

[0019] FIG. 3C shows a simplified version of simulated preferential lighting of a reel strip in accordance with one embodiment.

[0020] FIG. 4A shows layered displays in a gaming machine in accordance with one embodiment.

[0021] FIG. 4B shows layered displays in a gaming machine in accordance with another embodiment.

[0022] FIG. 4C shows another layered video display device arrangement in accordance with a specific embodiment.

[0023] FIGS. 5A and 5B illustrate a gaming machine in accordance with a specific embodiment.

[0024] FIG. 6 illustrates a control configuration for use in a gaming machine in accordance with another specific embodiment.

[0025] FIG. 7 is a block diagram illustrating an interaction between two hosts and a gaming machine for one embodiment of the present invention.

[0026] FIG. 8 is a block diagram showing hardware and software components and their interactions on a gaming machine for embodiments of the present invention.

[0027] FIGS. 9A-N are examples of video content for multi-layer displays, with and without an externally controlled interfaces, for various embodiments of the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0028] The present invention will now be described in detail with reference to a few preferred embodiments thereof as illustrated in the accompanying drawings. In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent, however, to one skilled in the art, that the present invention may be practiced without some or all of these specific details. In other instances, well known process steps and/or structures have not been described in detail in order to not unnecessarily obscure the present invention.

[0029] Gaming machine manufacturers highly regard customer preference information. When the assignee introduced CRT-based slot machines in 1975, the reaction of some players was less than enthusiastic. The CRT screens jolted players from a gaming activity based on a complex mechanical apparatus to a single, flat, video screen. The technology of 1975 pales in comparison to that of today. And yet, amongst casino patrons and other players, the perceived value of mechanically driven reel slot machines remains high.

[0030] Customer preference information belonging to the assignee shows that players trust the old mechanical machines. Some players feel that a lack of mechanically driven reels causes a slot game to be cheapened—and somehow less random. Many players believe that it is impossible to externally tamper with or (to player detriment) control outcomes for a mechanically driven machine. These people also commonly believe that manipulating outcomes portrayed on a video screen is both easily accomplished and undetectable to a player. Others simply prefer the feel and appearance of an electromechanical apparatus as they pull a handle, hear and feel solenoid and latches as they engage and disengage, and watch as spinning reels click into position to display an outcome. A loyal base of players still favors the traditional mechanical stepper machines, even today. The gradual disappearance of mechanical gaming machines, however, has left admirers of mechanical steppers scrambling to find their preferred machines.

[0031] Described herein are processor-based gaming machines that emulate a mechanical reel machine using one or more physical adaptations. The physical adaptations may include the use of layered video displays with a set distance between the displays. Traditional mechanical reel gaming machines arranged the mechanical reels behind a glass layer, which included screen printing or printed decals attached to the glass. The printing indicated rules for the game, pay tables, and various game graphics. In this multiple video display embodiment, a proximate video display device, such as an LCD, includes video data that mimics the glass layer and information typically printed on the glass layer. To increase realism, video data sent to the proximate video display device may also include video data for glare lines and other depictions of interaction of the stickers with an environment around a gaming machine. Video data emulating the stickers may also include video fraying and video discoloration (e.g., dirt that simulates age) to add the realistic simulation of aged and actual stickers. A second video display device, behind the first, which may also be an LCD, then includes video data that simulates the mechanical reels. Physical separation of the two video displays mimics the same separation seen between the glass and reels in a traditional mechanical gaming machines and significantly adds to the illusion of a real mechanical system. For example, this adds parallax, an actual three dimensional (3D) effect of real reel gaming machines, where a person variably sees portions of the distal display, through windows on the proximate display, based on their position relative to the gaming machine. FIGS. 1A, 1B, 2A-2C and 4A-4C describe the use of layered video displays to simulate this mechanical arrangement. Other physical adaptations may be used.

[0032] FIGS. 5A, 5B and 5C describe gaming machines, gaming methods and associated gaming devices that may be utilized with the layered video displays described with respect to FIGS. 1A-4C. The gaming devices on a processor-based gaming machine, such as layered video displays, may be controlled by software executed by a master gaming controller, which includes the processor (see at least FIG. 6), in conjunction with software executed by a remote logic device (e.g., a remote host, a central server or a central controller) in communication with the gaming machine. For example, the remote host may provide commands, instructions and data that control a display of video content on a multi-layered display. The remote host may be operable control the display of video content on the multi-layered display utilizing an externally controlled interface process (ECI) executed by the master gaming controller. FIGS. 8, 9 and 9A-N describe the use of ECIs on a gaming machine including a gaming machine with a multi-layered display.

[0033] Before describing these physical adaptation embodiments in further detail, it is useful to differentiate between three types of reels in a gaming machine: mechanical reels, two-dimensional (2-D) video reels, and realistic video simulation of mechanical reels as described herein.

[0034] Mechanical reels refer to the traditional hardware reels, with their associated latches and various mechanical parts. A mechanical reel usually has a set number of symbols disposed about a circumference of a reel strip attached to a wheel. A motor, spring, or other mechanical system physically spins the wheel until it stops at a rotational position and a particular symbol rests in view of a player to indicate an outcome for the reel game. In many older machines, the reels and symbols were spun by potential energy first stored in a