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(54) **GAMING MACHINE**

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(57) **ABSTRACT**

The game result display means of the gaming machine includes the reels and the liquid crystal display device arranged at a more front side than the display areas of the reels when seen from the front side of the gaming machine, and the liquid crystal display device has light transmitting symbols capable of displaying display contents of the reels therethrough and variably displays the light transmitting symbols thereon.

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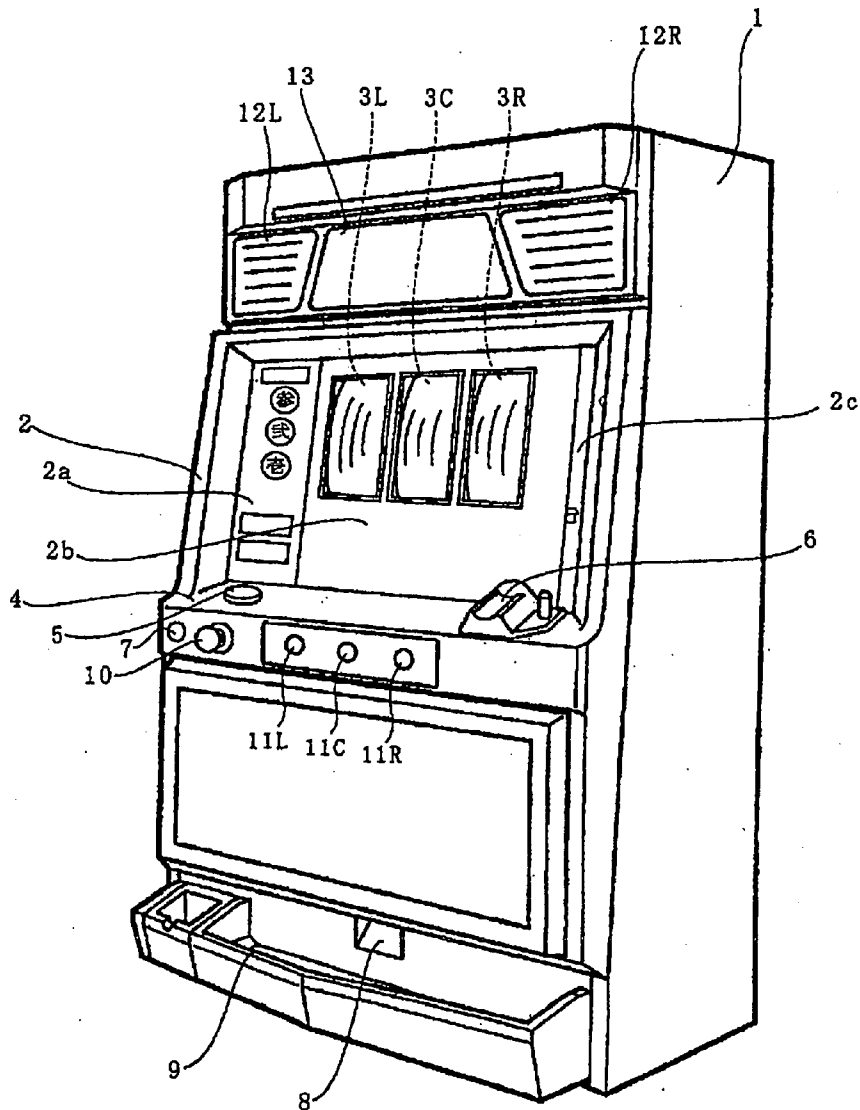


