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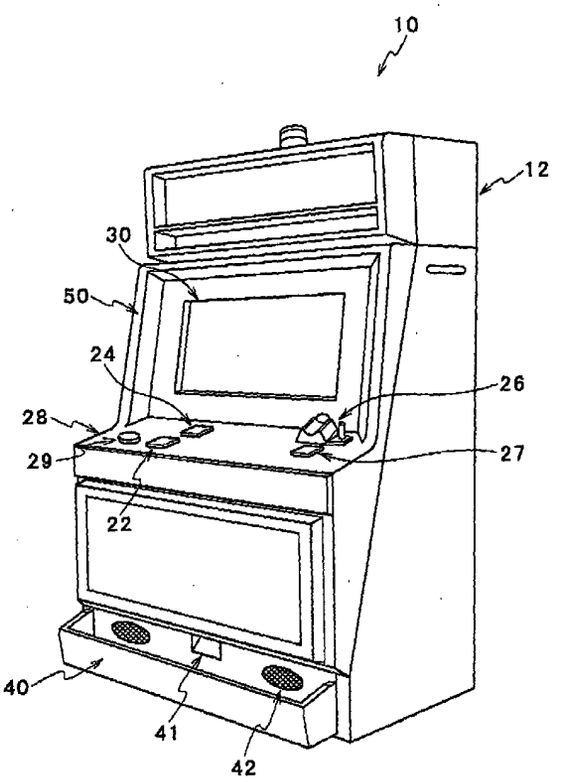
(54) Gaming machine

(57) When symbols to be stopped on at least one inactivated line other than an activated line of pay lines make a winning combination, whether the winning combination on the inactivated line is to be reflected in a game result or not is determined by lottery. If it is determined that the winning combination on the inactivated line is to be reflected in a game result, a player is awarded in accordance with the winning combination on the inactivated line.

FIG.1



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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a gaming machine for awarding a player in accordance with a winning combination when stopping symbols belonging to all columns on a display results in a winning combination of symbols on an activated line, and also to a control method thereof.

2. Description of the Related Art

[0002] A slot machine, which is one of gaming machine, includes reels each having multiple kinds of symbol along the periphery and being rotated by a mechanical element. The rotation and stop of a mechanical reel is controlled by a controller such as a processor. More specifically, the controller randomly selects one game result from multiple possible game results based on a gaming condition, which may be called "bet condition", and causes reels to rotate and stop, whereby the selected game result can be displayed. The selected game result is expressed by several symbols on reels, which have a visual relationship with the display area. When the selected game result agrees with a winning result defined on a payout table, the controller gives a payout unit a command to award a player in accordance with the winning result.

[0003] The display area is an area for a user to observe variably displaying and stopping symbols on reels, and a player simply watches the display area while a game is advancing. Therefore, the appearance of the display area may be one of important factors in designing a slot machine.

[0004] Various kinds of machine have been developed each of which varies the appearance of the display area. A typical example of these kinds of machine is disclosed in US Patent Nos. 6056642, 6027115 and 6517433.

[0005] According to US Patent No. 6056642, a symbol on each mechanical reel is illuminated from the back by means of some unit such as a colored light bulb so that the symbol on each reel can be colored.

[0006] According to US Patent No. 6027115, each mechanical reel itself includes an electroluminescence (EL) element for defining a symbol so that the symbol can be displayed in various forms.

[0007] According to US Patent No. 6517433, a video image is displayed over a mechanical reel. The video image is used for partially changing one or more symbols on each reels stopped for displaying a game result. In other words, when an activated pay line (called an activated line, hereinafter) does not have a winning combination, the video image is displayed as a symbol required to complete a winning combination on the activated line in response to a predetermined accidental event or non-accidental event. For example, when stopping the rotations of all reels results in a symbol combination, "BELL"-"BLANK"-"BELL", on an activated line, the video image is displayed as an animation for transforming a "BLANK" symbol on the middle reel (which may be called a second reel) to a "BELL" symbol in order to create a winning combination including three "BELL" symbols on the activated line. The video image may be also displayed as an animation that moves from an edge of the display area to a symbol on a reel so that a winning combination can be completed on an activated line. In this case, the video image is identified as a special symbol to be evaluated as a wild symbol or a scatter symbol for the symbol to be moved.

[0008] However, while machines according to those patent documents may reasonably contribute to attract player's attention by varying the appearance of the display area, the machines still have following problems.

[0009] Even when an activated line has no winning combination so that a player may not be awarded, at least one inactivated line among all inactivated lines other than the activated line may have a winning combination. In this case, since a winning combination is completed on a pay line, a player may be delighted or feel a sense of accomplishment temporarily. However, the player will notice that the pay line having the winning combination is actually not activated, resulting in no award. The disappointment of the player here may be larger since the player has been delighted or felt a sense of accomplishment temporarily as described above. Alternatively, a winning combination may be also completed not only on an activated line but also on at least one inactivated line among all inactivated lines other than the activated line. In this case, though a player may be delighted or feel a sense of accomplishment for a winning combination on the activated line to some extent, the player may strongly think that he/she can be much more highly awarded if the line having a winning combination was activated. As a result, though various devices have been made for the variation of the appearance of the display area, a player is no longer attracted by the machine very much, which may induce player alienation. The problem may become more significant when only one pay line is activated at all times while other pay lines cannot be activated at player's will.

[0010] In particular, a part in which a video image is to be displayed is limited to an activated line according to US Patent No. 6517433. Therefore, like machines according to US Patent Nos. 6056642 and 6027115, US Patent No. 6517433 also cannot solve the above-described problems.

[0011] Further, there is a possibility that an activated line may have a winning combination if symbols on the activated line were put in reverse order. For example, in a machine provided with five reels, a win is generally made when three successive symbols from the left side on an activated line are symbols serving a winning com-

bination under normal conditions. Here, three successive symbols from the right not from the left on an activated line may be symbols serving a winning combination. In this case, since three successive symbols on an activated line are symbols serving a winning combination, a player may be delighted or feel a sense of accomplishment temporarily with misconception that he/she can get a win. However, the player will notice that the three successive symbols serving a winning combination are put on the right not on the left of an activated line and that a win cannot be made unless the symbols on the activated line were put in reverse order. The disappointment of the player here may be larger in a similar way to the above case where a winning combination is made on an inactivated line.

[0012] The above-described problems may highly-possibly occur in not only a mechanical reel type but also in a simulate-reel type gaming machine.

SUMMARY OF THE INVENTION

[0013] It is an object of the invention to present a gaming machine which can make a player feel as if more activated lines are provided by yielding a possibility of awarding in accordance with a winning combination on an inactivated pay line (called an inactivated line, hereinafter), and also to present a control method thereof

[0014] It is another object of the invention to present a gaming machine, which can suppress player alienation by yielding a possibility of awarding in accordance with a winning combination which can be made if symbols on an activated line are put in reverse order, and also to present a control method thereof. A symbol combination, in which symbols stopped on an activated line make a winning combination when the symbols are put in reveres order, i.e., when the symbols are seen not from left or right under normal conditions but from right or left, is hereinafter referred to as "a reverse combination", which provides the possibility of a win.

[0015] According to a first aspect of the invention, there is presented a gaming machine having symbol display means for variably displaying and stopping a plurality of symbols for each columns and provided with a plurality of pay lines including at least one activated line, in which, when stopping symbols belonging to all columns by the symbol display means results in a winning combination of symbols on the activated line, a player is awarded in accordance with the winning combination. The gaming machine is characterized in that the gaming machine includes: means for determining by lottery whether a winning combination on at least one inactivated line other than the activated line in the pay lines is to be reflected in a game result or not; and means for awarding a player in accordance with the winning combination on the inactivated line when the determination means determines that the winning combination on the inactivated line is to be reflected in the game result.

[0016] According to a second aspect of the invention, there is presented a method for controlling a gaming machine having symbol display means for variably displaying and stopping a plurality of symbols for each columns and provided with a plurality of pay lines including at least one activated line, in which, when stopping symbols belonging to all columns by the symbol display means results in a winning combination of symbols on the activated line, a player is awarded in accordance with the winning combination. The method is characterized in that the method includes the steps of: determining by lottery whether a winning combination on at least one inactivated line other than the activated line in the pay lines is to be reflected in a game result or not; and awarding a player in accordance with the winning combination on the inactivated line when the determination means determines that the winning combination on the inactivated line is to be reflected in the game result.

[0017] According to the first and second aspects, whether a winning combination on an inactivated line is to be reflected in a game result or not is determined by lottery. When it is determined that the winning combination on the inactivated line is to be reflected in the game result, a player is awarded in accordance with the winning combination on the inactivated line. Thus, yielded is a possibility of awarding in accordance with a winning combination on an inactivated line. Therefore, a player may feel as if more activated lines are provided. As a result, the player may strongly get interested in the machine, and player alienation can be prevented.

[0018] According to a third aspect of the invention, there is presented a gaming machine having symbol display means for variably displaying and stopping a plurality of symbols for each columns and provided with a plurality of pay lines including at least one activated line, in which, when stopping symbols belonging to all columns by the symbol display means results in a winning combination of symbols on the activated line, a player is awarded in accordance with the winning combination. The gaming machine is characterized in that the gaming machine includes: means for determining by lottery, when a winning combination can be made if symbols on the activated line are put in reverse order, whether the activated line is regarded as having a reverse winning combination to be reflected in a game result or not; and means for awarding a player in accordance with the reverse winning combination when the determination means determines that the activated line is regarded as having the reverse winning combination to be reflected in the game result.

[0019] According to a fourth aspect of the invention, there is presented a method for controlling a gaming machine having symbol display means for variably displaying and stopping a plurality of symbols for each columns and provided with a plurality of pay lines including at least one activated line, in which, when stopping symbols belonging to all columns by the symbol display means results in a winning combination of symbols on the activated line, a player is awarded in accordance

with the winning combination. The method is characterized in that the method includes the steps of: determining by lottery, when a winning combination can be made if symbols on the activated line are put in reverse order, whether the activated line is regarded as having a reverse winning combination to be reflected in a game result or not; and awarding a player in accordance with the reverse winning combination when it is determined that the activated line is regarded as having the reverse winning combination to be reflected in the game result.

[0020] According to the third and fourth aspects, when a winning combination can be made if symbols on an activated line are put in reverse order, whether the activated line is regarded as having a reverse winning combination to be reflected in a game result or not is determined by lottery. When it is determined that the activated line is regarded as having the reverse winning combination to be reflected in the game result, a player is awarded in accordance with the reverse winning combination. As a result, the player may strongly get interested in the machine, and player alienation can be prevented.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] Other and further objects, features and advantages of the invention will appear more fully from the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a perspective view showing an appearance of a slot machine serving as a gaming machine according to an embodiment of the invention;
Fig. 2 is an enlarged front view showing a display area of the slot machine;
Fig. 3 is a section view taken at the line III-III in Fig. 2;
Fig. 4 is a perspective view of a liquid crystal display device of the slot machine from the back;
Fig. 5 is an exploded perspective view showing parts of the liquid crystal display device in Fig. 4;
Fig. 6 is a block diagram showing an electrical construction of a control device of the slot machine;
Fig. 7 is a block diagram showing an electrical construction of a display control device of the slot machine;
Fig. 8 is a flowchart showing a flow of main processing to be performed in the slot machine;
Fig. 9 is a flowchart showing a flow of main game lottery processing to be performed in the slot machine;
Fig. 10 is a flowchart showing a flow of bonus game processing to be performed in the slot machine;
Fig. 11 is a flowchart showing a flow of bonus game lottery processing to be performed in the slot machine;
Figs. 12A to 12C are diagrams for illustrating a win determination mechanism in the slot machine;
Fig. 13 is a diagram showing symbol arrangements on reel bands on the outer periphery of reels;
Fig. 14 is a diagram showing a winning form table;
Fig. 15 is a diagram for illustrating a win determination mechanism in a slot machine according to another embodiment of the invention; and
Fig. 16 is a flowchart showing a flow of main game lottery processing to be performed in a slot machine according to another embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0022] Preferred embodiments of the invention will be described below with reference to drawings.

[0023] First of all, a construction of an appearance of a slot machine serving as a gaming machine according to an embodiment of the invention will be described with reference to Fig. 1. A slot machine 10 in this embodiment includes a cabinet 12 and a main door 50.

[0024] The cabinet 12 is open on a side facing a player and is placed, for example, in a given place in a casino. The cabinet 12 contains various components including a control device 100 (see Fig. 6) for electrically controlling the slot machine 10 and a hopper 58 (see Fig. 6) for controlling insertion, saving and payout of coins.

[0025] The main door 50 is a member covering the internal part of the cabinet 12 not to expose to the outside. The main door 50 is supported rotatably by means of a shaft to the left side of the front of the cabinet 12. The door 50 is rotated toward the front and back about the shaft so that the open state and closed state can be switched. A liquid crystal display device 30 is provided at a substantial center of the main door 50.

[0026] The liquid crystal display device 30 is a unit for displaying various images relating to a game including effect images, informing images, and the like. A player advances a game by visually checking various images displayed on the liquid crystal display device 30. The liquid crystal display device 30 includes a transparent liquid crystal panel 34 (see Figs. 4 and 5). The transparent liquid crystal panel 34 can be switched to a transparent/opaque state partially or entirely and can display various images. The detail construction of the liquid crystal display device 30 will be described later.

[0027] The liquid crystal display device 30 has, on the back, three mechanical reels 3L, 3C and 3R (see Fig. 2) having multiple kinds of symbol rendered on the outer periphery and rotatably arranged from left to right. Symbols on the reels 3L, 3C and 3R are visible when the transparent liquid crystal panel 34 is switched to the transparent state. Fig. 13 shows arrangements of symbols on the reels 3L, 3C and 3R. The invention is not limited to the symbol arrangements.

[0028] A substantially horizontal control panel 28 is provided below the liquid crystal display device 30. A coin insertion slot 26 is provided on the right side of the control panel 28 for inserting a coin into the slot machine

10. On the other hand, a BET switch 22 and a spin-repeat bet switch 24 are provided on the left side of the control panel 28. The BET switch 22 is used for selecting the number of coins bet for one activated line, which will be described later. The spin repeat bet switch 24 is used for performing a game again without changing the number of coins bet for the activated line in the previous game. The BET switch 22 or spin repeat bet switch 24 is pressed so that the number of coins bet for the activated line can be determined in accordance with the manipulation.

