digital audio players **105**.

[0028] Additionally, the interactive gaming system **100** includes a means to prompt user interaction with a series of questions and/or statements. These questions and/or statements may be included in a deck of cards or included in gaming content for display on an LCD where an LCD is included in the central unit as illustrated in FIG. 5. Further, the questions and/or statements could be included on a DVD for viewing on an external display during play.

[0029] Further, in accordance to the first embodiment, the interactive gaming system **100** includes a means to utilize a plurality of digital audio players in accordance with interactive gaming content. As mentioned above, the gaming content is considered interactive or evolving with a play pattern designed in the programming. The gaming content would at least include control and audio information and/or data. The data may be generated or converted into any type of signal or format needed for playing or transferring the gaming content, such as but not limited to digital, analog, wav, etc. As such, when signals are transferred from the digital audio players or a control button, the interactive gaming system responds based on the programming contained within the gaming content enabling a user to interact with the interactive gaming system in a variety of different capacities. An example of this interaction is included in a “play pattern” example below.

[0030] Referring now to FIG. 4, there is shown a block diagram provided especially for the first embodiment of the interactive gaming system **100**. A central unit **110** includes I/O ports **130** to receive an output pin (not shown) from the digital audio players **105**. The digital audio players **105** communicate with the CBA **160** via the I/O ports **130** and an electrical connection **196** that permits the transfer of information. Utilizing the electrical connection **196**, data (such as audio content, including analog signals, etc.) can travel between the digital audio player **105** and the CBA **160**. Included within the CBA **160** are the amplifiers **180**, a multiplexer **175** and an IC **185**. The amplifiers **180** and the multiplexer **175** receive the analog signal(s) from the digital audio players **105**. The amplifiers **180** transfer the analog signal(s) to the IC **185** after converting the analog signal(s) to a digital format readable by the IC **185**. The IC **185** may then send a control signal to the multiplexer based on preprogrammed gaming content. Simultaneously, the IC **185** may also send a control signal to the plurality of LED drivers **195**.

[0031] Further, a control button, such as a “next” button **135**, is in contact with a switch **136**, permitting a user to press the next button **135** and trigger the switch **136**. The switch **136** is in communication with the IC **185** by an electrical connection that permits the transfer of information. When the next button **135** is pressed, a control signal is sent to the IC **185** via the electrical connection **196**. The IC **185** may then take this control signal and respond according to preprogrammed gaming content.

[0032] While receiving a control signal from the IC **185**, the LED drivers **195** also receive an appropriate amount of power from the power source **170** via the electrical connection **196**. The lights **140** are preferably a light emitting diode (LED). These LEDs **140** may have any number of different colors, or include a white LED with a lens of desired color. Utilizing the preprogrammed control signal(s) the IC **185** then directs the LED drivers **195** to transfer the appropriate amount of power to the LEDs **140** to activate a desired state. Examples of a desired state include a “light on,” a “light off,” or a varying level of illumination for the LEDs **140**. The power is obtained from the power source **170** while the data is obtained from a processor(s) **197**. The processor(s) **197** is designed to run the program(s) stored on a memory **198**.

[0033] Now referring to the communication between the IC **185** and the multiplexer **175**, the multiplexer **175** receives several different analog or digital signals from the I/O ports **130**, and then forwards a signal selected by the IC **185** on to the audio amplifier **190**. In accordance to programming, the multiplexer **175** is used to forward on the first signal received by the IC **185** from a corresponding digital audio player **105**. For example, when the digital audio players **105** send audio data to the I/O ports **130** in response to a user’s input, a signal is sent via an electrical connection **196** to the IC **185** (and via the amplifiers **180**, as described above) and the multiplexer **175**. The IC **185** contains the processor(s) **197** and may include the memory **198**. The memory **198** further includes programming to facilitate and direct content, control signals, and data within the central unit **110**. The IC **185** is also in communication with the power source **170**. The memory **198** contains gaming content. The processor(s) **197** in the IC **185** accesses the gaming content based on a program and/or in accordance to the generated signals received from the I/O ports **130**. The processor(s) then generates a response that includes signals and may be in the form of analog, digital, or control signals. From the processor(s) **197**, control signals are sent to the multiplexer **175** to select the analog signal (here, containing audio data) transferred to the audio amplifier **190** while control signals are transferred to the LED drivers **195** via an electrical connection **196**. The LED drivers **195** then direct the LEDs **140** to change to a desired state, based on a program and/or in accordance to a user’s input or preprogrammed response. The audio amplifier **190** simultaneously transfers the analog signals to the speaker **165**.

[0034] Now referring to FIG. 5, in accordance to a second embodiment, there is illustrated an interactive gaming system **200** that includes a plurality of digital audio players **205** and a central unit **210** that includes a LCD **212**. While the functionality and communication of the second embodiment are similar to the first embodiment, the second embodiment further provides the LCD **212** to enable the questions and/or statements described above to be included within the central unit **110** and displayed on the LCD **212**. Similar to the first embodiment, a processor(s) accesses gaming content (such as preprogrammed signals or audio content) stored on a memory in an IC.

[0035] Now referring to FIG. 6, in accordance to a third embodiment, there is illustrated an interactive gaming system **300** that includes a central unit **110** capable of being connected to a plurality of microphones **305** with a button **310**. While the functionality and communication of the third embodiment are similar to the first and second embodiments, the third embodiment further provides game play incorporating voice input from users, transferred to a processor(s) as

data. Similar to the first and second embodiments, the processor(s) accesses gaming content to use in accordance with the receipt of voice input.

[0036] From the foregoing and as mentioned above, it will be observed that numerous variations and modifications may be effected without departing from the spirit and scope of the novel concept of the invention. It is to be understood that no limitation with respect to the specific methods and apparatus illustrated herein is intended or should be inferred.

We claim:

- 1. An interactive gaming system comprising:
  - a central unit including an upper and lower housing to accommodate a plurality of buttons, a plurality of I/O ports and a plurality of light sources;
  - a circuit board assembly mounted to said lower housing including a processor having pre-programmed gaming

content stored on a memory, the processor in electrical communication with each light source, each button and each I/O port;

means to operatively connect said plurality of I/O ports to a plurality of storage medium devices;

means to transfer data from said plurality of storage medium devices to said processor;

the pre-programmed gaming content when activated by the processor facilitates the receipt, organization and transfer of data received from said plurality of storage medium devices; and

wherein said interactive gaming system utilizes said data in accordance with said preprogrammed gaming content to trigger game play and prompt user responses.

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