FIG. 1

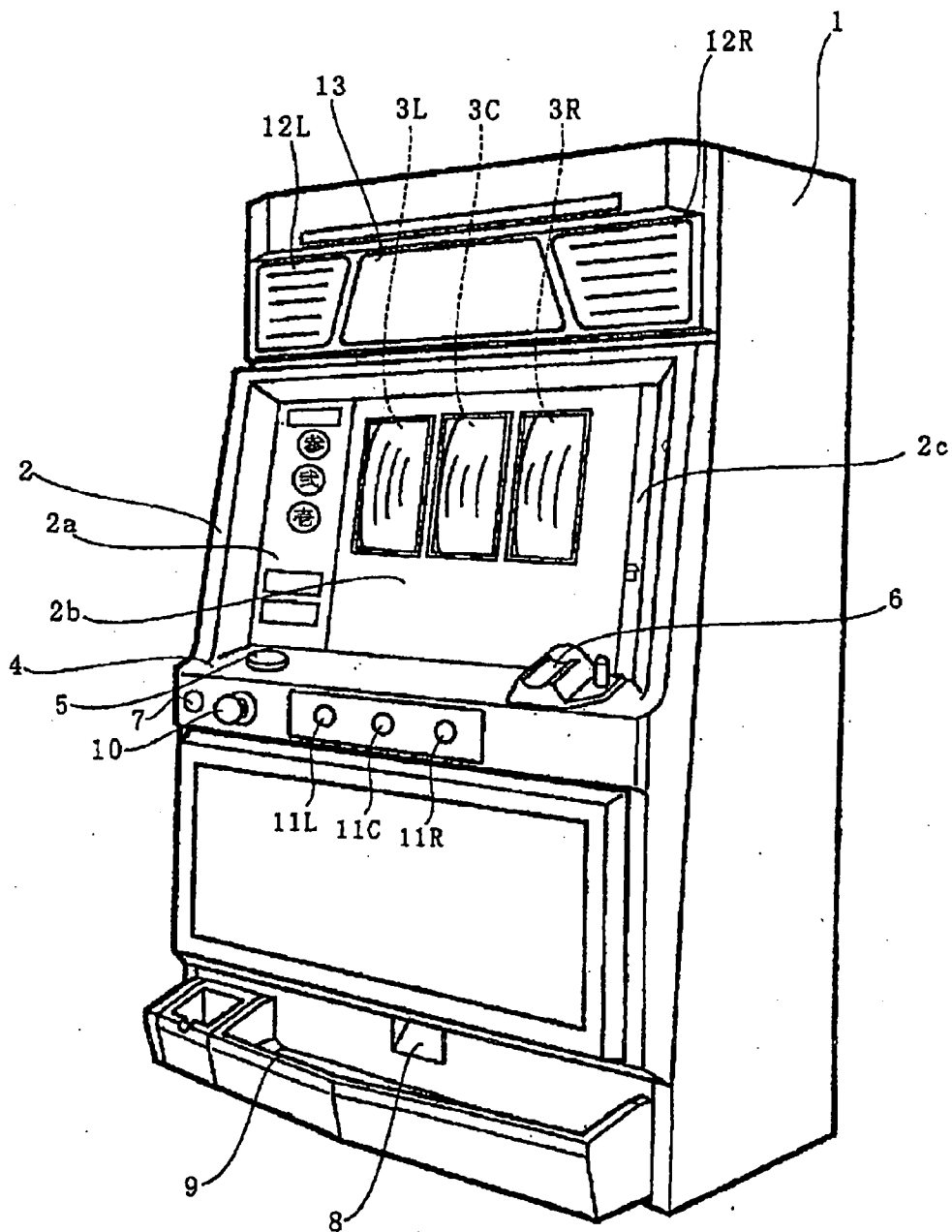


FIG. 2

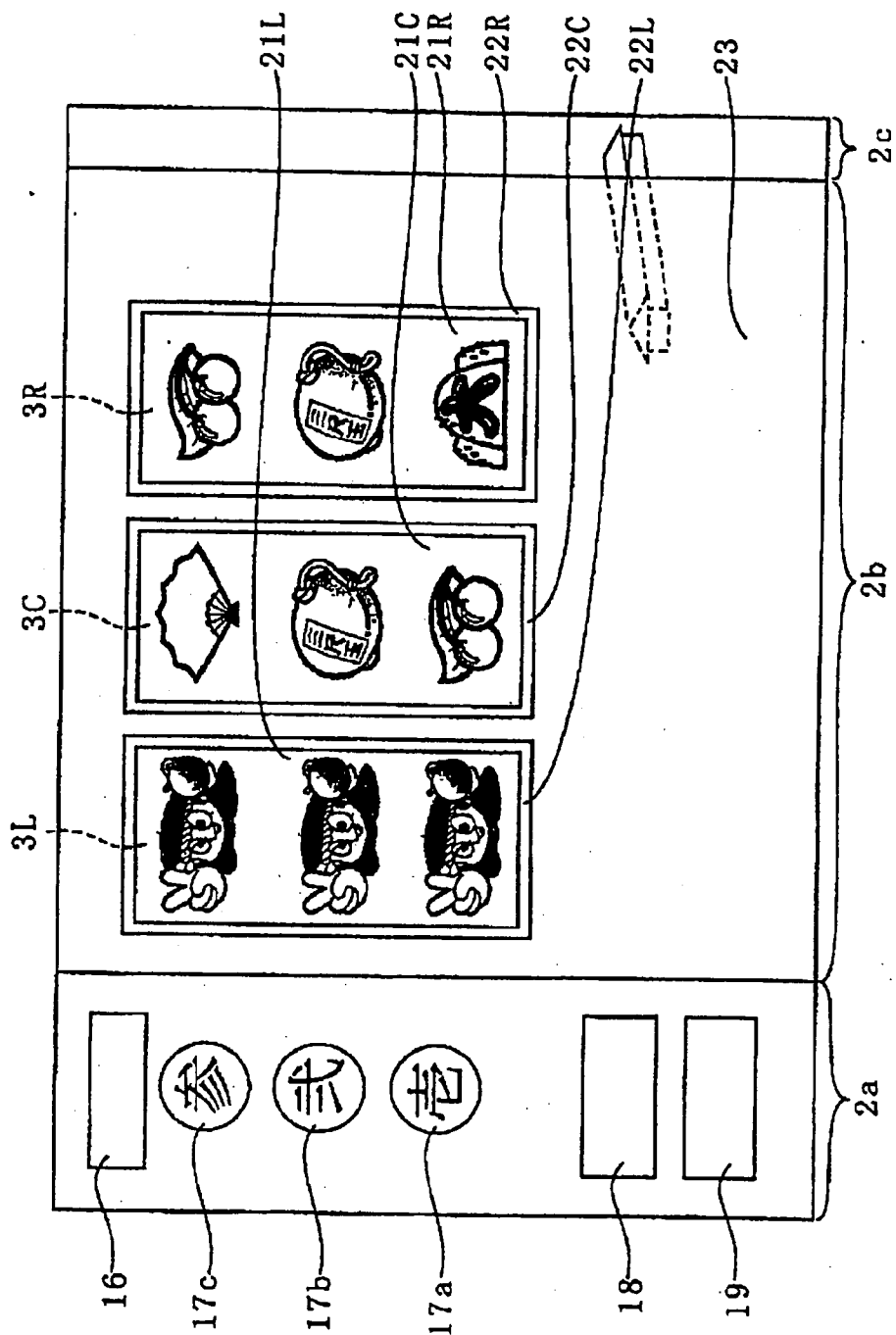


FIG.3

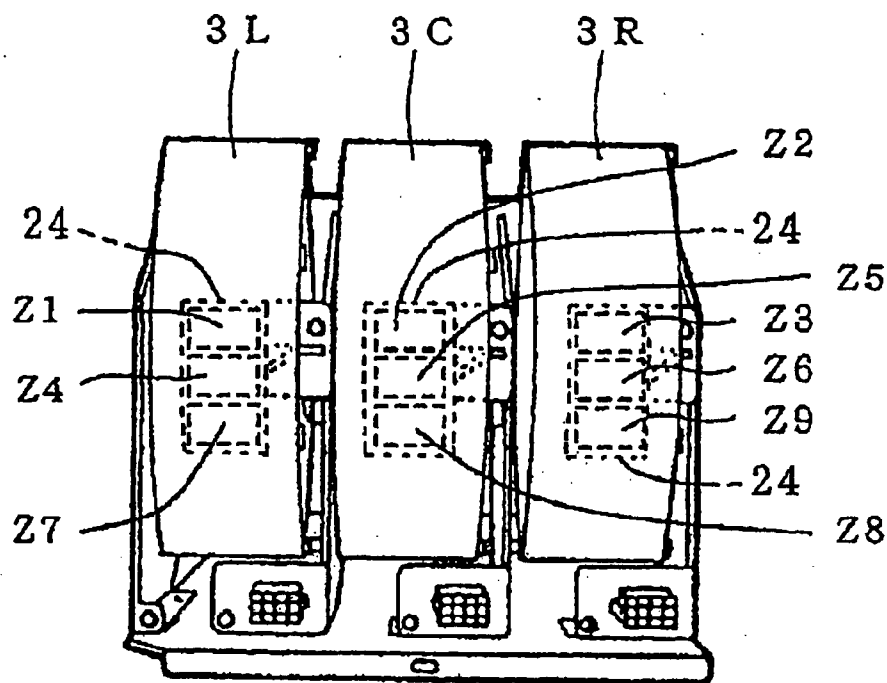


FIG.4

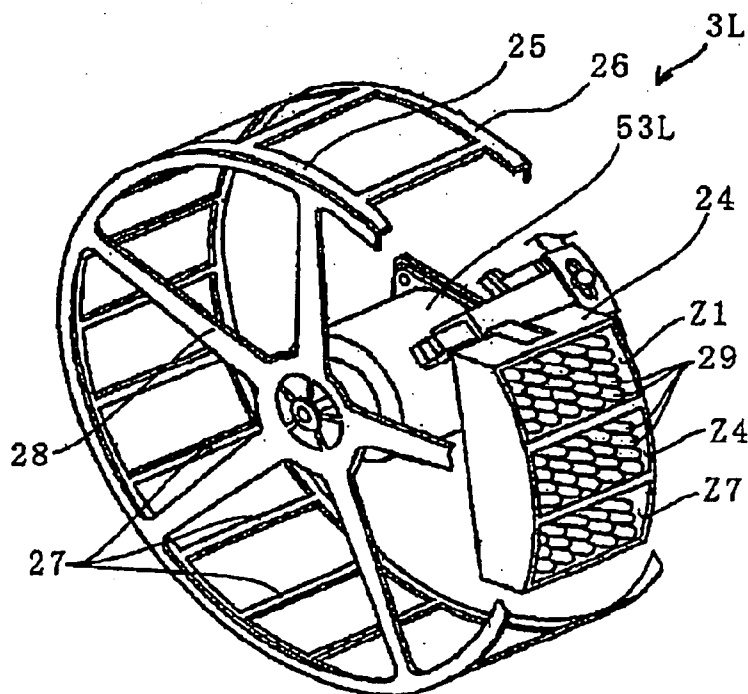
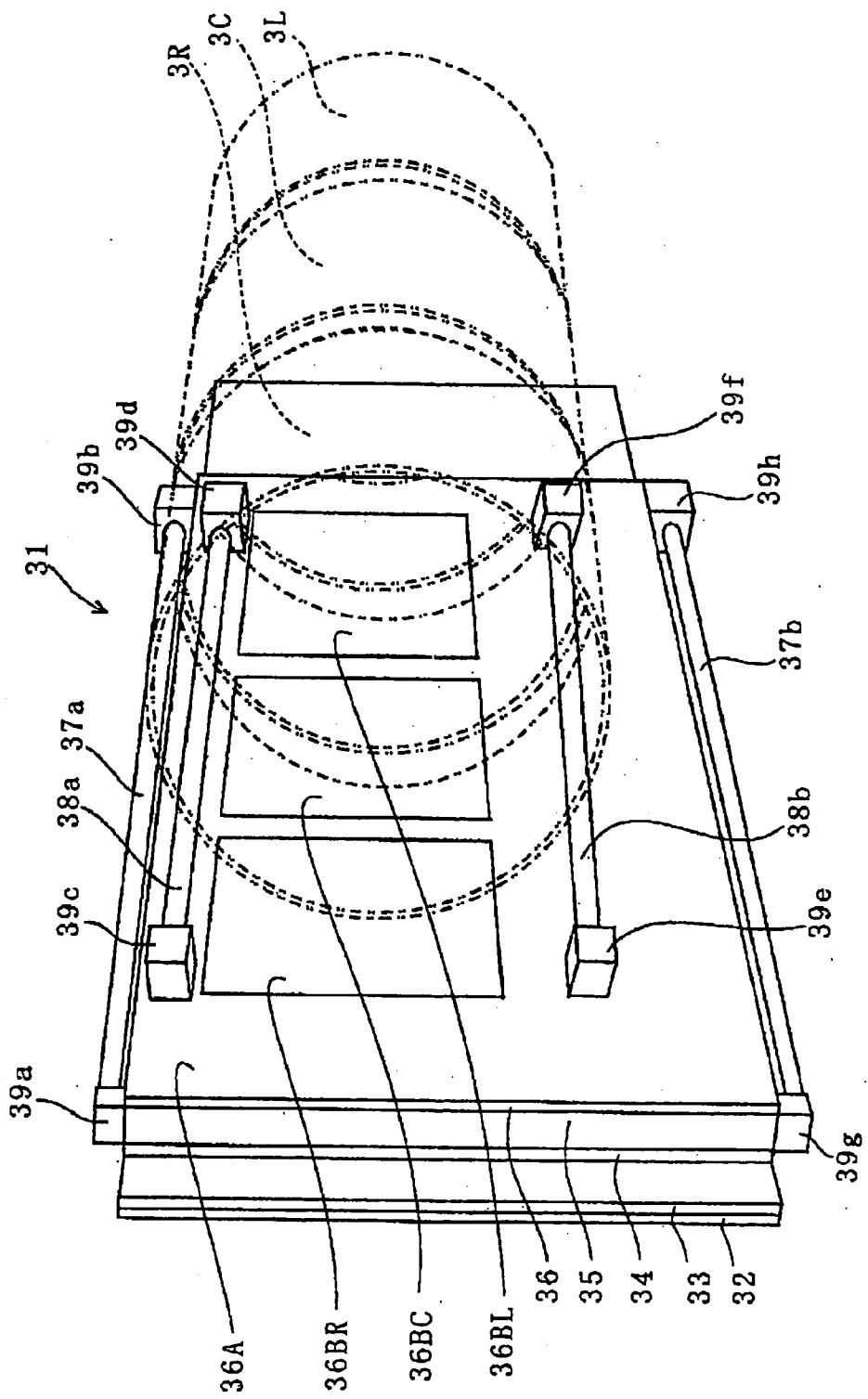


FIG. 5



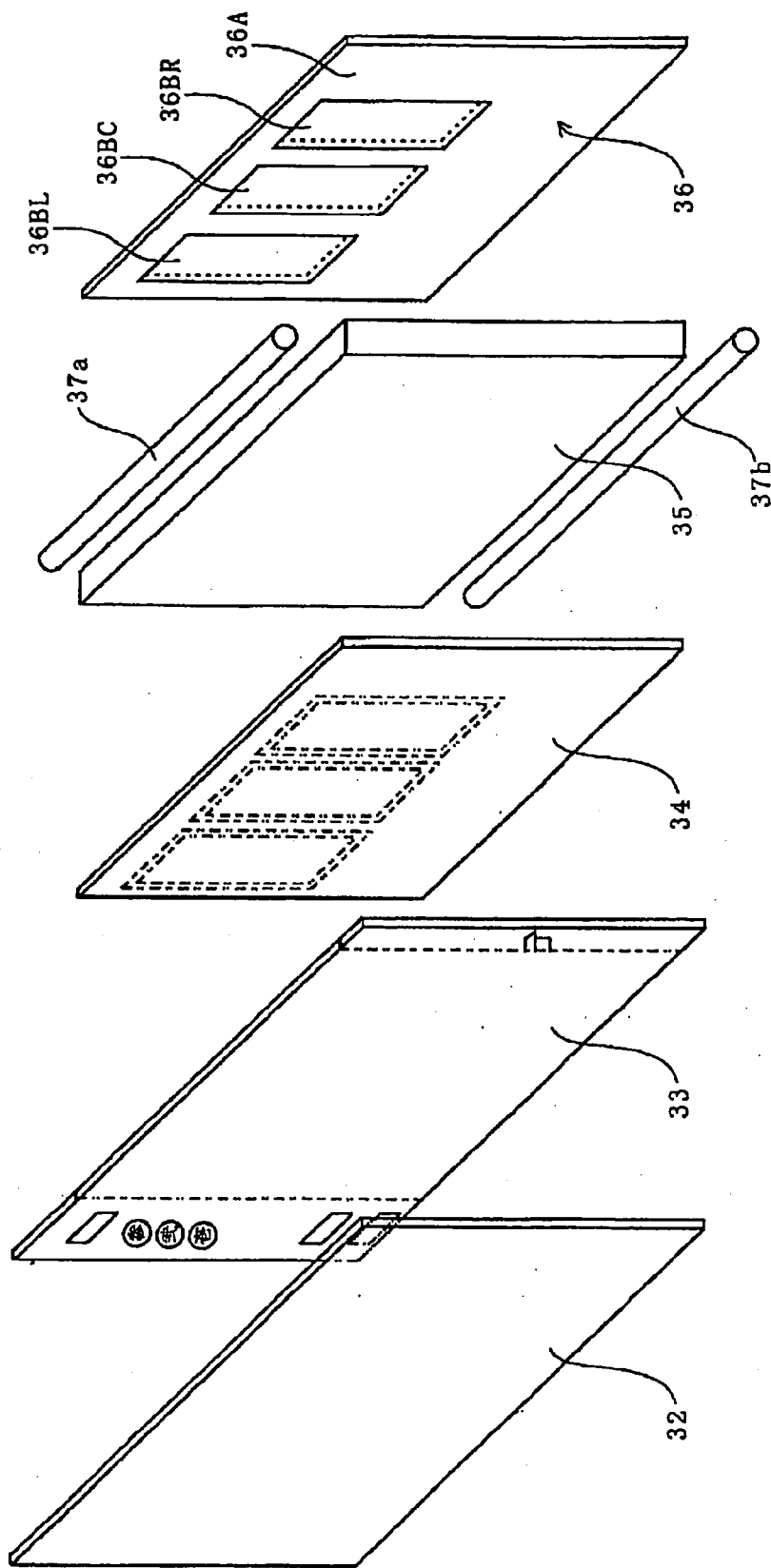
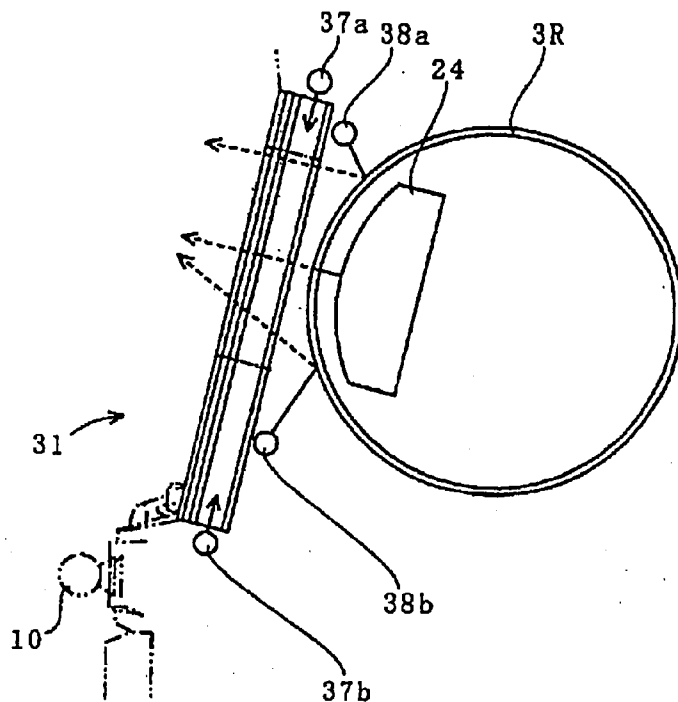