[0029] The control panel 28 includes a start switch 29 on the left side of the BET switch 22. Pressing one of the start switch 29 and the spin repeat bet switch 24 triggers starting a game, and the rotations of the three reels 3L, 3C and 3R are started in a predetermined form.

[0030] The control panel 28 further includes a payout switch 27 near the coin insertion slot 26. When a player presses the payout switch 27, an inserted coin is paid out from a payout opening 41 opening at the lower front part of the door 50, and the paid out coin is stored in a coin tray 40. Speaker grilles 42 are provided above the coin tray 40 and on left and right sides of the coin payout opening 41. The speaker grilles 42 transmit a sound effect emitted from a speaker 46 (see Fig. 6), accommodated within the cabinet 12, to the outside of the cabinet 12.

[0031] Referring to Fig. 2, the liquid crystal display device 30 includes a front panel 31 and the transparent liquid crystal panel 34 (see Figs. 4 and 5) provided on the back of the front panel 31. The front panel 31 includes a transparent display window 31a and a symbol-formed area 31b having symbols formed thereon. Image information displayed on the transparent liquid crystal panel 34 at the back of the front panel 31 is visible through the display window 31a of the panel 31. On the other hand, when the area covering the front of the reels 3L, 3C and 3R of the liquid crystal panel 34 is at the transparent state, symbols on the three reels 3L, 3C, and 3R are visible through the display window 31a.

[0032] Indicators including a number-of-payout-coins indicator 18, a credit value indicator 19, and a BET value indicator 20 are provided on the left back of the liquid crystal display device 30. The symbol-formed area 31b of the front panel 31 has a transparent part covering the front of the indicators 18 to 20, and what the indicators 18 to 20 display is visible therethrough.

[0033] In this embodiment, the three reels 3L, 3C and 3R are arranged so that three symbols on each reel are visible in vertical direction. In this case, five lines L1, L2, L3, L4 and L5, which will be described in detail below, are generally defined as pay lines. In this embodiment, one of the lines L1 to L5 is an activated line, and the remaining four lines are inactivated lines. More specifically, the slot machine 10 has one activated line L1, which is activated at all times, and four inactivated lines L2, L3, L4 and L5, which are not activated at all times. Each of the lines L1 to L5 extends through one symbol of each of the reels 3L, 3C and 3R when the rotations of all of the reels 3L, 3C and 3R are stopped. In more detail, the activated line L1 extends horizontally straight through symbols in the middle row of the reels 3L, 3C and 3R. The inactivated line L2 extends horizontally straight through symbols in the upper row of the reels 3L, 3C and 3R. The inactivated line L3 extends horizontally straight through symbols in the lower row of the reels 3L, 3C and 3R. The inactivated line L4 extends straight in a declining and downward direction through a symbol in the upper row of the left reel 3L, a symbol in the middle row of the middle reel 3C, and a symbol in the lower row of the right reel 3R. The inactivated line L5 is a vertically inverted line of the inactivated line L4 and extends straight in an inclining and upward direction through a symbol in the lower row of the left reel 3L, a symbol in the middle row of the middle reel 3C, and a symbol in the upper row of the left reel 3R.

[0034] Lines defined as pay lines vary in accordance with a matrix form of reel symbols. For example, when five reels are arranged so that five symbols on each reel are visible in vertical direction, twenty-five lines are generally defined as pay lines. Here, lines other than the twenty-five pay lines, which may be considered, are neither activated nor inactivated lines according to the present invention.

[0035] The activated line L1 is displayed in a predetermined form on the transparent liquid crystal panel 34 in predetermined timing during a period from the start of a game until the rotations of all of the reels 3L, 3C, and 3R are stopped.

[0036] The number-of-payout-coins indicator 18 displays the number of coins to be paid out when a winning combination is made. The credit value indicator 19 displays a credit value stored in the slot machine 10. The BET value indicator 20 displays a BET value, which is the number of coins bet for the activated line L1. Each of these indicators 18 to 20 is a 7-segment indicator. Alternatively, the images of the indicator 18 to 20 may be displayed on the transparent liquid crystal panel 34.

[0037] Referring to Fig. 3, the reels 3L, 3C and 3R are supported independently rotatably by a reel frame 74. The reel frame 74 includes stepping motors 59L, 59C and 59R (not shown in Fig. 3, see Fig. 6) for rotating and stopping the reels 3L, 3C and 3R. The reel frame 74 is placed between an upper frame 72 and lower frame 73 mounted to a main frame 75.

[0038] Referring to Figs. 4 and 5, the liquid crystal display device 30 includes the front panel 31 having a protective glass 32 and a display panel 33, the transparent liquid crystal panel 34, a light guide plate 35, a reflective film 36, fluorescent lamps 37a, 37b and 38a, 38b, which are so-called white light sources, lamp holders 39a, 39b, 39c, 39d, 39e, 39f, 39g and 39h, and a table carrier package (TCP) having an IC for driving the transparent liquid crystal panel. The TCP includes a flexible substrate (not shown in particular in Figs. 4 and 5) connecting to a terminal unit of the transparent liquid crystal pan-

el 34.

[0039] The liquid crystal display device 30 is provided over the reels 3L, 3C and 3R on the proximal side with respect to the display areas of the reels 3L, 3C and 3R. The reels 3L, 3C and 3R and the liquid crystal display device 30 are provided with a predetermined space therebetween.

[0040] Each of the protective glass 32 and the display panel 33 contains a transparent member. The protective glass 32 is provided for protecting the transparent liquid crystal panel 34, for example. The area in the display panel 33 corresponding to the symbol-formed area 31b in the front panel 31 has symbols and the like formed thereon while the area in the display panel 33 corresponding to the display window 31a in the front panel 31 (see Fig. 2) has no symbols formed thereon. Alternatively, the display window 31a may be provided in the entire part of the front panel 31 without the symbol-formed area 31b in the front panel 31. In this case, no symbols may be formed on the display panel 33, or the display panel 33 may be omitted.

[0041] Notably, Figs. 4 and 5 do not show electric circuits for operating the indicators 18 to 20 placed on the back of the display panel 33.

[0042] The transparent liquid crystal panel 34 is formed by liquid crystal sealing in a space between a transparent substrate of a glass plate, for example, having a thin film transistor layer thereon and a transparent substrate facing thereto. The display mode of the transparent liquid crystal panel 34 is set at "Normally White". The expression, "Normally White", refers to a state that liquid crystal is not driven, which is a white display, that is, the light passing outwardly through transparent liquid crystal panel 34 is externally visible. The adoption of the transparent liquid crystal panel 34 set at "Normally White" makes the variably displaying and stopping symbols on the reels 3L, 3C and 3R visible even when the liquid crystal cannot be driven, and thus a player can keep playing a game. In other words, even when the liquid crystal cannot be driven, a game can be performed on the basis of variably displaying and stopping symbols on the reels 3L, 3C and 3R.

[0043] The light guide plate 35 guides light from the fluorescent lamps 37a and 37b to the transparent liquid crystal panel 34, that is, to illuminate the transparent liquid crystal panel 34, and is provided at the back of the transparent liquid crystal panel 34. For example, the light guide plate 35 includes a transparent member having a light-guiding function of an acrylic resin, for example, about 2 cm thick.

[0044] The reflective film 36 may be a white polyester film or aluminum thin film having a silver-plated film and reflects light introduced to the light guide plate 35 to the front of the light guide plate 35. The reflective film 36 includes a reflective area 36A and a non-reflective area (transparent area) 36B. The non-reflective area 36B contains a transparent material and is provided in an area including a part covering the front of the reels 3L, 3C and 3R of the front panel 31.

[0045] The fluorescent lamps 37a and 37b are placed along the upper and lower ends of the light guide plate 35, and their both ends are supported by the lamp holders 39a and 39b and 39g and 39h. Light irradiated from these fluorescent lamps 37a and 37b is reflected by the reflective area 36A of the reflective film 36 and illuminates the transparent liquid crystal panel 34. On the other hand, the fluorescent lamps 38a and 38b are placed toward the reels 3L, 3C and 3R at upper and lower positions of the back of the reflective film 36, and their both ends are supported by the lamp holders 39c and 39d and 39e and 39f. Light emitted from the fluorescent lamps 38a and 38b is reflected by the surfaces of the reels 3L, 3C and 3R, launches to the non-reflective area 36B and illuminates the transparent liquid crystal panel 34. In this way, in the liquid crystal display device 30, light irradiated from the fluorescent lamps 37a and 37b and reflected by the reflective area 36A of the reflective film 36 and light irradiated from the fluorescent lamps 38a and 38b, reflected by the surfaces of the reels 3L, 3C and 3R and launching to the non-reflective area 36B illuminate the transparent liquid crystal panel 34. Therefore, the area of the liquid crystal display device 30 corresponding to the non-reflective area 36B of the reflective film 36 is switchable between the transparent and opaque state in accordance with whether the liquid crystal is being driven or not. On the other hand, the area of the liquid crystal display device 30 corresponding to the reflective area 36A of the reflective film 36 is opaque regardless of whether the liquid crystal is being driven or not.

[0046] In the slot machine 10, while a partial area of the display screen of the liquid crystal display device 30 is only switchable between the transparent and opaque states, the entire area of the display screen of the liquid crystal display device 30 may be switchable between the transparent and opaque states. When the entire area of the liquid crystal display device 30 is switchable between the transparent and opaque states, the reflective film 36 may have the non-reflective area 36B entirely or may be omitted.

[0047] Referring to Fig. 6, the control device 100 is a microcomputer and includes an interface circuit unit 102, an input-output bus 104, a CPU 106, a ROM 108, a RAM 110, a communication interface circuit 111, a random number generator 112, a motor drive circuit 120, a speaker drive circuit 122, a hopper drive circuit 124, a indicator drive circuit 128 and a display control device 200.

[0048] The interface circuit unit 102 is connected to the input-output bus 104, and the input-output bus 104 inputs/outputs a data signal or an address signal to the CPU 106.

[0049] The start switch 29 is connected to the interface circuit unit 102. A start signal output from the switch 32 is converted to a predetermined signal by the interface circuit unit 102 and then is supplied to the input-

output bus 104.

[0050] The BET switch 22, spin repeat bet switch 24 and payout switch 27 are also connected to the interface circuit unit 102. Switching signals output from these switches 22, 24 and 27 are also supplied to the interface circuit unit 102, are converted to predetermined signals by the circuit unit 102 and are then supplied to the input-output bus 104.

[0051] A coin sensor 52 is also connected to the interface circuit unit 102. The coin sensor 52 is a sensor for detecting a coin inserted to the coin insertion slot 26 and is provided in relation to the coin insertion slot 26. A sensing signal output from the sensor 52 is supplied to the interface circuit unit 102, is converted to a predetermined signal by the circuit unit 102, and is then supplied to the input-output bus 104.

[0052] A reel position detector circuit 60 is also connected to the interface circuit unit 102. The reel position detector circuit 60 detects a rotating position of each of the reels 3L, 3C and 3R based on a pulse signal from a reel rotating position sensor (not shown), and a signal detected by the reel position detector circuit 60 is supplied to the interface circuit unit 102, is converted to a predetermined signal by the interface circuit unit 102 and is supplied to the input-output bus 104.

[0053] The ROM 108 and RAM 110 are also connected to the input-output bus 104.

[0054] The ROM 108 stores a control program for centrally controlling the slot machine 10, a program for executing routines shown in Figs. 8, 9, 10 and 11, initial data for executing the control program and various data tables to be used for lottery. The data tables may include a lottery table, a symbol arrangement table and winning form table, for example. As shown in Fig. 14, the winning form table provides payout numbers in accordance with winning forms, i . e. , in accordance with winning combinations of symbols. In the winning form table, a winning combination of symbols and the number of coins to be paid out are associated with each other.

[0055] In the slot machine 10, when stopping rotations of all of the reels 3L, 3C and 3R results in a winning combination of symbols on the activated line L1, coins the number of which is in accordance with the winning combination are paid out in a predetermined form. The routine executable program includes, in particular, a first step (1) of, when determining both a combination of symbols to be stopped on the activated line L1 and combinations of symbols to be stopped on all of the inactivated lines L2 and L5 other than the activated line L1, in response to setting a gaming condition before the rotations of the reels 3L, 3C and 3R are started, results in a winning combination on at least one inactivated line, determining by lottery whether the winning combination on the inactivated line is to be reflected in a game result or not, and a second step (2) of, when it is determined that the winning combination on the inactivated line is to be reflected in the game result, paying out coins the number of which is in accordance with the winning combination on the inactivated line in a predetermined form. These first and second steps are performed by the control device 100 serving as a microcomputer.

[0056] In other words, according to this embodiment, a combination of symbols to be stopped on the activated line L1 is determined, and, at the same time, combinations of symbols to be stopped on all of the inactivated lines L2 to L5 are determined. When it is determined that symbols to be stopped on at least one inactivated line make a winning combination as a result, whether the winning combination on the inactivated line is to be reflected in a game result or not is determined by lottery. The determination by lottery is performed based on whether a winning flag for the inactivated line is on or not when combinations of symbols to be stopped on all of the inactivated lines L2 to L5 are determined. Only when the winning flag for the inactivated line is ON, the winning combination on the inactivated line is reflected in the game result. Whether a winning flag for an inactivated line is ON or not is determined based on a winning probability value for the inactivated line. In addition to winning probability values for the inactivated lines L2 to L5, a winning probability value for the activated line L1 is prepared. The number of coins to be paid out for a winning combination on an inactivated line is based on the payout number relating to a winning flag for the inactivated line.

[0057] The mechanism will be described with reference to a specific example and Figs. 12A, 12B and 12C.

[0058] The arrangements of reel symbols as shown in Figs. 12A to 12C are predetermined before the rotations of the reels 3L, 3C and 3R.

[0059] In the example shown in Fig. 12A, no winning combination is made on the activated line L1. On the other hand, the inactivated line L2 has "1BAR"-"1BAR"-"1BAR", which is a winning combination of "1BAR". At this time, based on a winning probability value for the inactivated line L2, whether a winning flag indicating that the winning combination of "1BAR" is made on the inactivated line L2 is turned on or not is predetermined. For example, when the winning probability value for the inactivated line L2 is "1/6", a winning flag for the inactivated line L2 is turned on at the probability of "1/6". When the winning flag for the inactivated line L2 is ON, the winning combination of "1BAR" on the inactivated line L2 is reflected in the game result. Therefore, even when the activated line L1 has no winning combination, the inactivated line L2 is regarded as having a winning combination serving as a bonus combination. Then, coins are paid out based on the payout number relating to the winning flag for the inactivated line L2.

