

at a certain wavelength or polarization of light and second features that are visible in response to exposure to a second wavelength or a second polarization of light. The first features define a first symbol in the symbol location and the second features define a second symbol in the symbol location. The wavelength or polarization of a light source is controlled by the machine to develop the first or second symbols.

[0013] The above summary of the present invention is not intended to represent each embodiment, or every aspect, of the present invention. This is the purpose of the Figures and the detailed description which follow.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] The foregoing and other advantages of the invention will become apparent upon reading the following detailed description and upon reference to the drawings.

[0015] FIG. 1 illustrates a typical slot machine on which the present invention is useful.

[0016] FIG. 2 is an isometric view of one embodiment of the present invention in which a simulated mechanical reel is produced by optical fibers having ends on a locus in which the radius of curvature is similar to that of a typical mechanical reel.

[0017] FIG. 3 is an isometric view of another embodiment of the present invention in which a simulated mechanical reel is produced by optical fibers having ends on a curved locus and on a flat plane, as well.

[0018] FIG. 4 is an alternative embodiment in which a mechanical reel has a transparent window and an image generator located behind the mechanical reel to display a simulated symbol through the transparent window.

[0019] FIG. 5 is an embodiment similar to FIG. 4 in which the image generator provides an output across the entire display area.

[0020] FIG. 6 is an embodiment similar to FIGS. 4 and 5 in which the image generator includes a plurality of optical fibers.

[0021] FIG. 7 is an embodiment similar to FIGS. 4 and 5 in which a lens provides curvature that is similar to the curvature of a mechanical reel.

[0022] FIG. 8 is an illustration of the output from reels having transparent windows and an image generator located behind each reel.

[0023] FIGS. 9a and 9b illustrate the versatility provided by the increase of symbols for the reels of FIGS. 4-7.

[0024] FIG. 10a illustrates an alternative embodiment where a mechanical reel has a plurality of video displays on its exterior symbols at symbol locations.

[0025] FIG. 10b illustrates one type of circuitry that could be used to supply power to the embodiment of FIG. 10a.

[0026] FIG. 11 illustrates yet another embodiment of the present invention in which one video display for generating simulated mechanical reels accompanies a plurality of mechanical reels.

[0027] FIGS. 12a and 12b illustrate a mechanical reel with a compound symbol at one symbol location that is produced by varying wavelengths of light.

[0028] FIGS. 13a-13d illustrate a mechanical reel with a compound symbol at one symbol location that is produced by varying polarization states of light.

[0029] While the invention is susceptible to various modifications and alternative forms, specific embodiments have been shown by way of example in the drawings and will be described in detail herein. It should be understood, however, that the invention is not intended to be limited to the particular forms disclosed. Rather, the invention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention as defined by the appended claims.

DESCRIPTION OF ILLUSTRATIVE EMBODIMENTS

[0030] FIG. 1 illustrates a typical slot machine 5 having three reels 6a, 6b, 6c on which symbols are displayed. The reels 6a, 6b, 6c move or appear to move the symbols in response to receiving a wager from a player. The symbols, as they stop in a display region of the slot machine 5, dictate the outcome of the game for the player. The present invention described below in FIGS. 2-13 is particularly useful for this type of slot machine 5.

[0031] FIG. 2 illustrates a first embodiment of the present invention in which a mechanical reel simulation system 10 includes an image display device 12 that provides output into a fiber optic bundle 14 that is comprised of a plurality of optical fibers. The fiber optic bundle 14 has a first end 16 that is located adjacent to the image display device 12 and is optically coupled thereto. This optical coupling can be brought about by ensuring close proximity between the first end 16 of the fiber optic bundle 14 and the image display device 12 through the use of an optically transparent adhesive. The image display device 12 may be one of a variety of devices including a CRT display, liquid crystal display (LCD), dot matrix, vacuum fluorescence display, organic light emitting diode (OLED), LED array, etc.

[0032] A second end 18 of the fiber optic bundle 14 is located on a curved plane having a radius R that approximates the curvature of a typical mechanical reel. The radius is generally in the range of from about 4 to about 7 inches. Thus, the second end 18 provides a simulated mechanical reel 20 having a plurality of symbols 22. Each of the symbols 22 is produced by the image display device 12 which, in response to a wager input from a player, causes the apparent movement of the simulated reel 20 behind a glass pane 24 that isolates the reel from the player. The glass pane 24 may also include the artwork that provides additional aesthetics to the gaming machine. The apparent movement of the simulated reel 20 is caused by movement of the symbols 22 across the second end 18 of the fiber optic bundle 14.

[0033] FIG. 3 illustrates a modified version of the system 10 of FIG. 2. A mechanical reel simulation system 30 includes an image display device 32 optically coupled to a fiber optic bundle 34 at its first end 36. The fiber optic bundle 34 has a curved second end section 38a and two flat second end sections 38b. The curved second end section 38a has a