FIG.6

**FIG. 7A** WHEN LIQUID CRYSTAL EXISTING AT SYMBOL DISPLAY AREAS IS NOT DRIVEN



**FIG. 7B** WHEN LIQUID CRYSTAL EXISTING AT SYMBOL DISPLAY AREAS IS DRIVEN

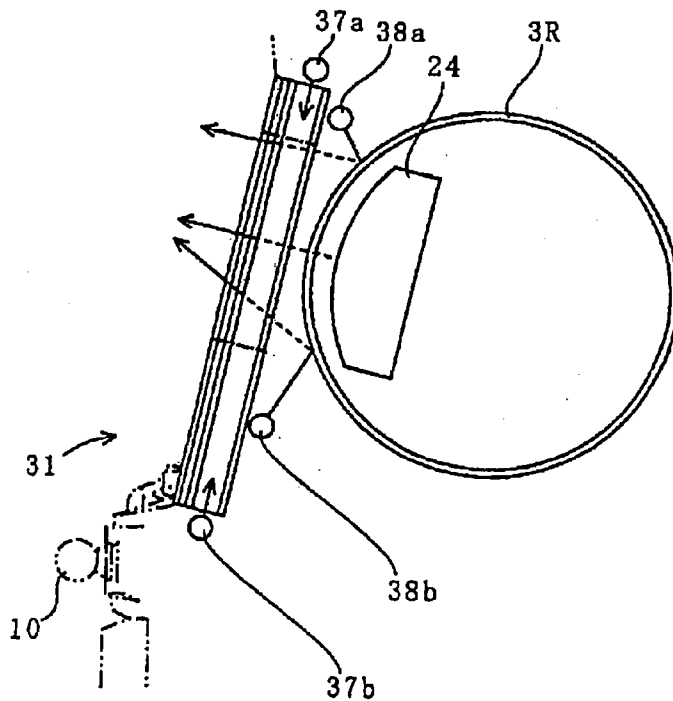


FIG. 8

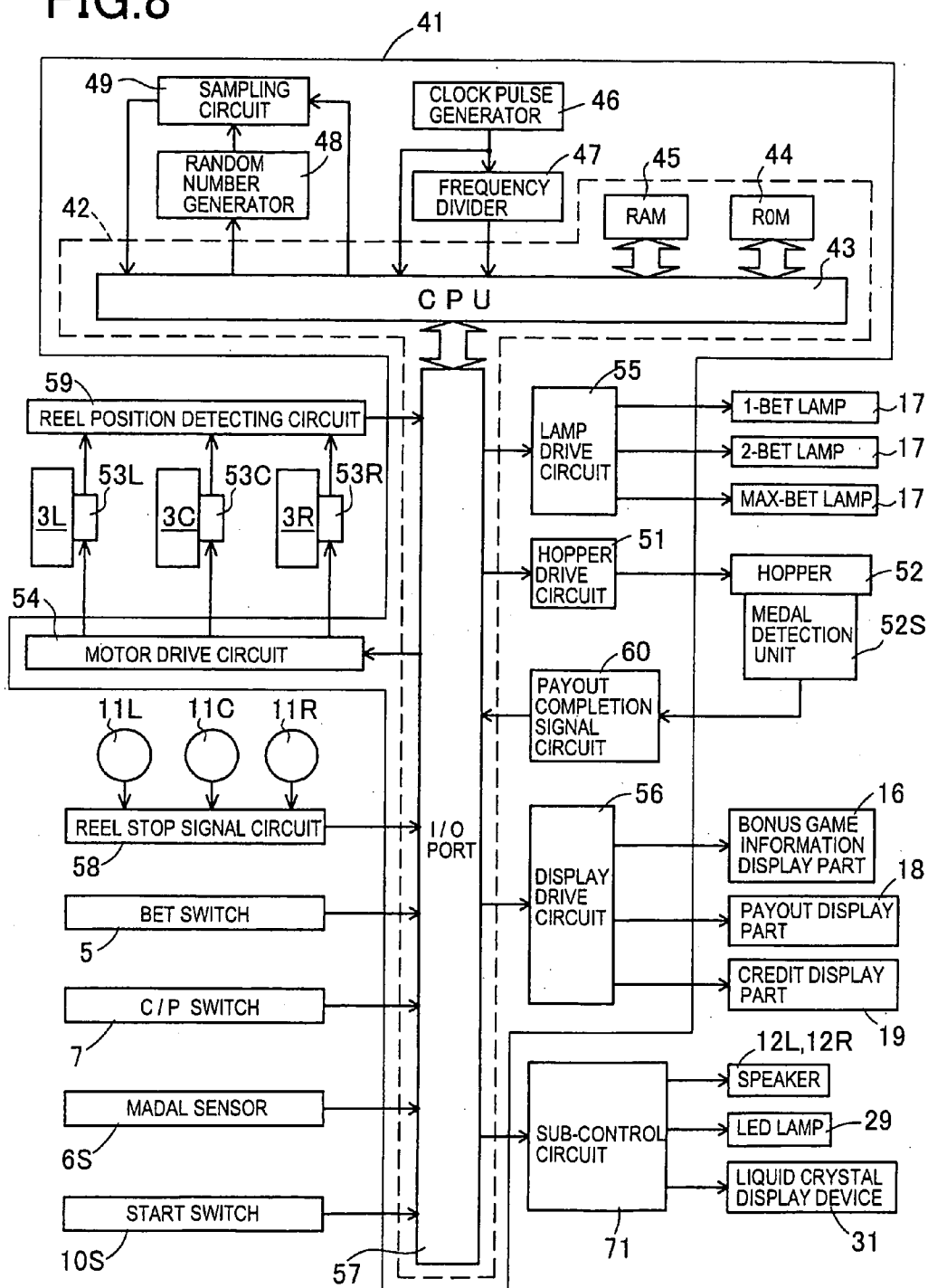
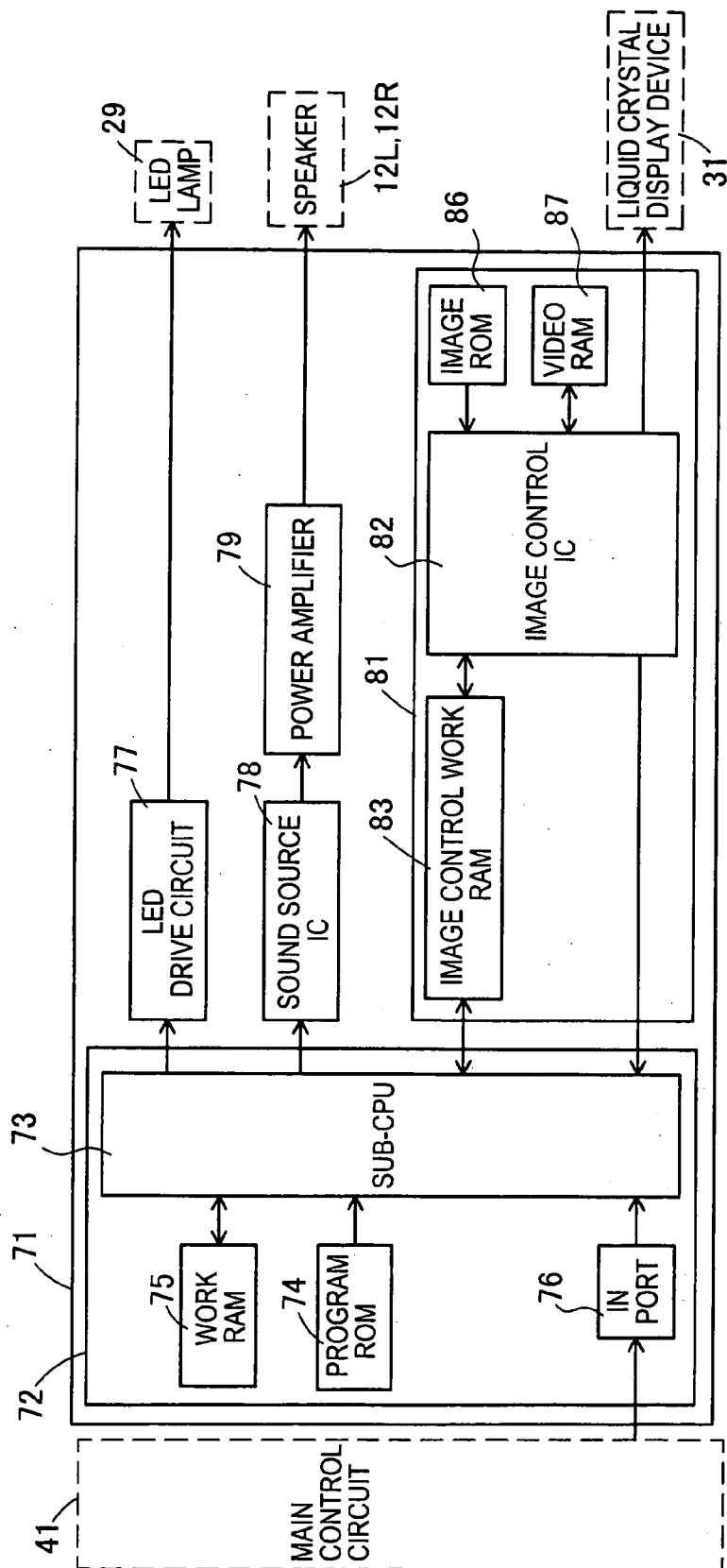


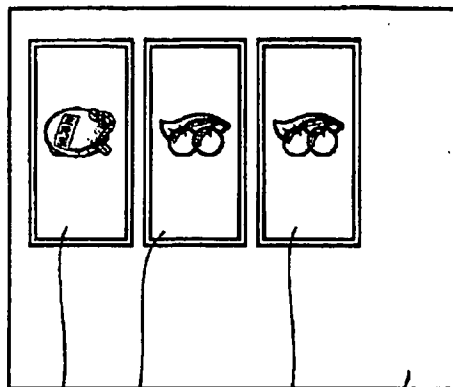


FIG. 9



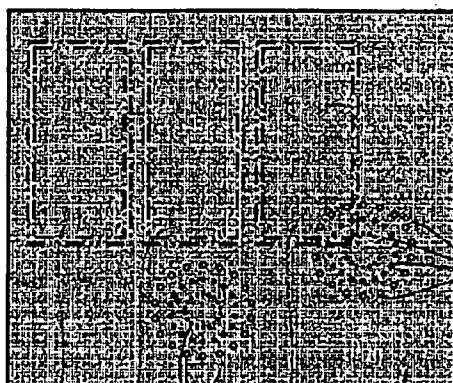
# FIG. 10

(1) DURING SYMBOLS OF ALL REELS ARE STOPPED AND DISPLAYED



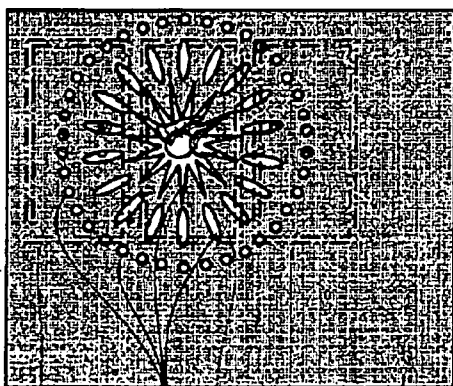
21L 21C 21R 23

(2) DURING "DEMO" DISPLAY IS DONE



21L 21C 91 21R 23

(3) DURING "DEMO" DISPLAY IS DONE



21L 93 21C 21R 23

## GAMING MACHINE

### FIELD OF TECHNOLOGY

[0001] The present invention relates to a gaming machine having variable display means for variably displaying various symbols necessary for a game and control means such as microcomputer and the like for controlling the variable display, the gaming machine including so-called Japanese pachislot machine; slot machine; ball flipping machine such as the first grade-third grade Japanese pachinko machine, arrange ball machine, mah-jong ball gaming machine or slit-slot machine; video slot machine; video poker machine and the like.