[0060] In the example shown in Fig. 12B, the activated line L1 has "1BAR"-"1BAR"-"2BAR", while the inactivated line L5 has "2BAR"-"1BAR"-"1BAR". In other words, a winning combination of "Any Bar" is made on both activated line L1 and inactivated line L5. For the activated line L1, a general win determination is performed, and

the bonus combination of "Any Bar" is confirmed. Here, the winning flag for the activated line L1 is turned on. For the inactivated line L5, a win determination is performed based on whether the winning flag for the inactivated line L5 is ON or not. If the winning flag for the inactivated line L5 is OFF, the winning combination of "Any Bar" on the inactivated line L5 is not reflected in the game result. In this case, only based on the fact that the winning flag for the activated line L1 is ON, bonus payout relating to the activated line L1 only occurs. On the other hand, if the winning flag for the inactivated line L5 is ON, the winning combination of "Any Bar" on the inactivated line L5 is reflected in the game result. In this case, based on the fact that both winning flags for the activated line L1 and for the inactivated line L5 are ON, bonus payout relating to the inactivated line L5 occurs in addition to the bonus payout relating to the activated line L1.

[0061] In the example shown in Fig. 12C, while the activated line L1 has no winning combination. On the other hand, the inactivated line L2 has "1BAR"-"1BAR"-"1BAR", which is a winning combination of "1BAR". Additionally, the inactivated line L3 also has "7"-"7"-"7", which is a winning combination of "7" having a higher payout number than that of the bonus combination occurring on the activated line L2. A win determination is performed on the inactivated line L2 based on whether the winning flag for the inactivated line L2 is ON or not. A win determination is also performed on the inactivated line L3 based on whether the winning flag for the inactivated line L3 is ON or not. Here, if both winning flags for the inactivated line L2 and for the inactivated line L3 are OFF, no payout occurs. If the winning flag for the inactivated line L2 is only ON, the winning combination of "1BAR" on the inactivated line L2 is only reflected in the game result. In this case, bonus payout relating only to the inactivated line L2 occurs. On the other hand, if only the winning flag for the inactivated line L3 is ON, the winning combination of "7" on the inactivated line L3 is only reflected in the game result. In this case, only bonus payout relating to the inactivated line 3, which is larger than that relating to the inactivated line L2, occurs. If both winning flags for the inactivated lines L2 and L3 are ON, both the winning combination of "1BAR" on the inactivated line L2 and the winning combination of "7", which is more valuable, on the inactivated line L3 are reflected in the game result. In this case, first bonus payout relating to the inactivated line L2 and second bonus payout relating to the inactivated line L3 both occur.

[0062] Notably, overlapping winning combinations as described above may be avoided under a regulation, for example.

[0063] The winning probability value may differ in a main game and a bonus game, which will be detailed later. For example, the winning probability value for a bonus game may be larger than that for a main game. Alternatively, the winning probability value may vary depending on a kind of winning combination not depending on a game type such as a main game and a bonus game.

[0064] The determination of whether a winning combination on an inactivated line is to be reflected in a game result or not may be based on random numbers described below not on the winning probability value as described above. In either case of using a winning probability value or random numbers, no complicated probability calculation is required so that electronic lottery processing to be performed in a general slot machine can be applied without any other devices.

[0065] Random numbers are extracted at random, and both a combination of symbols on the activated line L1 and combinations of symbols on all of the inactivated lines L2 to L5 are determined based on the extracted random numbers. Then, if it is determined that symbols to be stopped on at least one inactivated line make a winning combination, whether the winning combination on the inactivated line is to be reflected in a game result or not is determined by using the extracted random numbers as parameters. As a result, only when it is determined that the winning combination on the inactivated line is to be reflected, a winning flag for the inactivated line is turned on so that the winning combination on the inactivated line can be reflected in the game result.

[0066] The routine executable program further includes a third step of, when coins the number of which is in accordance with a winning combination on the inactivated line are paid out, driving the liquid crystal display device 30 and displaying thereby a predetermined effect image in a predetermined form on the transparent liquid crystal panel 34 of the liquid crystal display device 30 in connection with the inactivated line. The third step is mainly implemented by the control device 100 serving as a microcomputer. This means that the third step is secondarily implemented by the display control device 200 serving as a sub-microcomputer.

[0067] For example, in the case in Fig. 12A, a line image may be displayed on the area in the transparent liquid crystal panel 34 corresponding to the inactivated line L2 having a bonus combination. In the case in Fig. 12B, a line image may be displayed on the area in the transparent liquid crystal panel 34 corresponding to the inactivated line L5 having a bonus combination. In the case in Fig. 12C, a line image or line images may be displayed on the area in the transparent liquid crystal panel 34 corresponding to he inactivated line L2 and/or inactivated line L3 each having a bonus combination.

[0068] In particular in the case in Fig. 12A, a "jet" serving as an effect item preferably appears on the transparent liquid crystal panel 34, and the "jet" is moved so as to express a state that the "jet" is flying from one end to the other end of the inactivated line L2. Then, a "jet cloud" serving as an effect item relating to the "jet" is preferably moved from one end to the other end of the inactivated line L2. In this case, a player's sense of accomplishment can be increased.

[0069] In the case in Fig. 12C, an "F1 car" serving as an effect item is preferably moved on the transparent liquid crystal panel 34 so as to express a state that the "F1 car" runs fast from one end to the other end of the inactivated line L3. Furthermore, a "flame" serving as an effect item relating to the "F1 car" is preferably moved from one end to the other end of the inactivated line L3 so as to express a backfire left after the "F1 car" runs. The effects given to the inactivated line L3 having the bonus combination, "7"-"7"-"7", which is more valuable, can further increase a player's sense of accomplishment.

[0070] Referring back to Fig. 6, the RAM 110 temporarily stores flag and/or variable values and so on to be used in the control program.

[0071] The communication interface circuit 111 is also connected to the input-output bus 104. The communication interface circuit 111 is a circuit for communicating with a server, for example, via different kinds of communication circuit network such as a public switched telephone network and a LAN.

[0072] The random number generator 112 for generating random numbers is also connected to the input-output bus 104. The random number generator 112 generates random numbers in a predetermined range such as "0" to "65535 (16th power of 2)". Alternatively, the random number generator 112 may be adjusted to generate random numbers by computing processing by the CPU 106.

[0073] The motor drive circuit 120 for driving the stepping motors 59L, 59C and 59R and the indicator drive circuit 128 for driving the indicators 18 to 20 are also connected to the input-output bus 104. The CPU 106 controls operations of the actuators 18 to 20 and 59L, 59C and 59R through the drive circuits 120 and 128 in response to the occurrence of a predetermined event.

[0074] The speaker drive circuit 122 for driving the speaker 46 is also connected to the input-output bus 104. The CPU 106 loads sound data stored in the ROM 108 and sends the loaded sound data to the speaker drive circuit 122 through the input-output bus 104. Thus, a predetermined sound effect is output from the speaker 46.

[0075] The hopper drive circuit 124 for driving the hopper 58 is also connected to the input-output bus 104. When a payout signal is input from the payout switch 27, the CPU 106 outputs a drive signal to the hopper driver circuit 124 through the input-output bus 104. Thus, the hopper 58 pays out coins the number of which corresponds to the remaining credit value at that time, which is stored in a predetermined memory area of the RAM 110.

[0076] The display control device 200 is also connected to the input-output bus 104. The CPU 106 creates an image display command in accordance with a state and result of a game and outputs the created image display command to the display control device 200 through the input-output bus 104. When the image display command is input from the CPU 106, the display control device 200 generates a drive signal for driving the liquid crystal display device 30 based on the input image display command and outputs the generated drive signal to the liquid crystal display device 30. Thus, a predetermined image is displayed on the transparent liquid crystal panel 34 of the liquid crystal display device 30.

[0077] Referring to Fig. 7, the display control device 200 is a sub-microcomputer for performing image display processing and includes an interface circuit 202, an input-output bus 204, a CPU 206, a ROM 208, a RAM 210, a VDP 212, a video RAM 214, an image data ROM 216 and a drive circuit 218.

[0078] The interface circuit 202 is connected to the input-output bus 204. An image display command output from the CPU 106 of the control device 100 is supplied to the input-output bus 204 through the interface circuit 202. The input-output bus 204 inputs/outputs data signals or address signals from/to the CPU 206.

[0079] The ROM 208 and RAM 210 are also connected to the input-output bus 204. The ROM 208 stores a display control program for generating a drive signal to be supplied to the liquid crystal display device 30 based on an image display command from the CPU 106 on the control device 100. Especially, details of the third step of the routine executable program are adjusted to be reflected in the display control program. On the other hand, the RAM 210 stores flag and/or variable values to be used in the display control program.

[0080] The VDP 212 is also connected to the input-output bus 204. The VDP 212 is a processor including a so-called split circuit, a screen circuit, a palette circuit, and the like can perform different kinds of processing for displaying an image on the liquid crystal display device 30. The video RAM 214 and the image data ROM 216 are connected to the VDP 212. The video RAM 214 stores image data in accordance with an image display command from the CPU 106 of the control device 100. The image data ROM 216 stores different kinds of image data including the effect image data. Furthermore, the drive circuit 218 that outputs a drive signal for driving the liquid crystal display device 30 is also connected to the VDP 212.

[0081] The CPU 206 loads and executes the display control program stored in the ROM 208 so that image data to be displayed on the liquid crystal display device 30 can be stored in the video RAM 214 in accordance with an image display command from the CPU 106 of the control device 100. The image display command includes different image display commands including commands for displaying the effect images.

[0082] Being apparent from the description above, the claimed main components correspond to the control device 100 including the ROM 108 storing the routine executable program including the first to third steps, the CPU 106 performing different kinds of control in accordance with the program stored in the ROM 108, the RAM 110 functioning as a working area of the CPU 106 and

the display control device 200 controlling to drive the liquid crystal display device 30 according to this embodiment. The main components are interpreted in the narrow sense as further including the CPU 206, ROM 208, RAM 210, VDP 212, video RAM 214, image data ROM 216 and drive circuit 218, which are components of the display control device 200. This will be more apparent from a flow of a processing operation of the slot machine 10, which will be described later with reference to Figs. 8 to 11.

[0083] Figs. 8 to 11 show routines for controlling the slot machine 10, which are executable by the control device 100. A series of routines shown in Figs. 8 to 11 is invoked and executed in predetermined timing by the main program of the slot machine 10, which has been executed in advance.

[0084] In the following description, the slot machine 10 is activated in advance, and a variable used in the CPU 106 of the control device 100 is initialized to a predetermined value. Thus, the slot machine 10 is steadily operated.

[0085] Referring to Fig. 8, in the main processing routine, the CPU 106 of the control device 100 loads a credit value C stored in the RAM 110 and determines whether any credit serving as the remaining number of coins inserted by a player is "0" or not (step S1) based on the loaded credit value C. If the credit value C is "0" (step S1; NO), the CPU 106 cannot start a game and therefore exits from the routine without performing any processing. On the other hand, if the credit value C is equal to or larger than "1" (step S1; YES), the CPU 106 determines that a credit or credits remain(s) and moves the processing to step S2.

[0086] In step S2, the CPU 106 determines whether the spin repeat bet switch 24 has been pressed or not. If the spin repeat bet switch 24 is pressed and an operation signal is input from the switch 24 in accordance therewith (step S2; YES), the CPU 106 moves the processing to step S14. On the other hand, if no operation signal is input from the spin repeat bet switch 24 even after a predetermined period of time has passed (step S2; NO), the CPU 106 determines that the switch 24 has not been pressed and moves the processing to step S3.

[0087] In step S3, a gaming condition is set. More specifically, based on an operation on the BET switch 22, the CPU 106 determines the number of coins bet for the activated line L1 in the present game. Here, the CPU 106 receives an operation signal output from the switch 22 in response to an operation on the BET switch 22 and stores the BET value for the activated line L1 in a predetermined memory area of the RAM 110 based on the number of times that the operation signal has been received. The CPU 106 loads the credit value C written in a predetermined memory area of the RAM 110, subtracts the total BET value from the loaded credit value C, and stores the calculated value in a predetermined memory area of the RAM 110.

[0088] After a gaming condition is set in step S3, the CPU 106 waits for an operation on the start switch 29 (step S4). When the start switch 29 is pressed and an operation signal is input from the start switch 29 in response thereto (step S4; YES), the CPU 106 determines that the start switch 29 has been operated and moves the processing to step S5.

[0089] In step S14, the CPU 106 determines whether the credit value C is equal to or larger than the total BET value in the previous game or not. In other words, the CPU 106 determines whether the spin repeat bet switch 24 has been pressed or not. More specifically, if the spin repeat bet switch 24 is pressed and an operation signal is input from the switch 24 in response thereto, the CPU 106 loads the credit value C and BET value for the activated line L1 in the previous game, which are stored in a predetermined memory area of the RAM 110, and determines whether the credit value C is equal to or larger than the total BET value in the previous game or not based on a relationship between the loaded credit value C and BET value. If the CPU 106 determines that the credit value C is lower than the total BET value in the previous game (step S14; NO), the CPU 106 cannot start a game and exits from the routine without performing any processing. On the other hand, if the CPU 106 determines that the credit value C is equal to or larger than the total BET value in the previous game (step S14; YES), the CPU 106 subtracts the total BET value in the previous game from the credit value C, and stores the calculated value in a predetermined memory area of the RAM 110. Then, the CPU 106 moves the processing to step S5.

[0090] In step S5, the CPU 106 performs main game lottery processing by using an internal lottery. Fig. 9 shows the details of the main game lottery processing.

