VIRTUAL CAMERAS AND 3-D GAMING ENVIROMENTS IN A GAMING MACHINE

BACKGROUND OF THE INVENTION

[0001] This invention relates to game presentation methods for gaming machines such as slot machines and video poker machines. More particularly, the present invention relates to apparatus and methods of for displaying game presentations derived from a 3-D gaming environment.

[0002] As technology in the gaming industry progresses, the traditional mechanically driven reel slot machines are being replaced with electronic counterparts having CRT, LCD video displays or the like. These video/electronic gaming advancements enable the operation of more complex games, which would not otherwise be possible on mechanical-driven gaming machines. Gaming machines such as video slot machines and video poker machines are becoming increasingly popular. Part of the reason for their increased popularity is the nearly endless variety of games that can be implemented on gaming machines utilizing advanced electronic technology.

[0003] There are a wide variety of associated devices that can be connected to video gaming machines such as video slot machines and video poker machines. Some examples of these devices are lights, ticket printers, card readers, speakers, bill validators, ticket readers, coin acceptors, display panels, key pads, coin hoppers and button pads. Many of these devices are built into the gaming machine or components associated with the gaming machine such as a top box which usually sits on top of the gaming machine.

[0004] Typically, utilizing a master gaming controller, the gaming machine controls various combinations of devices that allow a player to play a game on the gaming machine and also encourage game play on the gaming machine. For example, a game played on a gaming machine usually requires a player to input money or indicia of credit into the gaming machine, indicate a wager amount, and initiate a game play. These steps require the gaming machine to control input devices, including bill validators and coin acceptors, to accept money into the gaming machine and recognize user inputs from devices, including key pads and button pads, to determine the wager amount and initiate game play.

[0005] After game play has been initiated, the gaming machine determines a game outcome, presents the game outcome to the player and may dispense an award of some type depending on the outcome of the game. A game outcome presentation may utilize many different visual and audio components such as flashing lights, music, sounds and graphics. The visual and audio components of the game outcome presentation may be used to draw a player's attention to various game features and to heighten the players interest in additional game play. Maintaining a game player's interest in game play, such as on a gaming machine or during other gaming activities, is an important consideration for an operator of a gaming establishment.

[0006] One method for maintaining a player's interest is to present multiple games at the same time during a game presentation. For instance, triple play poker in which a player plays three hands of poker during each game presentation has become very popular game implemented on a video gaming machine. Variants of triple play poker include game presentations where a hundred or more poker hands are played during each game presentation. The presentation of multiple games during a single game presentation may be extended to other types of games, such as video slot games.

[0007] One difficulty associated with presenting multiple games in a video game presentation is the screen resolution of the display on a gaming machine. A typical display resolution on a gaming machine is about 640 pixels by 480 pixels. As the number of games presented in a game presentation increases, the amount of detail may be limited by the screen resolution. For instance, for a hundred hand poker game where a hundred poker hands are displayed during each game presentation, each card must be drawn fairly small without much detail to accommodate all of the cards on a single display screen. The lack of detail and small card size may discourage some game players from playing such games.

[0008] Another method for maintaining a player's interest in playing a game on a gaming machine is to present an exciting game presentation that is shown on a display screen on the gaming machine. Many newer game systems use graphical generation schemes employing mass storage devices that utilize varied load times and streamable media formats to generate an exciting game presentation. With these game systems, many game scenes are generated during the game play using complex renderings and video playback capabilities. Typically, however, for efficiency reasons, a player has little control over the game outcome presentation other than through game decisions they make during the play of the game.

[0009] In view of the above, it would be desirable to provide method and apparatus that allow detailed game presentations accommodating the simultaneous play of multiple games to be presented on a video gaming machine where the game presentation may also be controlled by a game player.

SUMMARY OF THE INVENTION

[0010] This invention addresses the needs indicated above by providing method and apparatus on a gaming machine for presenting a plurality of game outcome presentations derived from one or more virtual 3-D gaming environments stored on the gaming machine. While a game of chance is being played on the gaming machine, two-dimensional images derived from a 3-D object in the 3-D gaming environment may be rendered to a display screen on the gaming machine in real-time as part of a game outcome presentation. To add excitement to the game, the 3-D position of the 3-D object and other features of the 3-D gaming environment may be controlled by a game player. Nearly an unlimited variety of virtual objects, such as slot reels, gaming machines and casinos, may be modeled in the 3-D gaming environment.

[0011] One aspect of the present invention provides a method of playing a game of chance in a gaming machine including a master gaming controller, a display device and a memory device. The method may be generally characterized as including: 1) receiving a wager for one or more games of chance controlled by the master gaming controller on the gaming machine; 2) determining game outcomes for each of the one or more games of chance; 3) rendering one