### DESCRIPTION OF RELATED ART

[0002] For example, the Japanese pachislot machine has a mechanically variable display device in which it is provided a plurality of rotating reels each of which variably displays plural symbols within a display window arranged in front of the machine, the reels being parallel provided in plural lines. According to start operation by a player, the control means drives and controls the variable display device and the reels are rotated, thereby symbols on the reels are variably displayed. And rotation of each reel is stopped automatically or based on stop operation by the player. At that time, in a case that the symbols of each reel displayed within the display window comprises a predetermined combination (the winning mode), game media such as medals or coins are paid out, thereby a predetermined benefit is given to the player.

[0003] Further, it is previously proposed a gaming machine having a plurality of reel drums, reel strips each of which is arranged on an outer periphery of each reel drum and on each outer surface of which the symbols are described in a divided manner, light sources each of which illuminates the symbol division on each reel strip from the backside thereof and is arranged within each reel drum and control means for controlling illumination by the light sources. Here, in the reel strip, the symbol portion is made semitransparent and the background of the symbol is made transparent or semitransparent, and the light source is constructed from a plurality of luminous diodes arranged in a dot-matrix manner. The control means controls light emission of each luminous diode, thereby light emission of the light source is controlled so as to display characters or figures by the emitted diodes.

[0004] And it is known a gaming machine that predetermined waiting images are displayed under power turning on state of the gaming machine during a non-gaming state from an end of a game to a start of the next game, in order to inform the player that games can be started by inserting coins.

[0005] See, for example, Japanese unexamined Publication No. 2001-353255.

### SUMMARY OF THE INVENTION

[0006] However, in the above mentioned gaming machine, images are merely displayed, therefore there is a case lacking for interest for games.

[0007] The object of the present invention is to provide a gaming machine which is constructed to include first display

means and second display means arranged at a more front side than a display area of the first display means when seeing a front side of the gaming machine, light transmitting symbols of the second display means being variably displayed so as to be able to see a part of the first display means, thereby interest for games can be enhanced.

[0008] The gaming machine of the present invention comprises: game result display means for displaying a game result thereon; and beneficial state generating means (for example, the CPU 43 mentioned later) for generating a beneficial state for a player when a predetermined game result is displayed on the game result display means; wherein the game result display means includes first display means (for example, the reels 3L, 3C, 3R mentioned later) and second display means (for example, the liquid crystal display device 31 mentioned later) arranged at a more front side than a display area of the first display means when seen from a front side of the gaming machine, and wherein the second display means has light transmitting symbols (for example the fireworks 92 mentioned later) capable of displaying display contents of the first display means therethrough, and the light transmitting symbols are variably displayed on the second display means.

[0009] In the gaming machine of the present invention, the light transmitting symbols may have specific shapes.

[0010] The gaming machine may further comprise rear illumination means for illuminating the first display means from a rear side thereof

[0011] The gaming machine may further comprise: light transmitting mode memory means (for example, the image ROM 86 mentioned later) for storing a plurality of display modes of images including the light transmitting symbols; and light transmitting mode select means (for example, the sub-CPU 73 mentioned later) for selecting one or a plurality of display modes among the display modes stored in the light transmitting mode memory means; wherein the second display means displays an image including the display area based on a selected result by the light transmitting mode select means.

[0012] In the concrete embodiment of the present invention, the first display means includes a plurality of symbol display parts (for example, reels 3L, 3C, 3R mentioned later) capable of variably displaying one or a plurality of symbols and conducting stop display thereof, and wherein the light transmitting symbols correspond to areas which are driven so that the player sees and recognizes a part of the symbol (for example, the reel sheet mentioned later) display parts.

[0013] In the gaming machine according to the present invention, the game result display means is constructed to include the first display means and the second display means arranged at a more front side than the display area of the first display means when seeing the front side of the gaming machine, and the second display means has the light transmitting symbols capable of displaying the display contents of the first display means therethrough and variably displays the light transmitting symbols thereon, thereby interest for games can be enhanced.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 is a perspective view of a slot machine according to the embodiment.

[0015] FIG. 2 is an explanatory view showing a panel display part and a liquid crystal display part.

[0016] FIG. 3 is an explanatory view showing an external appearance of a reel mechanism in which lamps are arranged within each reel.

[0017] FIG. 4 is a perspective view showing a reel and a circuit board for receiving LEDs therein arranged in the reel.

[0018] FIG. 5 is a perspective view roughly showing a construction of the liquid crystal display device.

[0019] FIG. 6 is an exploded perspective view showing a part of the liquid crystal display device.

[0020] FIG. 7 is an explanatory view for explaining function of the LED lamps and fluorescent lamps.

[0021] FIG. 8 is a block diagram showing an electrical circuit in the embodiment.

[0022] FIG. 9 is a block diagram showing a construction of a sub-control circuit.

[0023] FIG. 10 is an explanatory view showing demonstration display contents.

#### DETAILED DESCRIPTION OF THE INVENTION

[0024] FIG. 1 is a perspective view showing an outlined shape of a gaming machine 1 according to one embodiment of the present invention. Here, the gaming machine 1 is a so-called Japanese pachislot machine. Though, in the gaming machine 1, a player plays games by using game media such as coins, medals or tokens, or a card in which information of game value given to the player is stored, it will be described hereinafter the gaming machine 1 in which medals are used.

[0025] Presently, the Japanese pachislot machine in the main current has a plural kinds of winning modes. In particular, when a predetermined winning combination is accepted, the player can obtain a more beneficial gaming state than a normal gaming state for a predetermined period without finishing the game by only one payout of medals. As such winning combination, there exist one winning combination in which the game relatively giving large benefit to the player can be done in predetermined times (this winning combination is called "BIG BONUS" and abbreviated as "BB" hereinafter) and another winning combination in which the game relatively giving small benefit to the player in predetermined times (this winning combination is called "REGULAR BONUS" and abbreviated "RB" hereinafter).

[0026] And in the Japanese pachislot machine in the main current, in order to materialize the winning combination that medals or coins are paid out when a predetermined symbol combination stands side by side along pay lines made activated (abbreviated as "activated line" hereinafter), it is required to internally win the winning combination (abbreviated as "internal winning" hereinafter) by the internal lottery treatment (abbreviated as "internal lottery" hereinafter) and to conduct stop operation of the symbols by the player at the timing that the symbol combination indicating the winning combination internally won (abbreviated as "internal winning combination" hereinafter) can stop along the activated lines. That is to say, even if the winning combination is internally won, the winning according to the

internal winning combination cannot be realized when the stop operation by the player is out of the timing. Namely, in the present Japanese pachislot machine in the main current, it is required technique to conduct stop operation of the symbols at good timing. This technique is called "observation push", thus it is highly appreciated the technical intervention in the present Japanese pachislot machine.

[0027] At the front surface of a cabinet 2 entirely forming the gaming machine 1, a panel display unit 2a, a liquid crystal display unit 2b and a fixed display unit 2c, which have substantially vertical planes, are formed. As for the panel display unit 2a, the liquid crystal display unit 2b and the fixed display unit 2c, they will be described with reference to FIG. 2, hereinafter. In the cabinet 2 (at the rear side of the liquid crystal display unit 2b), three reels 3L, 3C, 3R (the first display means comprising the game result display means), on each outer periphery of which symbol line comprising a plural kinds of symbols is described, are rotatably arranged along a horizontal line. The reels 3L, 3C, 3R form the variable display means. Symbols on each reel (rotational drum type display device) can be seen through symbol display areas 21L, 21C, 21R (shown in FIG. 2 hereinafter). Each reel is constructed so as to be able to rotate at a constant rotational speed (for example, 80 rotations/minute).

[0028] At a lower position of the panel display unit 2a, the liquid crystal display unit 2b and the fixed display unit 2c, a frontward projection portion 4 having a substantially horizontal plane is formed. At the left side of the frontward projection portion 4, it is arranged a BET switch 5 for betting medals credited by button pressing operation. At the right side of the frontward projection portion 4, a medal insertion slot 6 is formed. At the front left side of the frontward projection portion 4, it is provided a c/p switch 7 for switching credit/payout of medals obtained in the game by the player based on button pressing operation. On the basis of switching by the c/p switch 7, medals are paid out from a medal payout opening 8 and the paid medals are accumulated in a medal receiving tray 9.

[0029] At the right side of the C/P switch 7, a start lever 10 (game start instruction means operable by the player), which starts rotation of the reels when operated by the player and starts variable display of the symbols (starts the game) within each of the symbol display areas 21L, 21C, 21R (see FIG. 2), is provided so as to be able to rotate within a predetermined angle. At the front center of the frontward projection portion 4 and the right side of the start lever 10, three stop buttons 11L, 11C, 11R (game result leading means operable by the player), which is operated to stop rotation of the reels 3L, 3C, 3R, respectively, are arranged. At the upper left and right sides of the cabinet 2, speakers 12L, 12R are arranged. Between the speakers 12L, 12R, a payout table panel 13 which shows winning combinations of the symbols and the number of medals paid out as awards, is provided.

[0030] With reference to FIG. 2, the panel display unit 2a, the liquid crystal display unit 2b and the fixed display unit 2c will be explained.

[0031] The panel display unit 2a comprises a bonus game information display part 16, BET lamps 17a ~17c, a payout display part 18 and a credit display part 19. Here, the bonus display part 16 is constructed from 7-segment LEDs and displays the game information during the bonus game. The

1-BET lamp **17a**, 2-BET lamp **17b** and MAX-BET lamp **17c** are turned on according to the medal number betted to conduct the game. The 1-BET lamp **17a** is turned on when the betted medal number is "1". The 2-BET lamp **17b** is turned on when the betted medal number is "2". And the MAX-BET lamp **17c** is turned on when the betted medal number is "3". The payout display part **18** and the credit display part **19** are constructed from 7-segment LEDs respectively. The payout display part **18** displays the payout medal number when the winning is materialized. The credit display part **19** displays the medal number accumulated (credited).

[0032] The liquid crystal display unit **2b** comprises the symbol display areas **21L**, **21C**, **21R**, window frame display areas **22L**, **22C**, **22R** and effect display area **23**. The display contents displayed on the liquid crystal display **2b** are variably changed according to the variable symbol display mode of the reels **3L**, **3C**, **3R**, stop display mode of the symbols and operation of a liquid crystal display device **31** mentioned hereinafter.

[0033] The symbol display areas **21L**, **21C**, **21R** are provided corresponding to the reels **3L**, **3C**, **3R**, respectively, and display the symbols arranged on the outer periphery of the reels **3L**, **3C**, **3R** and various effects thereon. Here, in a case that the reels **3L**, **3C**, **3R** corresponding to the symbol display areas **21L**, **21C**, **21R** are rotating or the stop buttons **11L**, **11C**, **11R** corresponding to the symbol display areas **21L**, **21C**, **21R** are in a operable state for stop operation of the reels **3L**, **3C**, **3R**, each symbol display area **21L**, **21C**, **21R** is transparently displayed so as to be able to easily recognize the symbols arranged on the outer peripheries of the reels **3L**, **3C**, **3R**, and effect effected through still images or moving images by, for example, symbols, letters, figures, marks, characters is not displayed.

[0034] The window frame display areas **22L**, **22C**, **22R** are formed so as to enclose each symbol display area **21L**, **21C**, **21R** and represents the frames of the symbols arranged on the outer peripheries of the reels **3L**, **3C**, **3R**.

[0035] The effect display area **23** is formed in an area other than the symbol display areas **21L**, **21C**, **21R** and the window frame display areas **22L**, **22C**, **22R** in the liquid crystal display unit **2b**. This effect display area **23** displays the image (representing so-called "WIN LAMP") conclusively indicating that bonus winning is realizable, the effect to increase interest for games and the information necessary for the player to beneficially advance the game.