[0091] Referring to Fig. 9, in the main game lottery processing, the CPU 106 of the control device 100 first simultaneously determines both a combination of symbols to be stopped on the activated line L1 and combinations of symbols to be stopped on all of the inactivated lines L2 to L5 other than the activated line L1 (step S101). More specifically, the CPU 106 generates a command for generating random numbers to the random number generator 112 and extracts random numbers in a predetermined range. The CPU 106 stores the extracted random numbers in a predetermined memory area of the RAM 110. While, in this embodiment, random numbers are generated by the random number generator 112 outside of the CPU 106, random numbers may be generated by computing processing by the CPU 106 without the random number generator 112. The CPU 106 loads a lottery table and winning form table for a main game stored in the ROM 108 and stores the loaded lottery table and winning form table in a predetermined memory area of the RAM 110. The lottery table for a main game is prepared for each reel. The CPU 106 loads the lottery table and winning form table for a main game stored in the memory area of the RAM 110 and

determines a combination of symbols on the activated line L1 and combinations of symbols on the inactivated lines L2 to L5 with reference to the lottery table and wining form table by using the random numbers as parameters which are written in the predetermined memory area of the RAM 110. When determining combinations of symbols to be stopped on the inactivated lines L2 to L5 results in a winning combination on at least one inactivated line, the CPU 106 determines whether the winning flag for the inactivated line is to be turned ON or not based on a winning probability value for the inactivated line written in the lottery table. When the winning flag for the inactivated line is turned on as a result, the CPU 106 stores the winning flag for the inactivated line in a predetermined memory area of the RAM 110.

[0092] Alternatively, symbols to be stopped may be determined for each reel with reference to the lottery table for a main game.

[0093] After both a combination of symbols to be stopped on the activated line L1 and combinations of symbols to be stopped on the inactivated lines L2 to L5 are determined in step S101, the CPU 106 determines whether symbols to be stopped on the activated line L1 make a winning combination or not (step S102). If symbols to be stopped on the activated line L1 make a winning combination (step S102; YES), the CPU 106 moves the processing to step S103. On the other hand, if symbols to be stopped on the activated line L1 make no winning combination (step S102; NO), the CPU 106 moves the processing to step S108.

[0094] In step S103, the CPU 106 turns on the winning flag for the activated line L1 in order to cause a win corresponding to the winning combination on the activated line L1. Here, the CPU 106 stores the winning flag for the activated line L1 in a predetermined memory area of the RAM 110.

[0095] After the winning flag for the activated line is turned on in step S103, the CPU 106 loads the winning form table for a main game stored in the RAM 110. Then, the CPU 106 determines a payout number, i.e., the number of coins to be paid out, in accordance with a kind of the winning combination on the activated line L1 and the number of coins bet for the activated line L1, based on the registered number of coins in the loaded winning form table (step S104). The CPU 106 stores the determined payout number in a predetermined memory area of the RAM 110.

[0096] After the payout number relating to the activated line L1 is determined in step S104, the CPU 106 determines whether symbols to be stopped on any of the inactivated lines L2 to L5 make a winning combination or not (step S105). If symbols to be stopped on any of the inactivated lines L2 to L5 do not make a winning combination (step S105; NO), the CPU 106 exits from the routine. On the other hand, if symbols to be stopped on at least one inactivated line make a winning combination (step S105; YES), the CPU 106 determines whether a winning flag for the inactivated line is ON or not (step S106). If the winning flag for the inactivated line is ON (step S106; YES), the CPU 106 loads the winning form table for a main game stored in the RAM 110. Then, the CPU 106 determines a payout number in accordance with a kind of the winning combination on the inactivated line, based on the registered number of coins in the loaded winning form table (step S107). The CPU 106 stores the determined payout number in a predetermined memory area of the RAM 110. On the other hand, if the winning flag for the inactivated line is not ON (step S106; NO), the CPU 106 exits from the routine without performing the above-described processing for determining a payout number relating to the inactivated line.

[0097] In the processing relating to steps S11 and/or S13, which will be described later, performing a series of the steps S101, S102, S103, S104, S105, S106, and S107 may cause a phenomenon below.

[0098] For example, as shown in Fig. 12B, when a winning combination of "Any BAR" occurs on the inactivated line L5 as well as the activated line L1, payout for both the winning combination on the activated line L1 and the bonus combination on the inactivated line L2 can be performed in a predetermined form.

[0099] On the other hand, in step S108, the CPU 106 determines whether symbols to be stopped on any of the inactivated lines L2 to L5 make a winning combination or not. If symbols to be stopped on any of the inactivated lines L2 to L5 do not make a winning combination (step S108; NO), the CPU 106 exits from the routine. On the other hand, if symbols to be stopped on at least one inactivated line make a winning combination (step S108; YES), the CPU 106 determines whether a winning flag for the inactivated line is ON or not (step S109). If the winning flag for the inactivated line is ON (step S109; YES), the CPU 106 loads the winning form table stored in the RAM 110. Then, the CPU 106 determines a payout number in accordance with a kind of the winning combination on the inactivated line, based on the registered number of coins in the loaded winning form table (step S110). The CPU 106 stores the determined payout number in a predetermined memory area of the RAM 110. On the other hand, if the winning flag for the inactivated line is not ON (step S109; NO), the CPU 106 exits from the routine without performing the above-described processing for determining a payout number relating to the inactivated line.

[0100] In the processing relating to steps S11 and/or S13, which will be described later, performing a series of the steps S101, S102, and S108 to 110 may cause a phenomenon below.

[0101] For example, as shown in Fig. 12A, even when the activated line L1 has no winning combination, payout for a bonus combination of "BAR" on the inactivated line L2 may be performed in a predetermined form. Furthermore, as shown in Fig. 12C, even when the activated line L1 has no winning combination, both payout for the bonus combination of "BAR" on the inactivated line

L2 and payout for the bonus combination of "7", which is more valuable, on the inactivated line L3 may be performed in a predetermined form.

[0102] At the end of the main game lottery processing, the CPU 106 moves the processing to step S6.

[0103] Referring back to Fig. 8, in step S6, the CPU 106 rotates the reels 3L, 3C and 3R sequentially or simultaneously based on the symbol arrangement table stored in the RAM 110.

[0104] After the rotations of the reels 3L, 3C and 3R are started in step S6, the CPU 106 counts the number of driving pulses to be transmitted to the stepping motors 59L, 59C and 59R and stores the count values in a predetermined memory area of the RAM 110. A reset pulse is obtained every one rotation of the reels 3L, 3C and 3R, and the reset pulses of the reels 3L, 3C and 3R are input to the CPU 106 through the reel position detector circuit 60. The reset pulses thus obtained clear the driving pulse count values written in the RAM 110 to "0". Thereby, count values corresponding to positions of the reels 3L, 3C and 3R in a range of one rotation are stored in a predetermined memory area of the RAM 110. On the symbol arrangement table stored in the RAM 110, positions of the reels 3L, 3C and 3R are associated with symbols on the reels 3L, 3C and 3L, respectively. In referring to the symbol arrangement table, the CPU 106 relates, for each of the reels 3L, 3C, and 3R, code numbers respectively corresponding to rotation pitches of the reel to symbol codes indicating symbols corresponding to the respective code numbers, with using the position where the reset pulse is obtained as a benchmark.

[0105] After the rotations of the reels 3L, 3C and 3R are started in step S6, the CPU 106 waits until a predetermined period of time has passed (step S7). When the predetermined period of time has passed (step S7; YES), the CPU 106 stops the rotations of the reels 3L, 3C and 3R sequentially or simultaneously based on symbol-to-be-stopped information written in a predetermined memory area of the RAM 110 such that symbols determined to be stopped at step S101 can be displayed in a display area having a visually interactive relationship with a player (step S8).

[0106] After the rotations of all of the reels 3L, 3C and 3R are stopped, the CPU 106 determines whether any winning combination has been made or not based on states of the winning flags for the activated line and/or inactivated lines stored in predetermined memory areas of the RAM 110 (step S9). If no winning flag is ON (step S9; NO), the CPU 106 determines that no winning combination has been made and exits from the routine. On the other hand, if any winning flag is ON (step S9; YES), the CPU 106 determines that a winning combination has been made and moves the processing to step S10.

[0107] In step S10, the CPU 106 determines whether the winning combination made is a combination allowing the shift to a bonus game or not based on the kind of the winning flag stored in the RAM 110. If the ON winning flag is a flag indicating a win allowing the shift to a bonus game (step S10; YES), the CPU 106 determines that the winning combination made is a combination for the bonus game shift and moves the processing to step S11. On the other hand, if the ON winning flag is a flag not indicating a win allowing the shift to a bonus game (step S10; NO), the CPU 106 determines that the winning combination made is a combination not indicating a win allowing the shift to a bonus game and moves the processing to step S13.

[0108] In step S11, the CPU 106 calculates the number of coins to be paid out, which is in accordance with the bonus-game-shift-allowing combination, based on a payout number written in a predetermined memory area of the RAM 110 so as to pay out coins, the number of which has been calculated, in a predetermined form. Here, the CPU 106 loads the credit value C stored in a predetermined memory area of the RAM 110, adds the calculated number of coins to be paid out to the loaded credit value C, and stores the calculated value in a predetermined memory area of the RAM 110. The CPU 106 causes the credit value indicator 19 to display the calculated value.

[0109] After the payout relating to the made bonus-game-shift-allowing combination ends, the CPU 106 performs bonus game processing (step S12). In a bonus game, a player can play without betting any coins during a predetermined number of games. In this embodiment, 15 free games are provided for in the bonus game. In the bonus game processing, the CPU 106 loads the credit value C written in a predetermined memory area of the RAM 110, adds the number of coins in accordance with a win made by a BONUS symbol, for example, to the loaded value, and stores the calculated value in a predetermined memory area of the RAM 110. The CPU 106 causes the credit value indicator 19 to display the calculated value. The CPU 106 loads a lottery table and winning form table for a bonus game and replaces the lottery table and winning form table for a main game stored in a predetermined memory area of the RAM 110 by the loaded lottery table and winning form table for a bonus game. On the lottery table for a bonus game, the winning probability value is higher than that for a main game. The CPU 106 stores data indicating the predetermined total number of bonus games (15 in this embodiment) in a predetermined memory area of the RAM 110, which corresponds to total-number-of-bonus-games defining processing in step S201, which will be described later. Thus, in a state where the bonus game is performed, during the 15 bonus games, a winning combination can be expected more easily, and player's amusement of the games can be enhanced.

[0110] At the end of the bonus game processing in step S12, the CPU 106 exits from the routine.

[0111] On the other hand, in step S13, the CPU 106 calculates the number of coins to be paid out, which is in accordance a winning combination other than the bonus-game-shift-allowing combination, based on a payout number written in a predetermined memory area of

the RAM 110 so as to pay out coins, the number of which has been calculated, in a predetermined form. Here, the CPU 106 loads the credit value C stored in a predetermined memory area of the RAM 110, adds the calculated number of coins to be paid out to the loaded credit value C, and stores the calculated value in a predetermined memory area of the RAM 110. The CPU 106 causes the credit value indicator 19 to display the calculated value.

[0112] At the end of the payout processing for the winning combination made other than the bonus-game-shift-allowing combination in step S13, the CPU 106 exits from the routine.

[0113] In paying out coins, the number of which is in accordance with a winning combination on an inactivated line, in step S11 or S13, the CPU 106 gives an image display command to the display control device 200. The display control device 200 drives the liquid crystal display device 30 in accordance with the image display command so that a predetermined effect image can be displayed on the transparent liquid crystal panel 34 of the liquid crystal display device 30 in a predetermined form and in connection with the inactivated line.

[0114] While, in step S11 and S13, the number of coins to be paid out is stored as a credit value, a payout command may be issued to the hopper drive circuit 124 so that coins can be actually paid out from the payout opening 41 by the hopper 58.

[0115] Referring to Fig. 10, in the bonus game processing routine, the CPU 106 first defines the total number of bonus games (step S201). More specifically, the CPU 106 loads the total number of bonus games written in a predetermined memory area of the RAM 110.

[0116] After the total number of bonus games is defined in step S201, the CPU 106 performs bonus game lottery processing by using an electronic lottery (step S202). Fig. 11 shows the details of the bonus game lottery processing.

[0117] Referring to Fig. 11, in the bonus game lottery processing, the CPU 106 of the control device 100 first simultaneously determines both a combination of symbols to be stopped on the activated line L1 and combinations of symbols to be stopped of all of the inactivated lines L2 to L5 (step S301). More specifically, the CPU 106 stores random numbers extracted in the same way as those in the main game lottery processing in a predetermined memory area of the RAM 110. The CPU 106 loads a lottery table and winning form table for a bonus game stored in a memory area of the RAM 110 and determines a combination of symbols to be stopped on the activated line L1 and combinations of symbols to be stopped on the inactivated lines L2 to L5 with reference to the lottery table and winning form table by using the random numbers written in the predetermined memory area of the RAM 110 as parameters. When determining combinations of symbols to be stopped on the inactivated lines L2 to L5 results in a winning combination of symbols on at least one inactivated line, the CPU 106 determines whether the winning flag for the inactivated line is to be turned ON or not based on a winning probability value for the inactivated line written in the lottery table. When the winning flag for the inactivated line is turned on as a result, the CPU 106 stores the winning flag for the inactivated line in a predetermined memory area of the RAM 110.

[0118] After both a combination of symbols to be stopped on the activated line L1 and combinations of symbols to be stopped on the inactivated lines L2 to L5 are determined in step S301, the CPU 106 determines whether symbols to be stopped on the activated line L1 make a winning combination or not (step S302). If symbols to be stopped on the activated line L1 make a winning combination (step S302; YES), the CPU 106 moves the processing to step S303. On the other hand, if symbols to be stopped on the activated line L1 make no winning combination (step S302; NO), the CPU 106 moves the processing to step S308.

[0119] In step S303, the CPU 106 turns on the winning flag for the activated line in order to cause a win corresponding to the winning combination on the activated line L1. Here, the CPU 106 stores the winning flag for the activated line in a predetermined memory area of the RAM 110.

[0120] After the winning flag for the activated line is turned on in step S303, the CPU 106 loads the winning form table for a bonus game stored in the RAM 110. Then, the CPU 106 determines a payout number in accordance with a kind of the winning combination on the activated line L1 based on the registered number of coins in the loaded winning form table (step S304). The CPU 106 stores the determined payout number in a predetermined memory area of the RAM 110.

