

## SIMULATION OF MECHANICAL REELS ON A GAMING MACHINE

### FIELD OF THE INVENTION

[0001] The present invention relates generally to reel spinning slot machines and, more particularly, to a reel spinning slot machine having mechanical reels with symbol locations that can provide for multiple symbols, or simulated mechanical reels that are curved like a typical mechanical reel of the machine.

### BACKGROUND OF THE INVENTION

[0002] A slot machine generally comprises a plurality of reels controlled by a processor. In response to a wager, the processor randomly selects an outcome from a plurality of possible outcomes and then causes the reels to be stopped to display the selected outcome. The selected outcome is represented by certain symbols on the reels being in visual association with a display area. If the selected outcome corresponds to a winning outcome identified on a pay table, the processor instructs a payoff mechanism to award a payoff for that winning outcome to the player in the form of coins or credits.

[0003] Slot machines are generally available in two different types. First, a video-based slot machine depicts the symbol-bearing reels on a video display. Second, a mechanical slot machine includes mechanical reels driven by stepper motors.

[0004] In prior art machines having mechanical reels, the display area of reel spinning slot machines is fairly mundane. Several proposals to modify the appearance of the display area have been set forth. For example, the reels may contain electroluminescent elements that define one or more reel symbols, such as diamonds, cherries or bars, where the characteristics of the reel symbols change based on inputs to the electroluminescent elements. In another proposal, the reel symbols are colored by backlighting the symbols with colored light bulbs or similar means.

[0005] Video-based slot machines allow for flexibility in game design and multi-denominational play and do not require any additional hardware for implementing bonus games. With respect to flexibility in game design, the video display of a video-based slot machine can depict complex and entertaining graphical images, animations, and play sequences that cannot be employed in mechanical slot machines. With respect to flexibility in multi-denominational play, the game (e.g., reel symbol distribution and pay table) can easily be modified to vary the theoretical payback percentage in response to a player's selection of different coin denominations for game play. Such game modifications are not easily made to mechanical slot machines. Further, video-based slot machines do not require any additional hardware for implementing bonus games because the bonus game may be depicted on the primary video display and executed by the same game controller used to execute the video slot game.

[0006] Video-based slot machines and mechanical slot machines generally appeal to different segments of the market. Although many players are attracted to the complex and entertaining graphical images, animations, and play sequences afforded by video-based slot machines, many

traditionalists are still drawn to mechanical slot machines because they are simplistic machines that often only pay on a single pay line and only require a pull of a handle to initiate a spin of the reels. Part of the reason that these traditionalists avoid video-based slot machines is that the simulated reels on the video-based machines are markedly different in looks than standard mechanical reels. This is primarily due to the generally flat nature of the video screen displaying the images. While there may be some slight curvature, the curvature on the video screen does not nearly approximate the curvature of a traditional mechanical reel.

[0007] It would be beneficial to incorporate some of the features of the video-based slot machines into a traditional mechanical slot machine because of the flexibility that these video-based machines offer. To increase the popularity of video-based slot machines, efforts have been made to promote such machines at gaming establishments and in print advertising mediums. Despite such efforts, many traditionalists remain loyal to mechanical slot machines and generally avoid video-based slot machines. A need exists for a slot machine having video-based capabilities, while still preserving the simplistic rotation of mechanical reels that traditionalists appreciate in the traditional mechanical slot machine.

### SUMMARY OF THE INVENTION

[0008] The present invention solves the aforementioned problems by providing a spinning reel slot machine having increased versatility, while having reels that are aesthetically similar to the traditional mechanical reels.

[0009] In one embodiment, the slot machine includes an image display device having a surface for producing images of simulated mechanical reels. The simulated mechanical reels, in response to a wager, move across the surface and stop to place symbols on the simulated mechanical reels in random orientations on the surface. A plurality of optical fibers have first ends optically coupled to the surface of the image display device and second ends for displaying the simulated mechanical reels to a player of said slot machine. At least some of the second ends define a curved display surface with a radius of curvature that approximates the radius of curvature of a mechanical reel.

[0010] In another embodiment, the slot machine includes a plurality of mechanical reels that, in response to a wager, are rotated and stopped to randomly place symbols on the reels in visual association with a display area. One or more of the mechanical reels has a transparent window at a location where a symbol would normally be present. A video display is located behind the reel with the window and is in alignment with the display area. The video display displays a video symbol when the transparent window stops in the display area. Thus, the video symbol is observable through the transparent window by a player of the slot machine.

[0011] In a further embodiment, a spinning reel slot machine includes a plurality of mechanical reels that, in response to a wager, are rotated and stopped to randomly place symbol regions on the plurality of reels in visual association with a display area. At least one of the plurality of mechanical reels has a miniature image display located at a selected one or more of the symbol regions. The miniature image display provides video symbols for the game.

[0012] In yet further embodiments, a symbol region on a reel has first features that are visible in response to exposure