[0036] The fixed display unit **2c** is an area to display the images determined beforehand. Concretely, the fixed display unit **2c** displays "a part of row houses" which is described on a display plate **33** mentioned hereinafter. By combining the image displayed on the fixed display unit **2c** and the image displayed on the effect display area **23**, one still image or moving image can be displayed. In the embodiment, one complete image of the row houses can be displayed.

[0037] Further, with reference to FIGS. 3 and 4, LED lamps **29** arranged in the reels **3L**, **3C**, **3R** will be described. The LED lamps **29** function as illumination means for illuminate the symbols arranged on the outer peripheries of the reels **3L**, **3C**, **3R** and one of illumination means for illuminating the areas mainly corresponding to the symbol display areas **21L**, **21C**, **21R** within an area of a liquid

crystal panel **34** (mentioned later). Thus, the LED lamps **29** function as common illumination means for commonly illuminating the above symbols and the areas. And the LED lamps **29** also function as rear illumination means for illuminating the first display means from the backside thereof.

[0038] As shown in FIG. 3, in the reels **3L**, **3C**, **3R**, there are arranged LED receiving circuit boards **24** which are positioned behind the symbols of three symbol lines (totally nine symbols), each symbol line appearing in each of symbol display areas **21L**, **21C**, **21R** when rotation of the reels **3L**, **3C**, **3R** stops. Each LED receiving circuit board **24** has three LED receiving portions in each of which a plurality of LED lamps **29** are provided. Hereinafter, among nine LED receiving portions, the LED receiving portion is serially represented by **Z1**, **Z2** and **Z3** from the left portion in the horizontal upper line, the LED receiving portion is serially represented by **Z4**, **Z5** and **Z6** from the left portion in the horizontal center line and the LED receiving portion is serially represented by **Z7**, **Z8** and **Z9** from the left portion in the bottom horizontal line. The LED lamp **29** illuminates the rear side of the reel sheet by white light, the reel sheet being attached to the reel **3L**, **3C**, **3R** along the outer periphery thereof. The reel sheet is made translucent, thus light emitted from the LED lamp **29** permeates to the front plane of the reel sheet.

[0039] As shown in FIG. 4, the reel **3L** is constructed from a cylindrical frame construction in which two circular frames **25** and **26** with the same shapes are connected by a plurality of connecting members **27** while separating with a distance (corresponding to the reel width) therebetween, and transmitting members **28** for transmitting driving force of a stepping motor **53L** (see FIG. 8) arranged in the center position of the frame construction to the circular frames **25** and **26**. Here, the reel sheet attached to the outer periphery of the reel **3L** is omitted.

[0040] The LED receiving circuit board **24** arranged within the reel **3L** has three LED receiving portions **Z1**, **Z4** and **Z7**, each receiving a plurality of LED lamps **29**. The LED receiving circuit board **24** is arranged so that the LED receiving portions **Z1**, **Z4**, **Z7** position at rear sides of the symbols (totally three symbols), respectively, the symbols being seen through the symbol display area **21L** by the player. Here, though the reels **3C** and **3R** are not shown, both reels have the same construction and the LED receiving circuit board **24** is arranged within each reel.

[0041] Next, with reference to FIGS. 5 and 6, a transmission type liquid crystal display device **31** (corresponding to the second display means constructing the game result display means) will be described. FIG. 5 is a perspective view (seeing from the rear side of the cabinet **2**) showing outline construction of the liquid crystal display device **31**. FIG. 6 is an exploded perspective view showing a partial construction of the liquid crystal display device **31**.

[0042] The liquid crystal display device **31** is constructed from a protect glass **32**, a display plate **33**, a liquid crystal panel **34**, a light guide plate **35**, a reflection film **36**, fluorescent lamps **37a**, **37b**, **38a**, **38b** functioning as so-called white light sources (capable of emitting light including light having all wavelengths with a predetermined ratio so that specific colors are inconspicuous to eyes of persons), lamp holders **39a** ~ **39h** and a flexible circuit board (not

shown) comprising a table carrier package (TCP) mounting an IC for driving the liquid crystal panel, the TCP being connected to a terminal portion of the liquid crystal panel 34. The liquid crystal display device 31 is arranged at a more front side than the display areas of the reels 3L, 3C, 3R (more front side than the display planes thereof) so as to spread over the reels 3L, 3C, 3R. And the reels 3L, 3C, 3R and the liquid crystal display device 31 are independently arranged (with a predetermined distance therebetween).

[0043] The protect glass 32 and the display plate 33 are made of light transmittable material. The protect glass 32 is provided with an object to protect the liquid crystal panel 34. At the areas corresponding to the panel display unit 2a of the display plate 33 and the fixed display unit 2c, images are described. Here, various display parts positioned at the rear side of the area in the display plate 33 corresponding to the panel display unit 2a and electric circuits for operating the BET lamps 17a ~17c are omitted to show.

[0044] The liquid crystal panel 34 is formed by filling liquid crystal material in clearance formed between the transparent plate such as a glass plate on which thin film transistor layer is formed and the transparent plate facing thereto. The display mode of the liquid crystal panel 34 is set to normally white. Here, "normally white" means a construction that the liquid crystal panel 34 becomes in a white display state (light can advance toward the display plane, that is, light transmitted can be seen from outside) when the liquid crystal panel 34 is not driven. By utilizing the liquid crystal panel 34 constructed to have the normally white mode, the symbols (variable display and stop display of the symbol display parts) arranged on the reels 3L, 3C, 3R can be seen and recognized through the symbol display areas 21L, 21C, 21R even if it occurs a trouble that the liquid crystal panel cannot be driven. Thereby, the player can continue the game. That is to say, if the above trouble occurs, it can be conducted the game based on the basic function such as the variable display and the stop display of the reels 3L, 3C, 3R.

[0045] The light guide plate 35 is arranged at the rear side of the liquid crystal panel 34 in order to lead the light emitted from the luminescent lamps 37a, 37b to the liquid crystal panel 34 (to illuminate the liquid crystal panel). For example, the light guide plate 35 is constructed from the light transmittable member with thickness of about 2 cm (having light transmitting ability) made of acrylic resin.

[0046] As the reflection film 36, for example, it is used the member that silver deposition layer is formed on white polyester film or aluminium thin film. The reflection film 36 reflects light led to the light guide plate 35 toward the front side thereof. This reflection film 36 is constructed from a reflection area 36A and non-reflection areas (non-transmittable areas) 36BL, 36BC, 36BR. The non-reflection areas 36BL, 36BC, 36BR are formed as the light transmittable areas which are made of transparent material and transmit the light led thereto without reflecting, and are arranged at each front position of symbols (totally three symbols) displayed when rotation of the reels 3L, 3C, 3R is stopped. In this case, areas corresponding to the reel sheet function as the light transmittable areas. Concretely, sizes and positions of the non-reflection areas 36BL, 36BC, 36BR coincide with those of the symbol display areas 21L, 21C, 21R. The reflection area 36A reflects the light led thereto and func-

tions as one of the illumination means for the area mainly corresponding to the window frame display areas 22L, 22C, 22R and the effect display area 23 within the area on liquid crystal panel 34. According to the above construction, since the player can see and recognize variable display and stop display of the symbols in the symbol display areas through the light transmittable areas in reflection means, the player can enjoy the game based on the display mode in the symbol display areas and the liquid crystal display device.

[0047] The fluorescent lamps 37a and 37b are arranged along the upper edge and the lower edge of the light guide plate 35 and both ends of the fluorescent lamp 37a, 37b are supported by lamp holders 39. The fluorescent lamps 37a and 37b function as illumination means for the area mainly corresponding to the window frame display areas 22L, 22C, 22R and the effect display area 23 within the area on the liquid crystal panel 34. Namely, the fluorescent lamps 37a and 37b emit light led to the light guide plate 35 (the lamps separately lead light to the light guide plate 35).

[0048] And the fluorescent lamps 38a and 38b are arranged so as to face toward the reels 3L, 3C, 3R at the upper and lower positions on the rear side of the reflection film 36. The light, which is emitted from the fluorescent lamps 38a and 38b and reflected on the surface of the reels 3L, 3C, 3R, further entered in the non-reflection areas 36BL, 36BC, 36BR, illuminates the liquid crystal panel 34. Therefore, the fluorescent lamps 38a and 38b function as the illumination means for illuminating the symbols arranged on the reels 3L, 3C, 3R and one of the illumination means for the areas mainly corresponding to the symbol display areas 21L, 21C, 21R within the area on the liquid crystal panel 34. The fluorescent lamps 38a and 38b function as common illumination means for illuminating both the above symbols and areas. Further, the fluorescent lamps 38a and 38b also function as the forward illumination means for illuminating the first display means from the front side thereof.

[0049] As mentioned above, the first display means and the second display means are commonly illuminated by the common illumination means. That is to say, since not only the first display means but also the second display means are illuminated by the light emitted from the common illumination means, cost becomes cheaper than a case that the illumination means is independently arranged for each display means. Further, by controlling the common illumination means illumination control can be made simple and the same illumination for two display means can be also realized at the same time.

[0050] Next, with reference to FIG. 7, function of the LED lamp 29 and the fluorescent lamps 37a, 37b, 38a, 38b will be described. In FIG. 7, moving direction of the emitted light from the lamp is shown by arrows.

[0051] FIG. 7 (1) schematically shows function of each lamp when the liquid crystal existing at the symbol display areas 12L, 21C, 21R is not driven (voltage is not added between the transparent plates of portions corresponding to the symbol display areas in the liquid crystal panel 34).

[0052] A part of the light emitted from the fluorescent lamps 38a, 38b is reflected on the reel sheet. And a part of the light emitted from the LED lamps 29 arranged on the LED receiving circuit board 24 penetrates through the reel sheet. Since the above light penetrates through the non-

reflection areas **36BL**, **36BC**, **36BR**, the light guide plate **35** and the liquid crystal panel **36** both of which constructs the liquid crystal display device **31**, the player can see and recognize the symbols arranged on the reels. Therefore, in a case that the liquid crystal existing at the symbol display areas **12L**, **21C**, **21R** is not driven, the LED lamps **29** and the fluorescent lamps **38a**, **38b** function as the illumination means for the symbols arranged on the reels **3L**, **3C**, **3R**.

[0053] On the contrary, the light emitted from the fluorescent lamps **37a**, **37b** and led into the light guide plate **35** penetrates through the liquid crystal panel **34** and enters in eyes of the player. That is, the fluorescent lamps **37a**, **37b** function as the illumination means for the area in the liquid crystal panel **34** corresponding to the above window frame display areas **22L**, **22C**, **22R** and the effect display area **23**.

[0054] FIG. 7 (2) schematically shows function of each lamp when the liquid crystal existing at the symbol display areas **12L**, **21C**, **21R** is driven (voltage is added between the transparent plates of portions corresponding to the symbol display areas in the liquid crystal panel **34**).

[0055] A part of the light emitted from the fluorescent lamps **38a**, **38b** is reflected on the reel sheet. And a part of the light emitted from the LED lamps **29** penetrates through the reel sheet. Since a part of the above light is reflected on or absorbed in or penetrated through the areas that the liquid crystal is driven within the area of the liquid crystal panel **34**, the player can see and recognize the effect display and the like displayed on the symbol display areas **21L**, **21C**, **21R**. Therefore, in a case that the liquid crystal existing at the symbol display areas **12L**, **21C**, **21R** is driven, the LED lamps **29** and the fluorescent lamps **38a**, **38b** function as the illumination means corresponding to the symbol display areas **21L**, **21C**, **21R** within the area of the liquid crystal panel **34**.