[0121] After the payout number relating to the activated line L1 is determined in step S304, the CPU 106 determines whether symbols to be stopped on any of the inactivated lines L2 to L5 make a winning combination or not (step S305). If symbols to be stopped on any of the inactivated lines L2 to L5 do not make a winning combination (step S305; NO), the CPU 106 exits from the routine. On the other hand, symbols to be stopped on at least one inactivated line make a winning combination (step S305; YES), the CPU 106 determines whether a winning flag for the inactivated line is ON or not (step S306). If the winning flag for the inactivated line is ON (step S306; YES), the CPU 106 loads the winning form table for the bonus game stored in the RAM 110. Then, the CPU 106 determines a payout number in accordance with a kind of the winning combination on the inactivated line, based on the registered number of coins in the loaded winning form table (step S307). The CPU 106 stores the determined payout number in a predetermined memory area of the RAM 110. On the other hand, if the winning flag for the inactivated line is not ON (step S306; NO), the CPU 106 exits from the routine without performing the above-described processing for determining a payout number relating to the inactivated

line.

[0122] On the other hand, in step S308, the CPU 106 determines whether symbols to be stopped on any of the inactivated lines L2 to L5 make a winning combination or not. If symbols to be stopped on any of the inactivated lines L2 to L5 do not make a winning combination (step S308; NO), the CPU 106 exits from the routine. On the other hand, if symbols to be stopped on at least one inactivated line make a winning combination (step S308; YES), the CPU 106 determines whether a winning flag for the inactivated line is ON or not (step S309). If the winning flag for the inactivated line is ON (step S309; YES), the CPU 106 loads the winning form table stored in the RAM 110. Then, the CPU 106 determines a payout number in accordance with a kind of the winning combination on the inactivated line, based on the registered number of coins in the loaded winning form table (step S310). The CPU 106 stores the determined payout number in a predetermined memory area of the RAM 110. On the other hand, if the winning flag for the inactivated line is not ON (step S309; NO), the CPU 106 exits from the routine without performing the above-described processing for determining a payout number relating to the inactivated line.

[0123] At the end of the bonus game lottery processing, the CPU 106 moves the processing to step S203.

[0124] Referring back to Fig. 10, in step S203, the CPU 106 rotates the reels 3L, 3C and 3R sequentially or simultaneously based on the symbol arrangement table stored in the RAM 110.

[0125] After the rotations of the reels 3L, 3C and 3R are started in step 203, the CPU 106 waits until a predetermined period of time has passed (step S204). When the predetermined period of time has passed (step S204; YES), the CPU 106 stops the rotations of the reels 3L, 3C and 3R sequentially or simultaneously based on symbol-to-be-stopped information written in a predetermined memory area of the RAM 110 such that symbols determined to be stopped at step S301 can be displayed in a display area (step S205).

[0126] After the rotations of all of the reels 3L, 3C and 3R are stopped, the CPU 106 determines whether any winning combination has been made or not based on states of the winning flags for the activated line and/or inactivated lines stored in predetermined memory areas of the RAM 110 (step S206). If any winning flag is ON (step S206; YES), the CPU 106 determines that a winning combination has been made and moves the processing to step S207. In step S207, the CPU 106 calculates the number of coins to be paid out, which is in accordance with the winning combination, based on a payout number written in a predetermined memory area of the RAM 110 so as to pay out coins, the number of which has been calculated, in a predetermined form. Here, the CPU 106 loads the credit value C stored in a predetermined memory area of the RAM 110, adds the calculated number of coins to be paid out to the loaded credit value C, and stores the calculated value in a predetermined memory area of the RAM 110. The CPU 106 causes the credit value indicator 19 to display the calculated value. Then, the CPU 106 moves the processing to step S208. On the other hand, if no winning flag is ON (step S206; NO), the CPU 106 determines that no winning combination has been made and then moves the processing to step S208 without performing the payout processing in step S207.

[0127] In step S208, the CPU 106 loads the number of bonus games stored in a predetermined memory area of the RAM 110, subtracts "1" from the loaded number, and stores the calculated value in the RAM 110.

[0128] After the number of bonus games is subtracted by "1" in step S208, the CPU 106 determines whether the remaining number of bonus games is "0" or not (step S209). If the remaining number of bonus games is not "0" (step S209; NO), the CPU 106 returns to the lottery processing in step S202. On the other hand, if the remaining number of bonus games is "0" (step S209; YES), the CPU 106 exits from the routine.

[0129] In paying out coins, the number of which is in accordance with a winning combination on an inactivated line, in step S207, the CPU 106 gives an image display command to the display control device 200. The display control device 200 drives the liquid crystal display device 30 in accordance with the image display command so that a predetermined effect image can be displayed on the transparent liquid crystal panel 34 of the liquid crystal display device 30 in a predetermined form and in connection with the inactivated line.

[0130] While, in step S207, the number of coins to be paid out is stored as a credit value, a payout command may be issued to the hopper drive circuit 124 so that coins can be actually paid out from the payout opening 41 through the hopper 58.

[0131] Apparently, contents of a free game provided as a bonus game may be contents of any conventionally publicly known free game.

[0132] This embodiment provides following operations and advantages.

[0133] When determining both a combination of symbols to be stopped on the activated line L1 and combinations of symbols to be stopped on all of the inactivated lines L2 and L5 results in a winning combination on at least one inactivated line, whether the winning combination on the inactivated line is to be reflected in a game result or not is determined by lottery. If it is determined that the winning combination on the inactivated line is to be reflected in the game result, a player is awarded in accordance with the winning combination on the inactivated line. Thus, yielded is a possibility of awarding in accordance with a winning combination on an inactivated line. Therefore, a player may feel as if more activated lines are provided. As a result, the player may strongly get interested in the machine, and player alienation can be prevented.

[0134] When a player is awarded in accordance with a winning combination on an inactivated line, a prede-

termined effect image is displayed on the transparent liquid crystal panel 34 in a predetermined form and in connection with the inactivated line by driving the liquid crystal display device 30. While a player generally watches an activated line not inactivated lines during a game, appearance of a symbol display area including the display window 31a is thus changed, which allows the player to visually recognize the effect image by simply slightly moving his/her eyes. Therefore, the player can quickly understand why awarded even though the activated line has no winning combination. As a result, the player may get more interested in the machine.

[0135] Next, another embodiment of the invention will be described with reference to Figs. 15 and 16. A gaming machine and a control method thereof according to this embodiment have a good deal in common with those in the above-described embodiment shown in Figs 1 to 14. Accordingly, only the difference from the above-described embodiment will be explained, while details of the common points is omitted.

[0136] In this embodiment, as shown in Fig. 15, five reels 131, 132, 133, 134 and 135 are arranged so that three symbols on each reel are visible in vertical direction. Twenty-five lines are defined as pay lines (only five lines L10, L20, L30, L40, and L50 in the twenty- five pay lines are shown in Fig. 15) so that the each pay line extends through one symbol of each of the reels 131 to 135. The line L10 (illustrated with a solid line in Fig. 15) extends horizontally straight through symbols in the middle row of the reels 131 to 135. The line L20 extends horizontally straight through symbols in the upper row of the reels 131 to 135. The line L30 extends horizontally straight through symbols in the lower row of the reels 131 to 135. The line 40 extends through a symbol in the upper row of the first reel 131, a symbol in the middle row of the second reel 132, a symbol in the lower row of the third reel 133, a symbol in the middle row of the fourth reel 134, and a symbol in the upper row of the fifth reel 135. The line 50 is a vertically inverted line of the inactivated line L40 and extends through a symbol in the lower row of the first reel 131, a symbol in the middle row of the second reel 132, a symbol in the upper row of the third reel 133, a symbol in the middle row of the fourth reel 134, and a symbol in the lower row of the fifth reel 135. In this embodiment, only the line L10 in the twenty-five pay lines including the lines L10 to L50 is defined as an activated line, while the other twenty-four pay lines are inactivated lines. A win is made when three successive symbols from the left side on the activated line L10 are symbols serving a winning combination under normal conditions.

[0137] The ROM 108 in this embodiment stores a program for executing routines shown in Fig.16. More specifically, the routine executable program according to this embodiment includes, in particular, a first step (1) of, when determining a combination of symbols to be stopped on the activated line L10, in response to setting a gaming condition before the rotations of the reels 131 to 135 are started, results in a winning combination which can be made if symbols on the activated line L10 are put in reverse order, determining by lottery whether the activated line L10 is regarded as having a reverse winning combination to be reflected in a game result or not, and a second step (2) of, when it is determined that the activated line L10 is regarded as having the reverse winning combination to be reflected in the game result, paying out coins the number of which is in accordance with the reverse winning combination in a predetermined form. These first and second steps are performed by the control device 100 serving as a microcomputer.

[0138] In other words, according to this embodiment, a combination of symbols to be stopped on the activated line L10 is first determined. As a result, when a winning combination can be made if symbols on the activated line L10 are put in reverse order, whether the activated line L10 is regarded as having a reverse winning combination to be reflected in a game result or not is determined by lottery. The determination by lottery is performed based on whether a reverse winning flag is on or not when the combination of symbols to be stopped on the activated lines L10 is determined. Only when the reverse winning flag is ON, the activated lines L10 is regarded as having a reverse winning combination to be reflected in the game result.

[0139] whether the reverse winning flag is ON or not is determined based on a prepared winning probability value. The number of coins to be paid out for the reverse winning combination is based on the payout number relating to the reverse winning flag.

[0140] The mechanism will be described with reference to a specific example and Fig. 15. The arrangements of reel symbols are predetermined before the rotations of the reels 131 to 135.

[0141] When the reels 131 to 135 are stopped as shown in Fig. 15, three successive symbols from the right side on the activated line L10 are symbols serving a winning combination, i.e., "1BAR"-"1BAR"-"2BAR", while three successive symbols from the left side on the activated line L10, which are symbols triggering a win under normal conditions, are "BLANK"-"BLANK"-"2BAR". Accordingly, the activated line L10 could be regarded as having no wining combination under normal conditions. However, if the symbols on the activated line L10 were put in reverse order, a winning combination of "Any Bar" can be made. At this time, based on a winning probability value, whether the reverse winning flag is turned on or not is predetermined. For example, when the winning probability value is "1/6", the reverse winning flag is turned on at the probability of "1/6".

[0142] When the reverse winning flag is ON, the activated line L10 is regarded as having a reverse winning combination of "ANY BAR", which is reflected in the game result. Therefore, even when the activated line L10 cannot be regarded as having a winning combination, which means that no winning combination is made, in a conventional rule, such a reverse winning combina-

tion as described above is accepted in this embodiment. Then, coins are paid out based on the payout number relating to the reverse winning flag.

[0143] The determination of whether a reverse winning combination is accepted or not, i.e., whether the activated line L10 is regarded as having a reverse winning combination to be reflected in a game result or not, may be based on random numbers described in the above-embodiment not on the winning probability value. Either the winning probability value or random numbers may be arbitrarily defined.

[0144] Fig. 16 shows a main game lottery processing in this embodiment. In the main game lottery processing, both a combination of symbols to be stopped on the activated line L10 and combinations of symbols to be stopped on all of the inactivated lines other than the activated line L10 are simultaneously determined (step S401). Then, whether symbols to be stopped on the activated line L10 make a winning combination or not is determined (step S402). If symbols to be stopped on the activated line L10 make a winning combination (step S402; YES), a normal winning flag is turned on (step S403). Then, a payout number, i.e., the number of coins to be paid out, is determined in accordance with a kind of the winning combination on the activated line L10 and the number of coins bet for the activated line L10 (step S404).

[0145] On the other hand, if symbols to be stopped on the activated line L10 make no winning combination (step S402; NO), determined is whether a winning combination can be made or not if symbols on the activated line L10 are put in reverse order (step S408). If a winning combination can be made when symbols on the activated line L10 are put in reverse order (step S408; YES), determined is whether the reverse winning flag is ON or not (step S409). If the reverse winning flag is ON (step S409; YES), a payout number in accordance with a kind of the reverse winning combination is determined (step S410). On the other hand, if the reverse winning flag is not ON (step S409; NO), the routine ends without the above-described determination processing of a payout number for the reverse winning combination.

[0146] Thus, this embodiment has difference in the win determination mechanism from the above-described embodiment so as to provide following operations and advantages.

[0147] When determining a combination of symbols to be stopped on the activated line L10 results in a winning combination which can be made if symbols on the activated line L10 are put in reverse order, whether the activated line L10 is regarded as having a reverse winning combination to be reflected in a game result or not is determined by lottery. If it is determined that the activated line L10 is regarded as having the reverse winning combination to be reflected in the game result, a player is awarded in accordance with the reverse winning combination. As a result, the player may strongly get interested in the machine, and player alienation can be prevented.

[0148] The win determination mechanism according to Fig. 9 and the win determination mechanism according to Fig. 16 may be combined with each other. That is, both the determinations of whether a reverse winning combination on an activate line is accepted or not (steps S408 to S410) and of whether a winning combination on an activated line is accepted or not (steps S105 to S107 or steps S108 to S110) may be performed in one main/bonus game lottery processing. Additionally, a reverse winning combination on an inactivated line may be accepted That is, when a winning combination can be made if symbols on an inactivated line are put in reverse order, whether the inactivated line is regarded as having a reverse winning combination to be reflected in a game result or not may be determined.

[0149] The invention is not limited to the embodiments.

[0150] While the transparent liquid crystal panel according to the embodiment is partially or entirely switchable between transparent and opaque states and can display various images, a liquid crystal shutter may be adopted which is only partially or entirely switchable between transparent and opaque states.

[0151] Instead of the transparent liquid crystal panel, an EL transparent display panel may be adopted, for example. In this case, an electroluminescence (EL) is adopted as a light source for irradiating light to the display panel.

[0152] While the embodiment illustrates the example in which an effect image is displayed on the transparent liquid crystal panel, the object of the invention can be sufficiently achieved without the transparent liquid crystal panel. In this case, a colored light bulb or other equivalent unit is preferably used to irradiate a symbol on a reel from the back so that the symbol can be colored. Alternatively, EL elements to be used for identifying reel symbols are preferably included in the reel itself so that the symbols can be displayed in various forms.

[0153] While the invention is applied to a 3-reel type or 5-reel type slot machine in the above embodiments, the invention is not limited by the number of reels.

[0154] While in the above embodiments the invention is applied to a slot machine in which one pay line L1; L10 is only activated at all time while the other pay lines cannot be activated at player's will, the invention may be applied to a slot machine in which two or more pay lines are activated as long as at least one pay line is inactivated. This means that the invention is not limited by the number of activated lines. Besides, an activated line may not be predetermined but any pay lines may be activated arbitrarily at player's will. Also in this case, the object of the invention can be sufficiently achieved.

[0155] The processing for determining whether a winning combination on an inactivated line or a reverse winning combination is accepted or not is not limited to be performed in both a main game and a bonus game, but may be performed only in a bonus game.

