

GAMING MACHINE

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a gaming machine including a liquid crystal display.

[0003] 2. Description of the Related Art

[0004] A recent slot machine including stop buttons or a so-called pinball slot machine (a so-called "Pachi-Slot machine" in Japan) has a variable display means provided with a plurality of rotatable reels for variably displaying symbols in a front display window. As the player performs start operation, control means controls the variable display means for rotating the reels, thereby producing variable display of symbols. Then, the rotating reels are stopped in order automatically in a given time or as the player performs stop operation. At this time, if the symbols on the reels appearing in the display window become a specific combination (winning symbol combination), game medium such as medals and coins are paid out to the player as the prize of the win.

[0005] The currently predominant pinball slot machine has a display window for the player to visually check symbols on reels on the front of the machine and a liquid crystal display for displaying an effect image concerning game play on a side of, below, or above the display window (namely, a position not overlapping the display window from the viewpoint of the player). Such a liquid crystal display generally is provided with a backlight for the liquid crystal display implemented as a cold-cathode tube for producing sharp display.

[0006] FIG. 13 is a perspective view of the front to show a part of a pinball slot machine in a related art. In FIG. 13, display windows 9004 (9004L, 9004C, and 9004R) are provided in front of a plurality of reels 9003 (9003L, 9003C, and 9003R) on which a plurality of symbols are arranged, so that the player visually checks the symbols placed on the reels 9003 through the display windows 9004. BET lamps 9009 for indicating which of pay lines in the horizontal direction (top line, center line, and bottom line) and pay lines in slanting directions (cross down line and cross up line) is activated are provided on one side of the display window 9004. A medal insertion slot 9022 for the player to insert a medal, BET switches 9011, 9012, and 9013 operated by the player to make the pay line activated, and a display 9005 for displaying an image concerning game play are provided below the display windows 9004.

[0007] FIG. 14 is a perspective view of a backside of the door to show a part of the gaming machine in the related art. In FIG. 14, a control circuit board 9530 is attached through a board support member 9520 to one side of and below the display windows 9004 (9004L, 9004C, and 9004R). The control circuit board 9530 is provided for performing display control of the BET lamps 9009 and the display 9005 and any other control; various circuits 9531 to 9539 are installed on the control circuit board 9530.

[0008] Generally, reel backlights implemented as white light emitting diodes are provided for illuminating the symbols on the reels from behind to project the symbols onto the display windows.

[0009] The above structure is disclosed in JP-A-2001-353255 (see page 2 and FIG. 2).

SUMMARY OF THE INVENTION

[0010] However, if an attempt is made to dispose the liquid crystal display so that a part of the liquid crystal display overlaps the display window 9004, the reel 9003 representing the symbols exists just behind the display window 9004 and no liquid crystal backlight can be provided in the portion of the liquid crystal display corresponding to the display window 9004 and thus a reel backlight for illuminating the symbols on the reel 9003 from behind is used supplementally as a liquid crystal backlight. However, since the reel 9003 is circular in cross section, a black triangular region 9321 is produced between the reel 9003 and liquid crystal 9504 due to the fact that the inside of the machine is dark as shown in FIG. 15. The board support member 9520 on the side of the back of the display windows 9004 is white, but the width of the board support member 9520 can be taken only as a small width. If the width of the board support member 9520 is made large, a problem of breakage or failure occurs because of interference between the control circuit board 9530 and the member in the machine (for example, the reel 9003) when a door is opened or closed. Therefore, the black triangular region 9321 is inevitably produced, also as shown in FIG. 13. This problem is not involved in the gaming machine in the related art with no liquid crystal provided on the front of the display window 9004; however, if an attempt is made to provide liquid crystal 9504 on the front of the display window 9004, there occurs a problem that the background of the liquid crystal 9504 becomes black in the presence of the black triangular region 9321, and the player can scarcely perceive color development of the liquid crystal 9504 with the black background.

[0011] Further, as shown in FIG. 15, there occurs a problem that in an area 9541 or 9543 distant from the reel 9003 on the liquid crystal 9504, color output relatively weakens as compared with that in a nearest part 9542 of the liquid crystal 9504 to the reel 9003.

[0012] If the same color is developed in all area of the liquid crystal 9504, it is also clarified that if the black shadow of the black triangular region 9321 is cast over the liquid crystal 9504, the liquid crystal area over which the black shadow is cast produces relatively dark display.

[0013] It is therefore an object of the invention to provide a gaming machine that provides an image displayed sharply even in an area for displaying symbols on reels through the area and enabling the player to clearly recognize the image and enjoy playing a game.

[0014] According to one aspect of the invention, there is provided a gaming machine including: a variable display means (for example, reels 3) configured to variably display a plurality of symbol rows each having a symbol placement face formed in a curved surface on which a plurality of symbols are placed; an image display means (for example, liquid crystal 504) being provided in front of and opposed to the variable display means and configured to display the symbols through a flat symbol transmission face and to display an image concerning a game; a symbol illumination means (for example, reel backlight 513) configured to illuminate the symbols; and an image display assistance means