[0056] Here, in a case that a part of the areas corresponding to the symbol display areas **21L**, **21C**, **21R** within the area of the liquid crystal panel **34** is driven, the LED lamps **29** and the fluorescent lamps **38a**, **38b** function as the illumination means for the symbols arranged on the reels **3L**, **3C**, **3R** and as the areas corresponding to the liquid crystal not driven in the symbol display areas **21L**, **21C**, **21R** within the liquid crystal panel **34**.

[0057] FIG. 8 shows the circuitry construction including a main control circuit **41** for controlling game treatment operation in the gaming machine **1**, peripheral devices electrically connected to the main control circuit **41**, and a sub-control circuit **71** for controlling the liquid crystal display device **31** and speakers **12L**, **12R** based on the control command transmitted from the main control circuit **41**. The main control circuit **41** and the sub-control circuit **71** construct the game result display control means. The main control circuit **41** has functions as the internal winning combination determination means, the first display control means and the beneficial state producing means. The internal winning combination determination means determines the internal winning combination among plural winning combinations based on the output from the game start instruction means. The first display control means controls the first display means based on the determined result by the internal winning combination determination means and the output by the game result leading means. The beneficial state producing means produces beneficial state for the player

when a predetermined game result is displayed on the game result display means. And the sub-control circuit **71** controls the second display means based on the determined result by the internal winning combination determination means and the output from the game result leading means.

[0058] The main control circuit **41** is mainly constructed from a microcomputer **42** arranged on the circuit board, in addition to a circuit for sampling random number. The microcomputer **42** includes a CPU **43** conducting control operation according to preset program, a ROM **44** and a RAM **45**.

[0059] To the CPU **43**, a clock pulse generator **46** generating reference clock pulses, a frequency divider **47**, a random number generator **48** for generating random numbers sampled and a sampling circuit **49** are connected respectively. Here, as the means for sampling random number, it may construct that random number sampling is done according to the operation program of the CPU **43** in the microcomputer **42**. In this case, the random number generator **48** and the sampling circuit **49** may be omitted, or these may be remained to back up random number sampling operation.

[0060] In the ROM **44** of the microcomputer **42**, there are stored a probability lottery table utilized for judging random number sampling conducted every operation of the start lever **10** (start operation), a stop control table for determining stop combination of the reels according to operation of the stop buttons and various control instructions (commands) to transmit to the sub-control circuit **71**. Here, the sub-control circuit **71** never transmits commands, information and the like to the main control circuit **41**, but one-way transmission from the main control circuit **41** to the sub-control circuit **71** is only done.

[0061] In the circuit of FIG. 8, as main actuators controlled based on control signal from the microcomputer **42**, there are various lamps (1-BET lamp **17a**, 2-BET lamp **17b**, MAX-BET lamp **17c**), various display parts (bonus game information display part **16**, payout display part **18**, credit display part **19**), a hopper **52** as the game value giving means (including drive part for payout) accumulating medals and paying out a predetermined number of medals according to instruction by a hopper drive circuit **51** and stepping motors **53L**, **53C**, **53R** for driving the reels **3L**, **3C**, **3R** to be rotated.

[0062] A motor drive circuit **54** for driving and controlling the stepping motors **53L**, **53C**, **53R**, a hopper drive circuit **51** for driving and controlling the hopper **52** and a lamp drive circuit **56** for driving and controlling various lamps and a display drive circuit **56** for driving and controlling display parts are connected to the output part of the CPU **43** through an I/O port **57**. These drive circuits controls operation in each of the actuators when receiving control commands such as drive commands each of which is output from the CPU **43**.

[0063] Further, as for the input signal producing means mainly producing input signals which are necessary for the microcomputer **42** to produce the control commands, there are provided the BET switch **5**, the medal sensor **6S** for detecting the inserted medals, the C/P switch **7**, the start switch **10S**, the reel stop signal circuit **58**, the reel position detecting circuit **59** and the payout completion signal circuit **60**. These are also connected to the CPU **43** through the I/O port **57**.

[0064] The medal sensor 6S detects the medals inserted in the medal insertion slot 6. The start switch 10S detects operation of the start lever 10. The reel stop signal circuit 58 produces stop signal corresponding to operation of each stop button 11L, 11C, 11R. The reel position detecting circuit 59 provides signal to detect the position of each reel 3L, 3C, 3R with the CPU 43 when receiving pulse signal from the reel rotation sensor. The payout completion signal circuit 60 produces signal for detecting the medal payout completion when the count number (corresponding to the medal number paid out from the hopper 52) by the medal detection unit 52S reaches to data of a designated number.

[0065] In the circuit shown in FIG. 8, the random number generator 48 generates random numbers within a predetermined numeral range and the sampling circuit 49 conducts sampling of one random number at the suitable timing after the start lever 10 is operated. Based on the thus sampled random number and the probability lottery table stored in the ROM 44, the internal winning combination of the symbols is determined. And after the internal winning combination is determined, sampling of the random number is conducted again to select the "stop control table".

[0066] After rotation of the reels 3L, 3C, 3R is started, it is counted the number of the drive pulses each of which is provided with each of the stepping motors 53L, 53C, 53R, and the counted number is written in the predetermined area of the RAM 45. The reset pulse is generated from each of the reels 3L, 3C, 3R every one rotation thereof, and these reset pulses are input to the CPU 43 through the reel position detecting circuit 59. Based on the thus obtained reset pulses, the count number of drive pulses counted in the RAM 45 is cleared to "0". Thereby, in the RAM 45, the count number corresponding to the rotational position within one rotation in each of the reels 3L, 3C, 3R is stored.

[0067] In order to connect the rotational positions of the reels 3L, 3C, 3R with the symbols described on the outer peripheries of the reels, a symbol table is stored in the ROM 44. In this symbol table, both code numbers, each of which is serially given every a predetermined rotational pitch of each reel 3L, 3C, 3R by setting the rotational position producing the reset pulse as the reference rotational position, and symbol codes, each of which indicates the symbol provided corresponding to each of the code numbers, are connected with each other.

[0068] Further, in the ROM 44, a winning symbol combination table is stored. In the winning symbol combination table, winning symbol combinations corresponding to various winnings, medal payout numbers each of which corresponds to each winning and winning determination codes each of which represents each winning, are corresponded with each other. The above winning symbol combination table is referred when the stop control of the left reel 3L, the center reel 3C and the right reel 3R is conducted and when the winning is confirmed after all reels 3L, 3C, 3R are stopped.

[0069] When one of winning combinations is internally won by the lottery treatment (probability lottery treatment) based on the above sampling of the random number, the CPU 43 sends stop signals for conducting stop control of the reels 3L, 3C, 3R to the motor drive circuit 54, based on the operation signals sent from the reel stop signal circuit 58 at the timing that the player operates the stop buttons 11L, 11C, 11R and the selected stop control table.

[0070] If the symbols stop in a stop mode that the winning combination internally won is realized, the CPU 43 provides the payout command signal to the hopper drive circuit 51, thereby a predetermined number of the medals are paid out from the hopper 52. At that time, the medal detection unit 52S counts the number of medals paid out, and when the number of medals paid out reaches to the designated number, the medal payout completion signal is input to the CPU 43. Thereby, the CPU 43 stops driving of the hopper 52 through the hopper drive circuit 51, as a result, the payout treatment of the medals is terminated.

[0071] FIG. 9 shows a construction of the sub-control circuit 71. The sub-control circuit 71 conducts turning on and off treatment of the LED lamps 29 based on the control command from the main control circuit 41, display control of the liquid crystal display device 31 and output control of sounds output from the speakers 12L, 12R. This sub-control circuit 71 is constructed on a separate circuit board from the circuit board on which the main control circuit 41 is formed and is mainly constructed from a microcomputer (abbreviated as "sub-microcomputer" hereinafter) 72. The sub-control circuit 71 is constructed from a LED drive circuit 77 as the display control means for controlling a plurality of ornamental lamps, the LED lamps 29 and the fluorescent lamps 37a, 37b which are arranged on the cabinet of the gaming machine 1, an image control circuit 81 as the display control means of the liquid crystal display device 31, a sound source IC 78 for controlling sounds output from the speakers 12L, 12R and a power amplifier 79 acting as the amplifier.

[0072] The sub-microcomputer 72 includes a sub-CPU 73 conducting control operation according to the control command sent from the main control circuit 41, a program ROM 74 acting as the memory means and a work RAM 75. Though the sub-control circuit 71 does not have the clock pulse generator, the frequency divider, the random number generator and the sampling circuit, it is constructed so that the random sampling is conducted in the operation program of the sub-CPU 73. And the program ROM 74 stores the control program executed in the sub-CPU 73. Further, the program ROM 74 also stores the image control program concerning with display on the liquid crystal display device 31 and various select tables. The work RAM 75 is constructed as the temporary memory means utilized when the control program is executed by the sub-CPU 73.

[0073] The image control circuit 81 is constructed from an image control work RAM 83, an image ROM 86, a video RAM 87 and an image control IC 82. The image control IC 82 determines the display contents displayed on the liquid crystal display device 31 based on parameters designated by the sub-CPU 73. The image control work RAM 83 is used for temporarily storing images when images are formed by the image control IC 82 and when images followingly displayed on the liquid crystal display device 31 are designated to the image control IC 82 by the sub-CPU 73. The image control IC 82 forms images corresponding to display contents determined by the sub-CPU 73 and outputs to the liquid crystal display device 31. The image ROM 86 stores various images to form the images to be displayed. And the video RAM 87 is constructed as the temporary memory means utilized when images are formed in the image control IC 82.



[0074] Further, with reference to **FIG. 10**, display examples in the liquid crystal display unit **2b** will be described. Here, in the liquid crystal display unit **2b** of the embodiment, after it is continued for a predetermined time interval (for example, one minute) a state (abbreviated “non-gaming state” hereinafter) that medal inserting operation and operation of the BET switch **5** (abbreviated as “BET operation” hereinafter) are not conducted after one game is finished (for example, rotation of all reels is stopped), demonstration display (waiting image display) is basically conducted. This demonstration display indicates a display for notifying a state that the gaming machine is in a waiting state for the player. And existence or nonexistence of the demonstration display and display patterns (modes) are changed according to the internal winning combination and the like. Hereinafter, “demonstration” is abbreviated as “demo”.

[0075] Although detailed description will be explained later, the liquid crystal display device **31** moves and displays visible areas (fireworks **92**, **93** mentioned later) on the liquid crystal panel, a part of the first display means capable of being seen and recognized through the visible areas in cooperation with the light transmittable part. This visible areas (light transmitting symbols) have predetermined shapes (concretely, the shape indicating “fireworks”). That is to say, it is provided in the second display means the light transmitting symbols through which the player can see and confirm the first display means and the light transmitting symbols can be variably displayed, thereby display in the first display means and display in the second display means can be mutually combined and displayed. Thus, it can be done variegated effect display, which cannot be realized previously.

[0076] Further, since the light transmitting symbols have predetermined shapes, the player can play games with more enjoyment than in previous cases. And in a case that the predetermined shapes are symbols displayed on the first display means, it can make the player have expectation to occurrence of the beneficial state that a predetermined winning combination or a specific winning combination may be materialized according to the predetermined shapes.

[0077] And if it is constructed that the player can see and confirm a part of the first symbol display part through the light transmitting symbols, the player will play games with very high expectation when the player can see a part of bonus winning symbol behind the light transmitting symbols. Thereby, interest for games conducted in the game machine can be improved.

[0078] Here, the BET operation and start operation are conducted, and “cherry small combination” is determined as the internal winning combination. Further, the symbols are variably displayed on the symbol display areas **21L**, **21C**, **21R** and stop operation of the symbols is done. Thereafter, as shown in **FIG. 10 (1)**, the symbols are stopped and displayed on the symbol display areas **21L**, **21C**, **21R**. Here, “cherry small combination” is materialized. In **FIG. 10 (1)**, symbols on the reel sheet are partially omitted to show. After stop display of the symbols is conducted and the non-gaming state is continued for one minute, the “demo” display is done in the effect display area **23** as shown in **FIG. 10 (2)**. Concretely, two fireworks **91** and **92** are displayed in the effect display area **23** while moving. The fireworks **91**

are moved and displayed in the effect display area **23** and the fireworks **92** are moved and displayed over the symbol display area **21R**, the window frame display area **22R** and the effect display area **23**. These fireworks are moved and displayed based on moving images. Here, a part of the reel sheet can be seen and recognized through the fireworks **92** displayed on the symbol display area **21R**.