[0156] Symbol display means include, for example, two types of a type variably displaying and stopping symbols on reels each having multiple kinds of symbols along the periphery by mechanically rotating and stopping the reels, and a type variably displaying and stopping symbols by electrically controlling the driving of a display device to spin and stop reel images on a display screen of the device. That is, while the embodiment illustrates the example that the invention is applied to a mechanical reel slot machine, the invention may be applied to a simulated-reel slot machine. This means that the invention is not limited by the forms of variably displaying and stopping symbols.

[0157] Furthermore, the invention is applicable to gaming machines other than slot machines.

[0158] While this invention has been described in conjunction with the specific embodiments outlined above, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art. Accordingly, the preferred embodiments of the invention as set forth above are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention as defined in the following claims.

Claims

1. A gaming machine having symbol display means for variably displaying and stopping a plurality of symbols for each columns and provided with a plurality of pay lines including at least one activated line, in which, when stopping symbols belonging to all columns by the symbol display means results in a winning combination of symbols on the activated line, a player is awarded in accordance with the winning combination,

   characterized in that the gaming machine comprises:

   means for determining by lottery whether a winning combination on at least one inactivated line other than the activated line in the pay lines is to be reflected in a game result or not; and
   means for awarding a player in accordance with the winning combination on the inactivated line when the determination means determines that the winning combination on the inactivated line is to be reflected in the game result.

2. The gaming machine according to Claim 1, **characterized in that** the gaming machine further comprises means for displaying a predetermined effect image in a predetermined form and in connection with the inactivated line when a player is awarded in accordance with the winning combination on the inactivated line.

3. A method for controlling a gaming machine having symbol display means for variably displaying and stopping a plurality of symbols for each columns and provided with a plurality of pay lines including at least one activated line, in which, when stopping symbols belonging to all columns by the symbol display means results in a winning combination of symbols on the activated line, a player is awarded in accordance with the winning combination,

   characterized in that the method comprises the steps of:

   determining by lottery whether a winning combination on at least one inactivated line other than the activated line in the pay lines is to be reflected in a game result or not; and
   awarding a player in accordance with the winning combination on the inactivated line when the determination means determines that the winning combination on the inactivated line is to be reflected in the game result.

4. The method for controlling a gaming machine according to Claim 3, **characterized in that** the method further comprises the step of displaying a predetermined effect image in a predetermined form and in connection with the inactivated line when a player is awarded in accordance with the winning combination on the inactivated line.

5. A gaming machine having symbol display means for variably displaying and stopping a plurality of symbols for each columns and provided with a plurality of pay lines including at least one activated line, in which, when stopping symbols belonging to all columns by the symbol display means results in a winning combination of symbols on the activated line, a player is awarded in accordance with the winning combination,

   characterized in that the gaming machine comprises:

   means for determining by lottery, when a winning combination can be made if symbols on the activated line are put in reverse order, whether the activated line is regarded as having a reverse winning combination to be reflected in a game result or not; and
   means for awarding a player in accordance with the reverse winning combination when the determination means determines that the activated line is regarded as having the reverse winning combination to be reflected in the game result.

6. A method for controlling a gaming machine having symbol display means for variably displaying and stopping a plurality of symbols for each columns

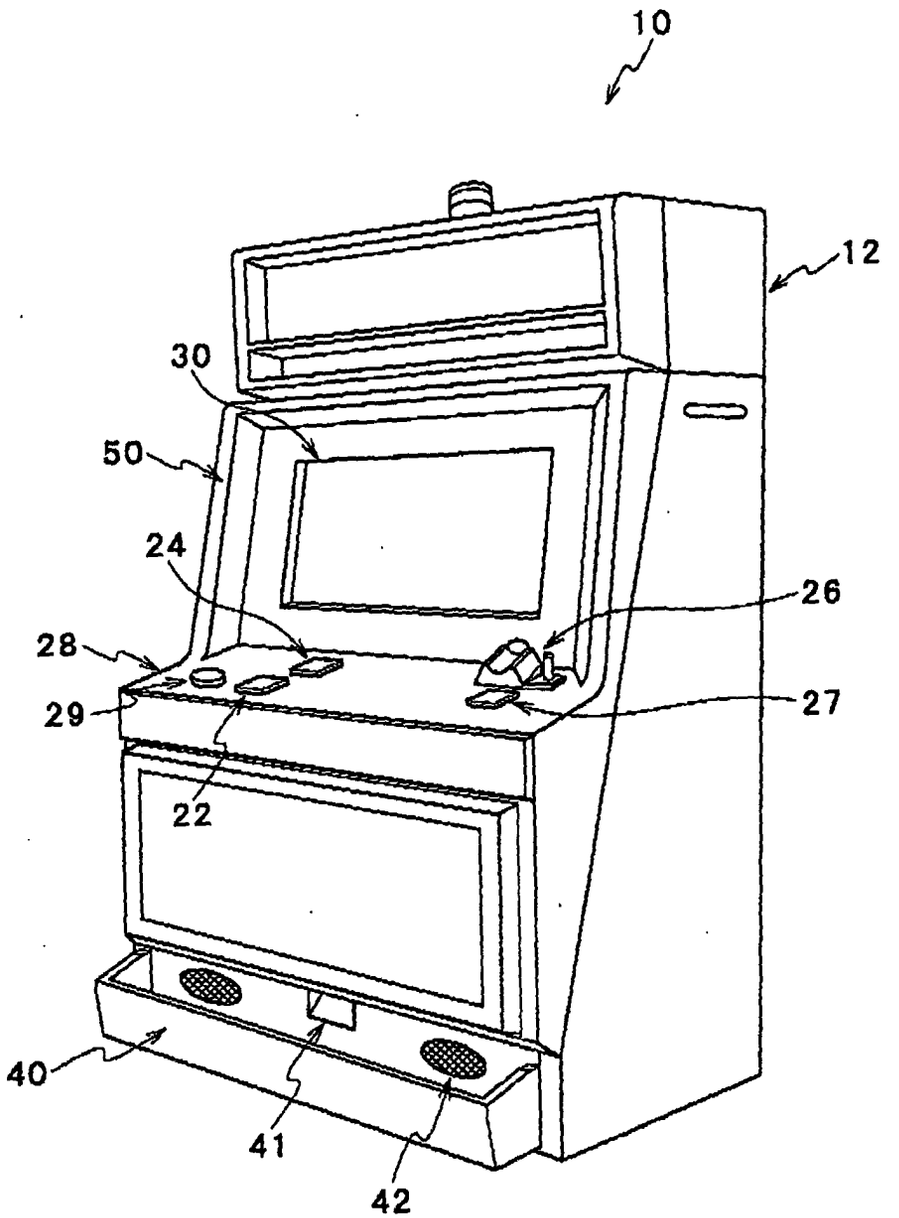
and provided with a plurality of pay lines including at least one activated line, in which, when stopping symbols belonging to all columns by the symbol display means results in a winning combination of symbols on the activated line, a player is awarded in accordance with the winning combination,

characterized in that the method comprises the steps of:

determining by lottery, when a winning combination can be made if symbols on the activated line are put in reverse order, whether the activated line is regarded as having a reverse winning combination to be reflected in a game result or not; and

awarding a player in accordance with the reverse winning combination when it is determined that the activated line is regarded as having the reverse winning combination to be reflected in the game result.

FIG.1



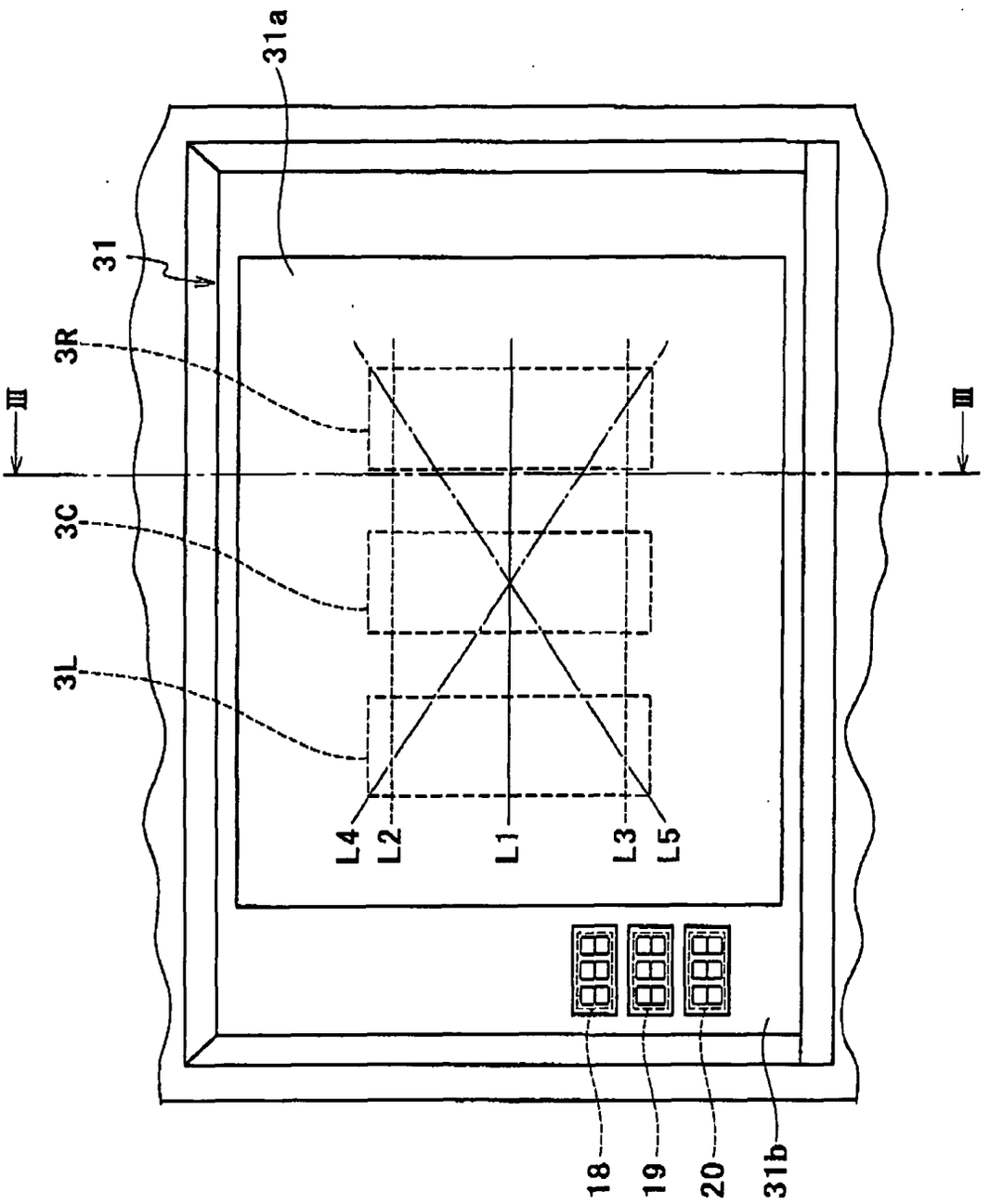
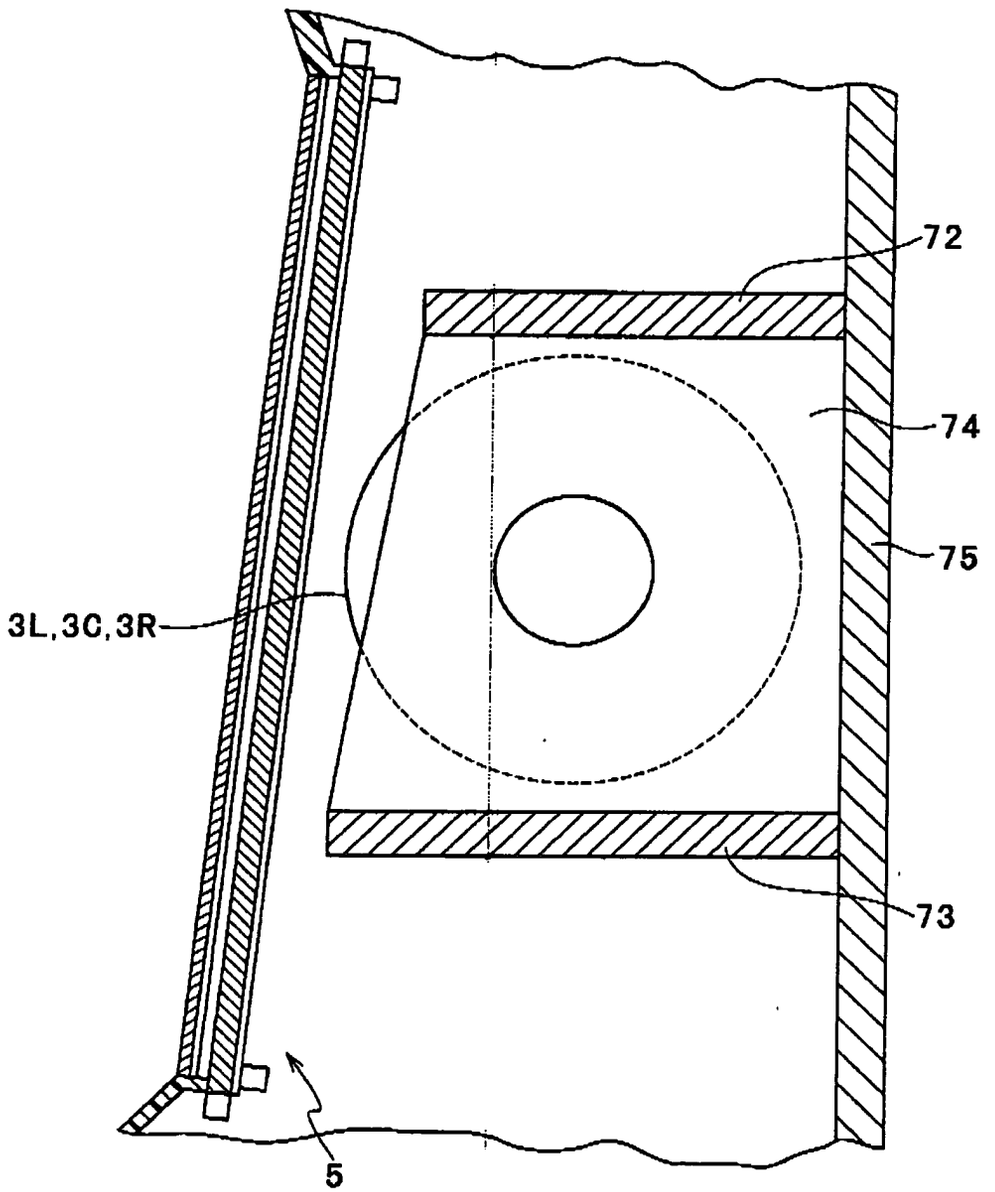


FIG.2

FIG.3



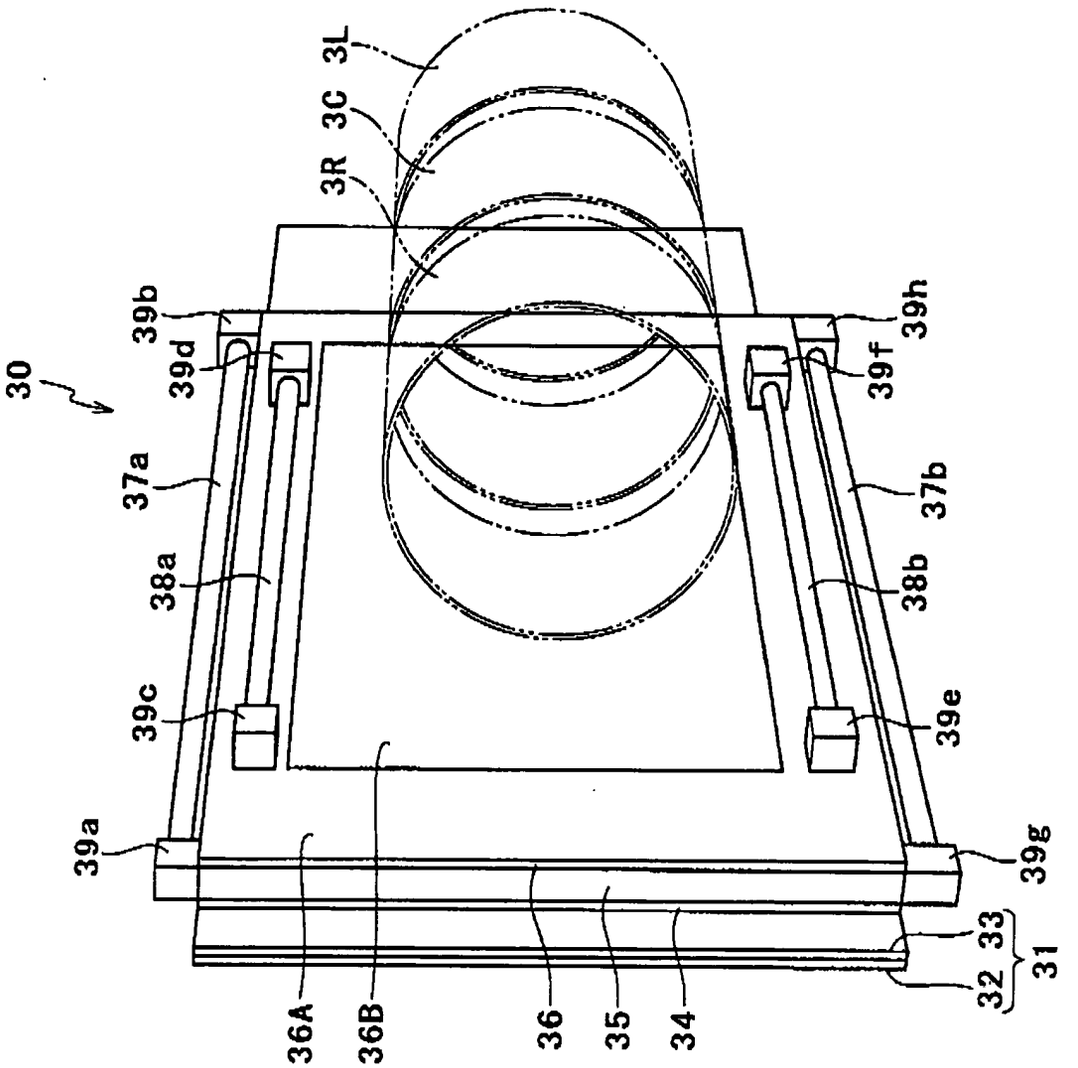

3L
3C
3R
30
39b
39d
39h
39f
37a
37b
38a
38b
39c
39e
39a
39g
33
31
32
36A
36B
36
35
34

FIG.4

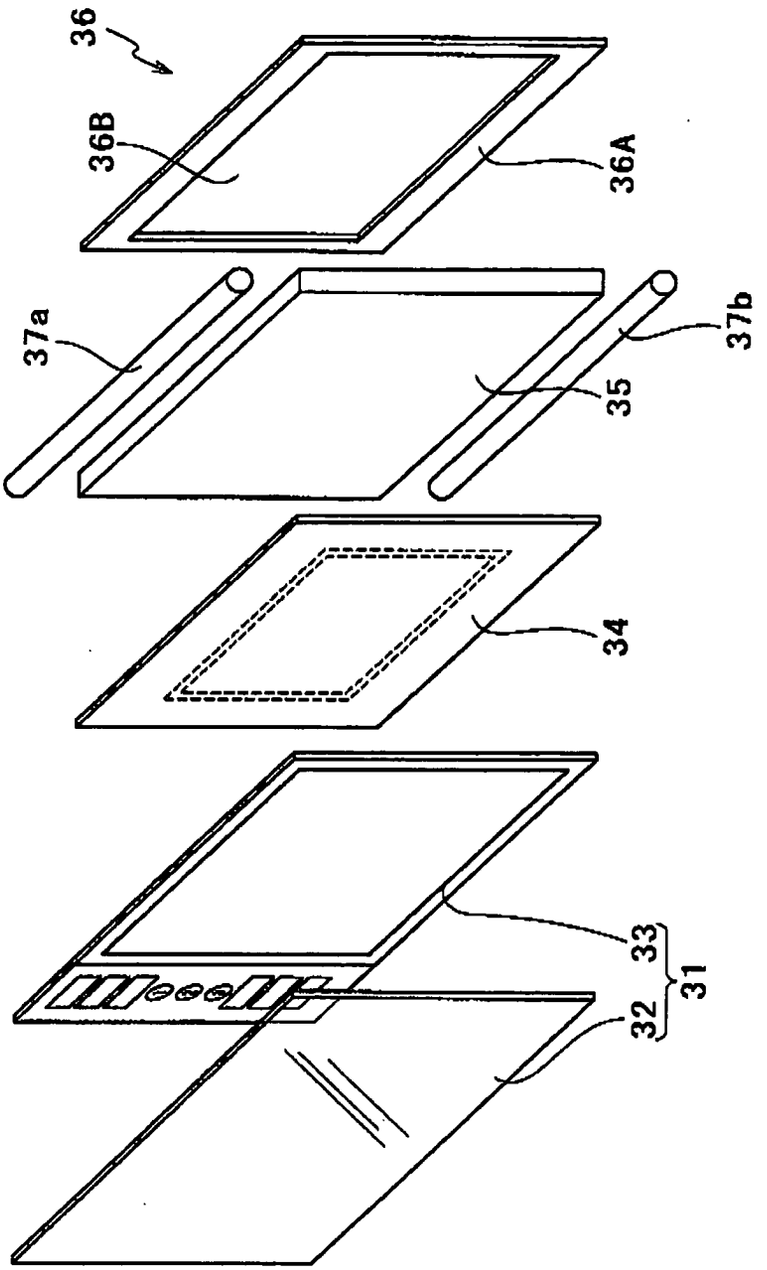


FIG.5

FIG. 6

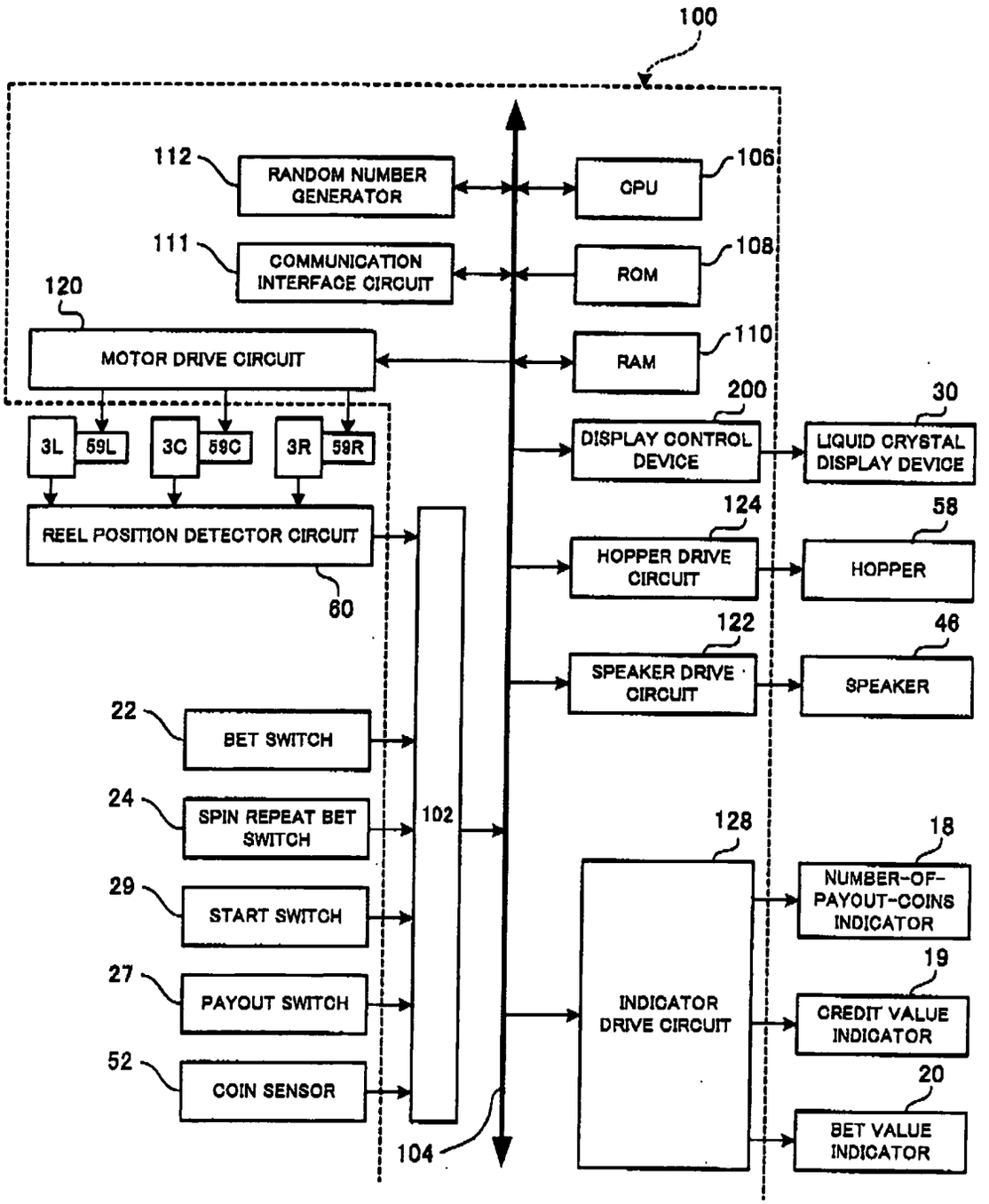

100
112
RANDOM NUMBER GENERATOR
CPU
106
111
COMMUNICATION INTERFACE CIRCUIT
ROM
108
120
MOTOR DRIVE CIRCUIT
RAM
110
200
30
3L
59L
3C
59C
3R
59R
DISPLAY CONTROL DEVICE
LIQUID CRYSTAL DISPLAY DEVICE
124
58
REEL POSITION DETECTOR CIRCUIT
60
HOPPER DRIVE CIRCUIT
HOPPER
122
46
SPEAKER DRIVE CIRCUIT
SPEAKER
22
BET SWITCH
24
SPIN REPEAT BET SWITCH
102
128
18
29
START SWITCH
INDICATOR DRIVE CIRCUIT
NUMBER-OF-PAYOUT-COINS INDICATOR
27
PAYOUT SWITCH
19
CREDIT VALUE INDICATOR
52
COIN SENSOR
20
BET VALUE INDICATOR
104

FIG. 7

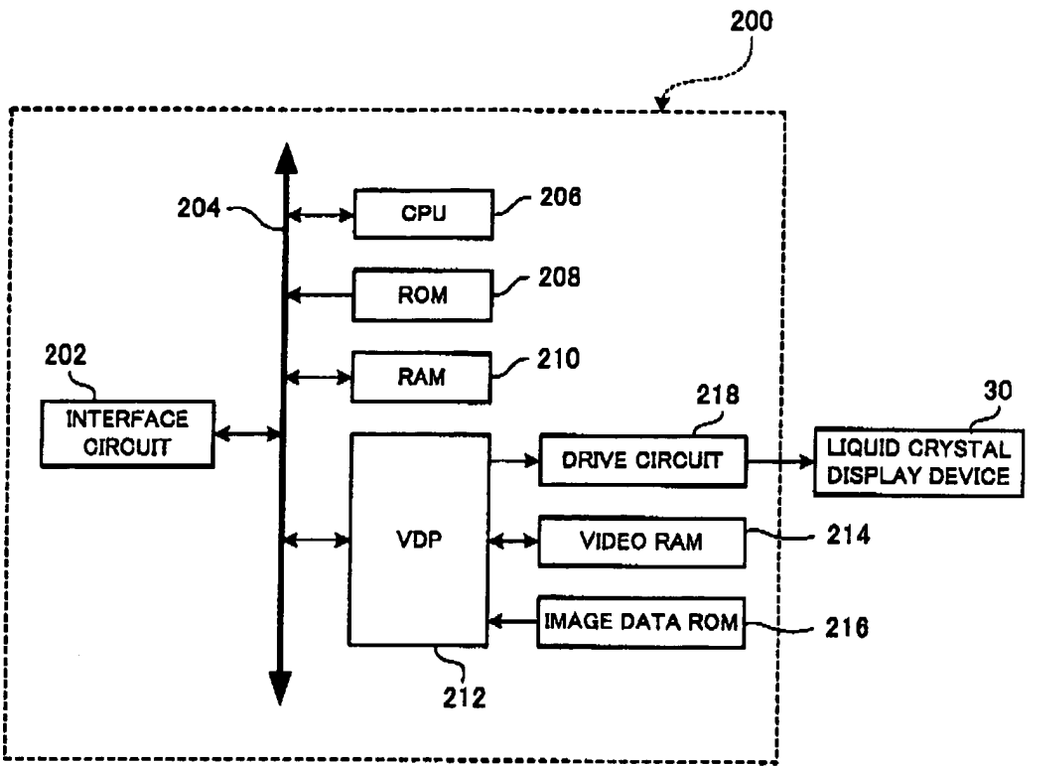

200
204
CPU
206
ROM
208
RAM
210
202
INTERFACE CIRCUIT
218
DRIVE CIRCUIT
30
LIQUID CRYSTAL DISPLAY DEVICE
VDP
VIDEO RAM
214
IMAGE DATA ROM
216
212