[0079] Further, as shown in **FIG. 10 (3)**, supposed that the center of the fireworks **93** are positioned at the central part of the symbol display area **21C**, when the fireworks **93** are moved and displayed over the symbol display areas **21L**, **21C**, **21R**, the window frame display areas **22L**, **22C**, **22R** and the effect display area **23**, the player can see and confirm a part of the symbol (cherry symbol), which is stopped at the central part of the symbol display area **21C**, through a part indicating the fireworks **93**.

[0080] As mentioned above, the visible area (the fireworks **92**, **93**), through which the reel sheet as a part of the first display means can be seen and recognized through the light transmittable part on the liquid crystal panel **34** by the liquid crystal display device **31**, is moved and displayed. Thereby, it can make the player have interest about what symbols are stopped and displayed and interest for games can be raised. And since the visible area has the shape indicating the fireworks, the player can enjoy the effect by the displayed fireworks and it can make the player have interest about the symbols and the like which can be seen and recognized through the shape indicating the fireworks. Here, in the symbol display areas **21L**, **21C**, **21R**, a part of the shape in the fireworks **93** is indicated by white display. That is to say, a part of the shape in the fireworks **93** is displayed by forming the area in which the liquid crystal is not driven. And the player can clearly see and recognize the symbol according to the shape indicating the fireworks by providing the mentioned rear illumination means. Further, since the rear illumination means illuminating the mentioned first illumination means from the rear side thereof is provided, the player can clearly see and recognize the display contents of the first display means, the contents being seen and recognized through the light transmitting symbols, and it can make the player have expectation that a predetermined beneficial state or a specific beneficial state may occur, by combining the display contents of the first display means with the shape of the light transmitting symbol.

[0081] Further, since the player is, in general, very interested in the mode of symbols which are stopped and displayed, when the fireworks are moved and displayed so as to be able to see and recognize the symbol, it can make the player have more interest for games.

[0082] Though description is done according to the embodiment, the present invention is not limited to this description.

[0083] The above mentioned second display means may be constructed from the liquid crystal display device including the liquid crystal panel, the light transmitting means arranged at the rear side of the liquid crystal panel, individual illumination means for producing light entering in the light transmitting means and the reflection means for reflecting light entered in the light transmitting means toward the liquid crystal panel arranged at the front side of the light transmitting means, and area in a part of the reflection means may be made light transmittable, thereby the visible area

through which a part of the first display means can be seen and recognized through the light transmittable part on the liquid crystal panel may be moved and displayed.

[0084] Further, moving velocity of the above mentioned visible area (the fireworks in the embodiment) may be differently changed. And a plurality of the visible areas with different moving velocity may be provided and the displayed visible area may be determined according to situations in the game. Further, shape of the visible area may be changed or the visible area may be moved and displayed while changing the shape thereof.

[0085] Further, the visible area may be moved and displayed based on a predetermined operation by the player and the like persons (including clerk, salesperson). And the visible area may be easily moved and displayed according to the predetermined operation by the player. For example, moving velocity, number, color, pattern, or shape (outline shape, inner shape) of the visible area may be changed according to the predetermined operation by the player, expectation value (information concerning with the game), so-called stock number and the like.

[0086] Further, the visible area may be constructed so as to start of moving and display thereof during variable displaying of the symbol display means (the above mentioned reels), at substantially same timing of start of the variable displaying, during stop displaying of the symbols and at substantially same timing of stop displaying of the symbols.

[0087] Further, a plurality of the visible areas may be moved and displayed. And these visible areas may have different moving velocity and shape, respectively.

[0088] Further, it may be provided the light transmitting mode memory means (for example, the image ROM 86) for storing a plurality of display modes of images (for example, characters and the like) including the visible area and the light transmitting mode select means (the sub-CPU 73) for selecting one or plural display modes among the plural display modes stored in the light transmitting mode memory means, the second display means may display the image including the visible area based on the selected result by the light transmitting mode select means. Thereby, various display modes can be displayed and the player does not lose interest for the displayed contents. As a result, interest for games can be more highly raised.

[0089] Further, since it is constructed so that display control of a plurality of the light transmitting symbols can be done, variegated effect display can be conducted. And in a case that the specific light transmitting symbol is provided and when the specific winning combination is selected by the winning combination select means the specific light transmitting symbol is displayed with a more higher probability than a case that the specific winning combination is not selected, the player plays games with very high expectation when the specific light transmitting symbol is displayed, thereby interest for games conducted in the game machine can be improved.

[0090] And in the embodiment, though the symbol display portions are formed every reel which displays a plurality of symbols while rotating, the present invention is not limited to this. For example, one symbol display area may be formed in the second display means corresponding to one or plural

or all of plural reels (plural variable display parts) each of which displays a plurality of symbols while rotating. Entire area of the second display means may construct the symbol display area. The size thereof may be changed.

[0091] Further, it is enough that the symbol display area can display the symbol of the first display means, and may be constructed from only member capable of displaying symbols (transparent glass or transparent resin) in which liquid crystal is not provided in the symbol display area.

[0092] The first display means or the third display means may be constructed so as to be able to move in directions of up and down, right and left, before and behind, reciprocally move, inducibly vibrate or rotate. In this case, the symbol display part may be constructed so as to move according to the movement of the first display means or the third display means. Based on these operations, it can expect more interesting effect and there may be a case that such operations are applicable for concerning with game contents.

[0093] It is enough for the symbol display area that the first display means or the third display means can be seen therethrough.

[0094] And it is enough that the above mentioned light transmitting symbols has a predetermined shape and the player can see and recognize the first display means through the light transmitting symbol. Further, it may be constructed that the light transmitting symbol is able to variably display by enlargement, reduction or change in shape thereof. And the gaming machine may be constructed so that a plurality of variable display modes can be controlled to display and one or plural variable display modes are selected among the above mentioned plural variable display modes according to the winning combination selected by the winning combination select means, the winning combination which is internally won but not materialized or random number lottery and the like, and the light transmitting symbol is variably displayed based on the selected variable display mode. In that case, the player can see and recognize various light transmitting symbols themselves or the symbols displayed on the first display means through the light transmitting symbols. Thus, variegated effect display can be conducted and thereby interest for games conducted in the gaming machine can be improved.

[0095] Further, while variably displaying the light transmitting symbol, light transmittability (easiness to see the first display means) thereof may be varied. And the light transmitting symbol may have the same light transmittability thereover and the light transmittability in plural stages. As the concrete example, the light transmitting symbol may be constructed so as to have high light transmittability (easier to see the first display means) at circumferential part of the center thereof and low light transmittability (harder to see the first display means) at a part according that such part is apart from the circumferential part of the center thereof. Also in the thus constructed case, variegated effect display can be conducted.

[0096] Further, the light transmittability of the light transmitting symbol may be constructed so as to vary in time series (by stages or continuously according to elapsing of time). In that case, velocity or direction in varying of the light transmittability may be changed. Thereby, more profound effect can be realized.

[0097] And the gaming machine may be constructed so that the light transmittability of the light transmitting symbol is changed according to the winning combination selected by the winning combination select means, the winning combination which is internally won but not materialized or random number lottery and the like. Substantially at the same time, movement and size of the light transmitting symbol may be changed. Thereby, the player see change in display of the light transmitting symbol while expecting occurrence of the beneficial state, thus not only effect but also interest for games can be improved.

[0098] And in the embodiment, though the reels 3L, 3C, 3R are adopted as the first display means and the liquid crystal display device 31 is adopted as the second display means, the present invention is not limited to this. For example, CRT, LCD, plasma display, 7-segment LED, LED dot-matrix, lamp, LED, fluorescent lamp, organic EL display, disc, electronic paper, flexible LED, flexible liquid crystal, liquid crystal projector, FED and the like can be adopted as the first display means, the second display means or the third display means. Further, the third display means different from the first display means and the second display means can be arranged at a more front side than the second display means when seeing the front side of the gaming machine, between the first display means and the second display means, or at a more rear side than the first display means when seeing the front side of the gaming machine. The display result displayed on the first display means, the second display means or the third display means is constructed from still images or moving images. The combination, in which two or more or all of the first display means, the second display means and the third display means are combined, can be integrally constructed. In this case, there may be a case that the unit integrally constructed can be wholly exchanged, and this case is preferable since time and labor for decomposing work or assembling work thereof can be omitted and maintenance work can be improved. Further, if parts and construction can be commonly used in the unit, this case is preferable since it can contribute to cost reduction. Of course, if the illumination means commonly utilized for the common illumination means is included in the unit, the same effect similar to the above can be expected.

[0099] Further, the beneficial state includes: a state that a predetermined combination (for example, replay, BB, RB, small combination, single bonus and the like) is materialized; free game; a state that information necessary for the player to favorably advance the game is notified; a state that probability to get internal winning of a predetermined combination is high; a state that winning of a predetermined combination is materialized with high probability; winning of a predetermined combination or a predetermined combination carried over is permitted to materialize with high probability; so-called "challenge time" that the reels are basically stopped based on the operation timing of the stop buttons by the player; small combination; medium combination; big combination; combination (state that so-called "symbol start opening" (symbol variable movement is started when a ball enters in the symbol start opening) is opened or enlarged; so-called "probability changing state", so-called "time shortening state"); or combination of the above states. Here, the small combination, the medium combination and the big combination concern with a state that so-called "big winning opening" is opened in the so-called Japanese Pachinko gaming machine.

[0100] And when the internal winning combination determination means determines a predetermined combination (for example, bonus) as the internal winning combination, one or plural or all of the illumination means included in the common illuminations means can be turned off. For example, the LED lamps 29 arranged for each of the reels 3L, 3C, 3R can be turned off every the operation button corresponding thereto is operated or every the operation button other than the above operation button is operated. Based on the above constructions, interest for games increases. And the forward illumination means (the fluorescent lamps 38a, 38b) can be provided for each of the symbol display parts (the reel 3L, 3C, 3R).

[0101] Further, one or plural or all of the illumination means included in the common illumination means can be constructed so as to variably display. For example, still images or moving images can be displayed on the first display means (reel sheet) by changing the turning on mode of the LED lamps 29 or light colors emitted therefrom or by continuously changing those. And self-emitting type plasma display, organic EL display and the like may be adopted as the illumination means (one example of the third illumination means), thereby images can be displayed on the first display means. By this constructions, interest for games increases.

[0102] In a case that the special game result (for example, the symbol combination indicating that bonus winning is materialized) is displayed on the first display means or the second display means, it can be provided the special gaming state producing means that the beneficial state for the player is displayed thereon. And both the special gaming state producing means and the second display means can be formed on single control circuit board. And the gaming state can be displayed by superimposing the images displayed on the first display means and the images displayed on the second display means. Further, based on the trigger that a predetermined state is realized, the effect display on the second display means can be done so as to avoid the specific symbols stopped and displayed on the symbol display part or so as to superimpose the specific symbols. If the gaming state is displayed by the superimposed images, the beneficial state for the player may be produced with high probability in comparison with the case in which the superimposed images is not displayed. Thereby, it can include the effect that the player's expectation increases, in excess of the previous case. Thus, such effect can contribute to increase of interest.

[0103] In the embodiment, though the start lever 10 is adopted as the game start instruction means, the present invention is not limited to this. For example, the BET switch 5, the medal insertion slot 6, the medal sensor 6S or the start switch 10S can be adopted.

[0104] The display includes: display by the sense of sight, display by the sense of hearing, notification by the sense of smelling, turning on of the lamps or combination of those. The display mode includes: colors, patterns, shapes (outline shapes, interior shapes) and the like. And the game result can be displayed after operation of the game start instruction means or the game result leading means.

[0105] In the embodiment, though the above mentioned LED drive circuit is utilized as the display control means for a plurality of the ornamental lamps, the LED lamps and the

fluorescent lamps, each of which is arranged in the cabinet, the present invention is not limited to this. Turning on control of the LED lamps may be conducted by another display control means. In this case, for example, in turning on control of the LED lamps, electric power may be provided so that the LED lamps are always turned on during a period from power-on of the gaming machine till power-off thereof. Here, turning on includes blinking mode that the LED lamps are intermittently blinked with a very short time interval. Thus, since the LED lamps are always turned on, light emitted from the LED lamps always illuminates each symbol display area even if abnormality occurs in the mentioned LED drive circuit. Thereby, the player can always see the symbols arranged on each of the reels through the each symbol display areas, thus the above turning on control is preferable.

[0106] Further, turning on control of the above mentioned fluorescent lamps may be done by another display control means. In this case, for example, in the turning on control of the fluorescent lamps, electric power may be provided so that the fluorescent lamps are always turned on during a period from power-on of the gaming machine till power-off thereof. Thereby, similar to the above, light emitted from the fluorescent lamps always illuminates each symbol display area even if abnormality occurs in the mentioned LED drive circuit. Thereby, the player can always see and recognize the symbols arranged on each of the reels through the each symbol display areas

[0107] Further, in the embodiment, though the above mentioned sub-CPU conducts display control of a plurality of the ornamental lamps arranged in the cabinet, sound output control and image display control of the liquid crystal display device, the present invention is not limited to this. Another sub-CPU separate from the above sub-CPU may conduct the above various controls. For example, in a case that another sub-CPU separate from the above sub-CPU conducts the control of a plurality of the ornamental lamps arranged in the cabinet and, for example, in a case that abnormality occurs in the display control, it is enough to exchange only the sub-CPU with abnormality occurrence or only the circuit construction including the sub-CPU with abnormality occurrence to the normal sub-CPU or circuit construction having the normal sub-CPU. Therefore, time and labor for removing the cause of the abnormality occurrence can be omitted and such construction is very preferable. And in a case that another sub-CPU other than the above sub-CPU conducts sound output control or image display control, or for example, in a case that abnormality occurs in the sound output control or the image display control, it is enough to exchange only the sub-CPU with abnormality occurrence or only circuit construction including the sub-CPU with abnormality occurrence.

[0108] Further, the liquid crystal display device described in the embodiment may have image enlarging means for enlarging the input images by a predetermined magnification. For example, the image enlarging means may convert the image data for 640×480 dots into the image data for 1024×768 dots and output the converted image data to the display part (above mentioned terminal part). Thereby, it can use the image data for small display area, the data quantity thereof being less in comparison with that for the factual display area. As a result, memory quantity of the ROM and image data forming time can be reduced.

[0109] And in the embodiment, though the symbol display area is divided corresponding to each of three reels 3L, 3C, 3R, the present invention is not limited to this and the symbol display area may be formed so as not to be divided. For example, it may be conceivable that two or three of the reels 3L, 3C, 3R can be seen and recognized through one symbol display area. And if the first display means and the third display means are arranged at the rear face or side of the second display means, it may be constructed that the player sees and recognizes through one symbol display area a part or whole of the first display means and a part or whole of the third display means. When the reflection means is produced, there may be a case that the reflection means can be easily produced in comparison with a case that a plurality of transparent portions are formed dividedly.

[0110] Further, the present invention can apply to Japanese Pachinko gaming machine, arrange ball gaming machine, mah-jong ball gaming machine, video-slot machine, video poker machine and the other machines, in addition to the slot machine in the embodiment. And even in the game program imitatively executing operation of the above mentioned slot machine in a family gaming machine, the present invention can apply and execute the game. In this case, CD-ROM, FD (flexible disc) and the similar memory medium can be utilized for the memory medium for storing the game program.

[0111] Here, recently in the Japanese Pachinko gaming machine in the main current, the gaming machine, in which an electric display device such as the liquid crystal display device is arranged at the center of gaming plate, is popularized. In this electric display device, a plurality of symbols (abbreviated as “special symbols” hereinafter) represented by images are variably displayed, thereby three lines of reels in the slot machine are imitatively displayed. When variable display of the special symbols stops and a predetermined stop mode (in which the same special symbols stop such as 7-7-7 and this stop mode is generally called “big combination”), the game shifts to the special gaming state beneficial for the player. In general Japanese Pachinko gaming machine, the variable display of the special symbols is started on condition that balls shot within the gaming plate by operation of the shooting handle enter into a predetermined winning hole (so-called “variable display start hole”). After a predetermined time is elapsed the variable display of the special symbols stops.

[0112] In this kind of Japanese Pachinko gaming machine, it may be arranged the liquid crystal display device (the second display means) and the first display means (for example, drum-type reels) at a more rear side than the display area (display plane) of the liquid crystal display device when seeing the front side of the gaming machine. And the special symbols may be variably displayed on one or both of the first display means (for example, the liquid crystal display device) and the second display means (for example, drum-type reels).

[0113] The above mentioned game result display means may be constructed so as to include the first display means and the second display means provided at a more front side than the display area of the first display means when seeing the front surface of the gaming machine. And the game result display means may be constructed so as to include the first display means and the second display means provided

at a more front side than the display area of the first display means when seeing the front side of the gaming machine.

[0114] The above mentioned rear illumination means illuminates the second display means from the backside thereof. And the above mentioned front illumination means illuminates the second display means from the backside of thereof. And the front illumination means may illuminate the second display means from the side plane thereof.

[0115] The above mentioned first display means and/or the second display means may be formed in a curved shape. As for extent of the curvature, the first display means and the second display means may have substantially the same curvature. Thereby, there may be a case that design of the gaming machine is improved and the gaming machine is made attractive. Even if the first display means is curved with a small radius of curvature or with a large radius of curvature, the above same effect can be obtained.

[0116] The above mentioned reflection means corresponds to means which has at least function to refract a part or whole of light led by the light leading means toward the liquid crystal panel and illuminate the liquid crystal panel.

[0117] The above mentioned game start instruction means may be a variable symbol display start hole which produces an output signal when the winning combination or passage of the ball is detected. The game start instruction means in the ball flipping machine corresponds to the variable display start hole for the special symbols (or the start gate), the variable display start hole for the common symbols, the various judging symbol display start holes (or the start gates).

[0118] In a case that the above mentioned internal winning combination determination means determines the predetermined combination as the internal winning combination, one or plural illumination means included in the common illumination means is/are turned off. Or the illumination means may always be turned off.

[0119] There may be a case that one or plural illumination means included in the common illumination means is/are turned off at the substantially same timing that the above mentioned internal winning combination determination means determines the predetermined combination as the internal winning combination. Or the illumination means may always be turned off.

[0120] As for variable display by the illumination means included in the common illumination means, it is conceivable various display modes. For example, it may be constructed so as to be able to execute the special symbol variable display. Here, the special symbol variable display can be executed in the mode such as: brightness in a part or whole of the display part in the illumination means differs from that in the non-specific symbol variable display; still images, moving images, specific letters, numbers, figures, characters, which are not displayed in the non-specific symbol variable display, are displayed; variable display speed differs from that in the non-specific symbol variable display. Further, voluntary display modes may be utilized. And in a case that the specific symbol variable display is conducted, it may be constructed that the beneficial state for the player occurs with high probability in comparison with the case that the specific symbol variable display is not done. Thereby, it can be included the effect that the player's

expectation increases, in excess of the previous case. Thus, such effect can contribute to increase of interest.

[0121] As for the means adopted as the third display means, it may be adopted display devices which is applicable as the first display means and the second display means, as mentioned above. It may be a case that one or plural effect display reels is/are utilized as the third display means, and both the first display means and the third means are arranged at the rear surface or side of the second display means. In this case, the symbol display area through which the player sees the display area of the third display means may be provided in the second display means. Thereby, the player can easily recognize the display contents on the display area of the third display means, thus this construction is very preferable.

[0122] Further, it may be controlled so that the images formed by superimposing the images of the second display means and the images of the third display means are seen by the player, and when such control occurs, the beneficial state occurs with higher probability than the case that such control does not occur. Thereby, it can be included the effect that the player's expectation increases, in excess of the previous case. Thus, such effect can contribute to increase of interest.

[0123] Further, any one of the first display means, the second display means and the third display means may be constructed form a movable structure with shapes such as figures, dolls, animals, insects, famous structures, fishes, vehicles. For example, the above structures may be moved with rotation, swing, reciprocal movement or vibration in cases that: the special combination is internally won, the special combination is materialized, the number of the combination which is as same as the special combination internally won but not materialized exceeds a predetermined number, the special images are displayed on the display means different from the above structures. And there may be a case that the above structure is constructed from plural members and a part of the members is/are moved. In this case, there may be a case that it can be further expected more various effects by displaying on other than the image display device.

[0124] Further, the front illumination means may be arranged at the front side of the first display means and the second display means. In this case, if the inside of the game arcade is dark, the front illumination means can illuminate both the first display means and the second display means with enough light. Therefore, there may be a case that the player can clearly recognize the images displayed on the display means, thus it can be expected that the player can enjoy more various effect in the gaming machine.

[0125] Although only some exemplary embodiments of this invention have been described in detail above, those skilled in the art will readily appreciate that many modifications are possible in the exemplary embodiments without materially departing from the novel teachings and advantages of this invention. Accordingly, all such modifications are intended to be included within the scope of this invention.

[0126] This application is related to co-pending U.S. patent applications entitled "GAMING MACHINE" referred to as Attorney Cocket No, SHO-0019, "GAMING MACHINE" referred to as Attorney Docket No. SHO-0020,

“GAMING MACHINE” referred to as Attorney Docket No. SHO-0021, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0022, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0023, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0024, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0025, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0026, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0027, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0028, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0029, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0030, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0031, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0032, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0033, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0034, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0035, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0036, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0037, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0038, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0039, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0040, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0041, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0042, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0043, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0044, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0045, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0046, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0047, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0048, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0049, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0050, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0051, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0052, “MOTOR STOP CONTROL DEVICE” referred to as Attorney Docket No. 0053, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0054, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0055, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0056, “GAMING MACHINE” referred to as Attorney Docket No. SHO-0057, respectively, all the applications being filed on Oct. 31, 2003, herewith. The co-pending

applications including specifications, drawings and claims are expressly incorporated herein by reference in their entirety.

What is claimed is:

1. A gaming machine comprising:

game result display means for displaying a game result thereon; and

beneficial state generating means for generating a beneficial state for a player when a predetermined game result is displayed on the game result display means;

wherein the game result display means includes first display means and second display means arranged at a more front side than a display area of the first display means when seen from a front side of the gaming machine, and

wherein the second display means has light transmitting symbols capable of displaying display contents of the first display means therethrough, and the light transmitting symbols are variably displayed on the second display means.

2. The gaming machine according to claim 1, wherein the light transmitting symbols have specific shapes.

3. The gaming machine according to claim 1, further comprising rear illumination means for illuminating the first display means from a rear side thereof.

4. The gaming machine according to claim 1, further comprising:

light transmitting mode memory means for storing a plurality of display modes of images including the light transmitting symbols; and

light transmitting mode select means for selecting one or a plurality of display modes among the display modes stored in the light transmitting mode memory means;

wherein the second display means displays an image including the display area based on a selected result by the light transmitting mode select means.

5. The gaming machine according to claim 1, wherein the first display means includes a plurality of symbol display parts capable of variably displaying one or a plurality of symbols and conducting stop display thereof, and

wherein the light transmitting symbols correspond to areas which are driven so that the player sees and recognizes a part of the symbol display parts.

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