FIG. 8

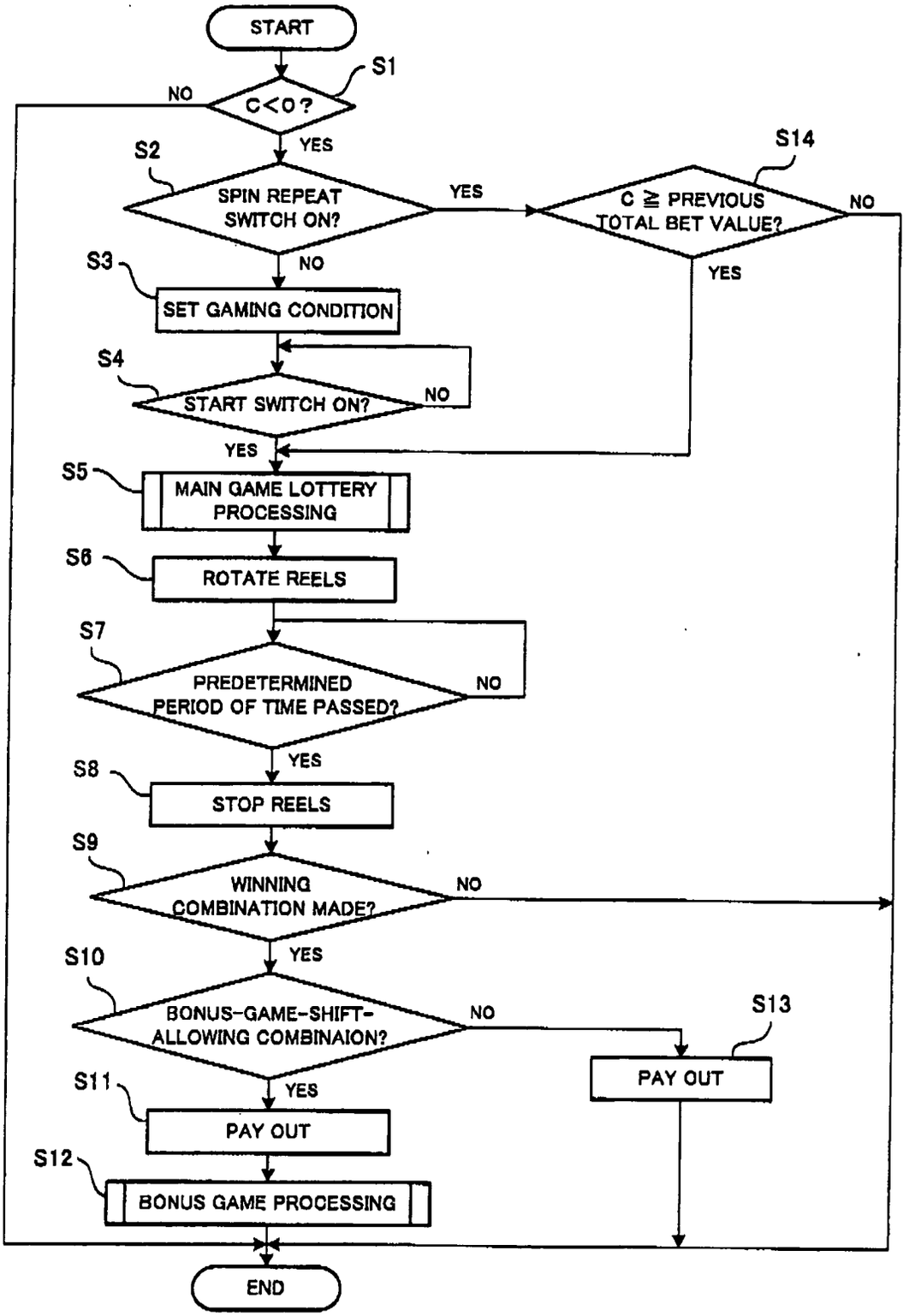

START
S1
C<0?
NO
YES
S2
SPIN REPEAT SWITCH ON?
YES
S14
C ≧ PREVIOUS TOTAL BET VALUE?
NO
YES
NO
S3
SET GAMING CONDITION
S4
START SWITCH ON?
NO
YES
S5
MAIN GAME LOTTERY PROCESSING
S6
ROTATE REELS
S7
PREDETERMINED PERIOD OF TIME PASSED?
NO
YES
S8
STOP REELS
S9
WINNING COMBINATION MADE?
NO
YES
S10
BONUS-GAME-SHIFT-ALLOWING COMBINAION?
NO
S13
PAY OUT
YES
S11
PAY OUT
S12
BONUS GAME PROCESSING
END

FIG. 9

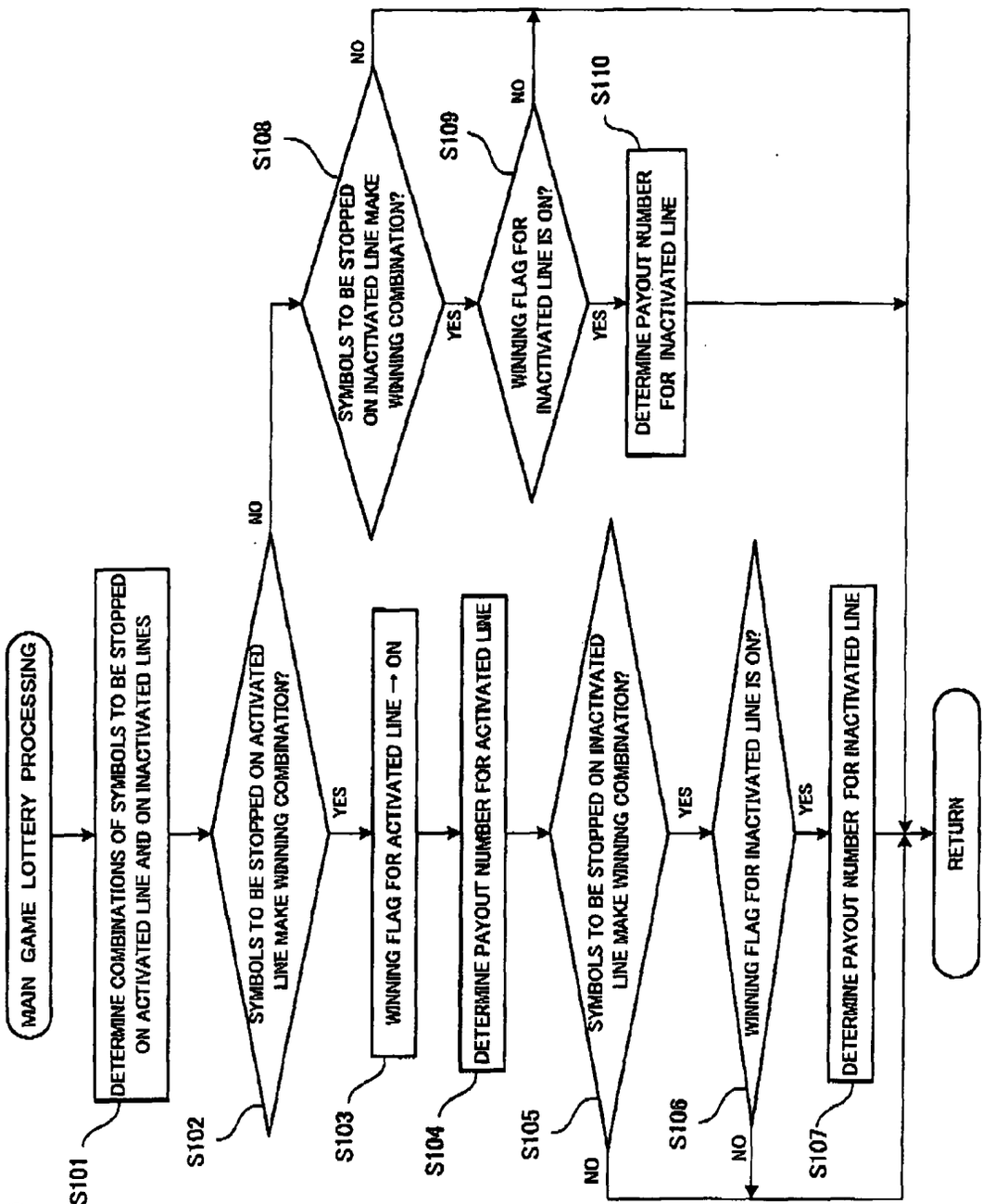

MAIN GAME LOTTERY PROCESSING
S101
DETERMINE COMBINATIONS OF SYMBOLS TO BE STOPPED ON ACTIVATED LINE AND ON INACTIVATED LINES
S102
SYMBOLS TO BE STOPPED ON ACTIVATED LINE MAKE WINNING COMBINATION?
NO
YES
S103
WINNING FLAG FOR ACTIVATED LINE → ON
S104
DETERMINE PAYOUT NUMBER FOR ACTIVATED LINE
S105
SYMBOLS TO BE STOPPED ON INACTIVATED LINE MAKE WINNING COMBINATION?
NO
YES
S106
WINNING FLAG FOR INACTIVATED LINE IS ON?
NO
YES
S107
DETERMINE PAYOUT NUMBER FOR INACTIVATED LINE
S108
SYMBOLS TO BE STOPPED ON INACTIVATED LINE MAKE WINNING COMBINATION?
NO
YES
S109
WINNING FLAG FOR INACTIVATED LINE IS ON?
NO
YES
S110
DETERMINE PAYOUT NUMBER FOR INACTIVATED LINE
RETURN

FIG. 10

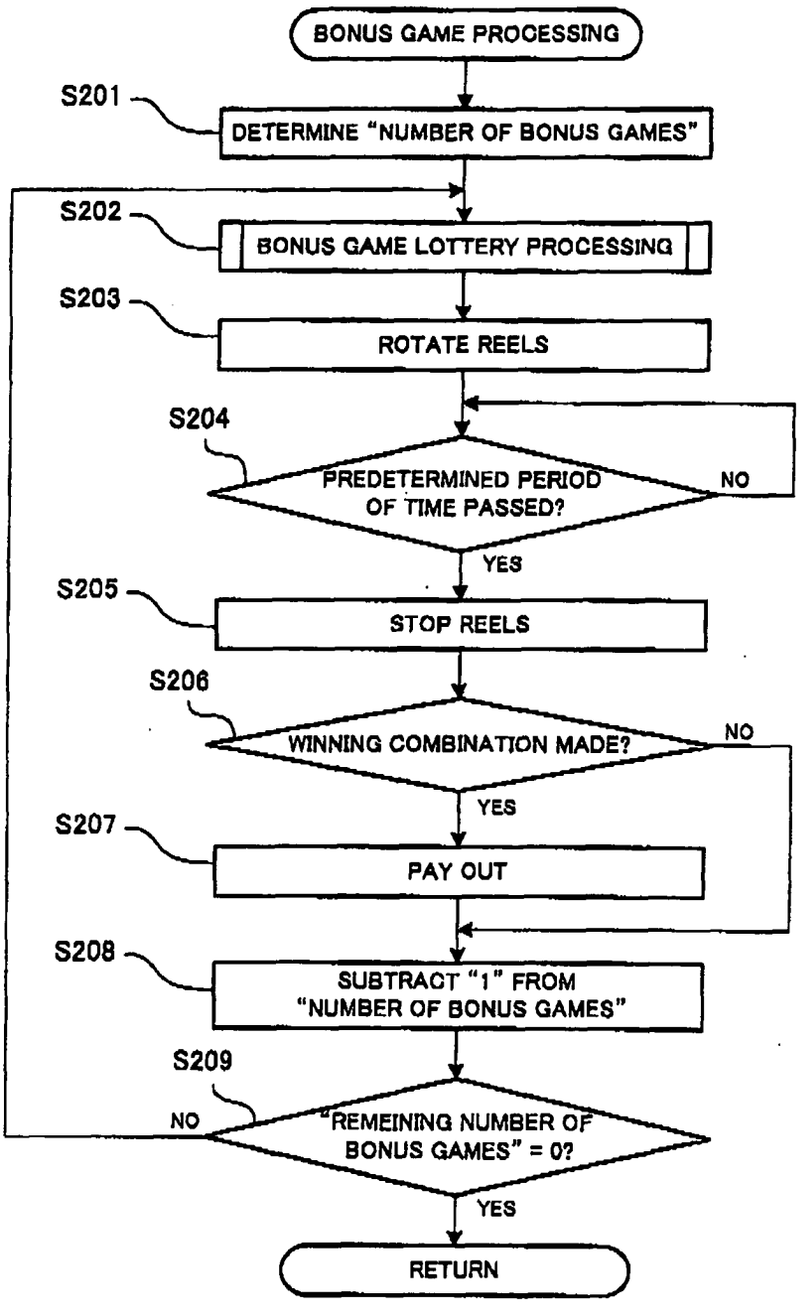

BONUS GAME PROCESSING
S201
DETERMINE "NUMBER OF BONUS GAMES"
S202
BONUS GAME LOTTERY PROCESSING
S203
ROTATE REELS
S204
PREDETERMINED PERIOD OF TIME PASSED?
NO
YES
S205
STOP REELS
S206
WINNING COMBINATION MADE?
NO
YES
S207
PAY OUT
S208
SUBTRACT "1" FROM "NUMBER OF BONUS GAMES"
S209
"REMEINING NUMBER OF BONUS GAMES" = 0?
NO
YES
RETURN

FIG. 11

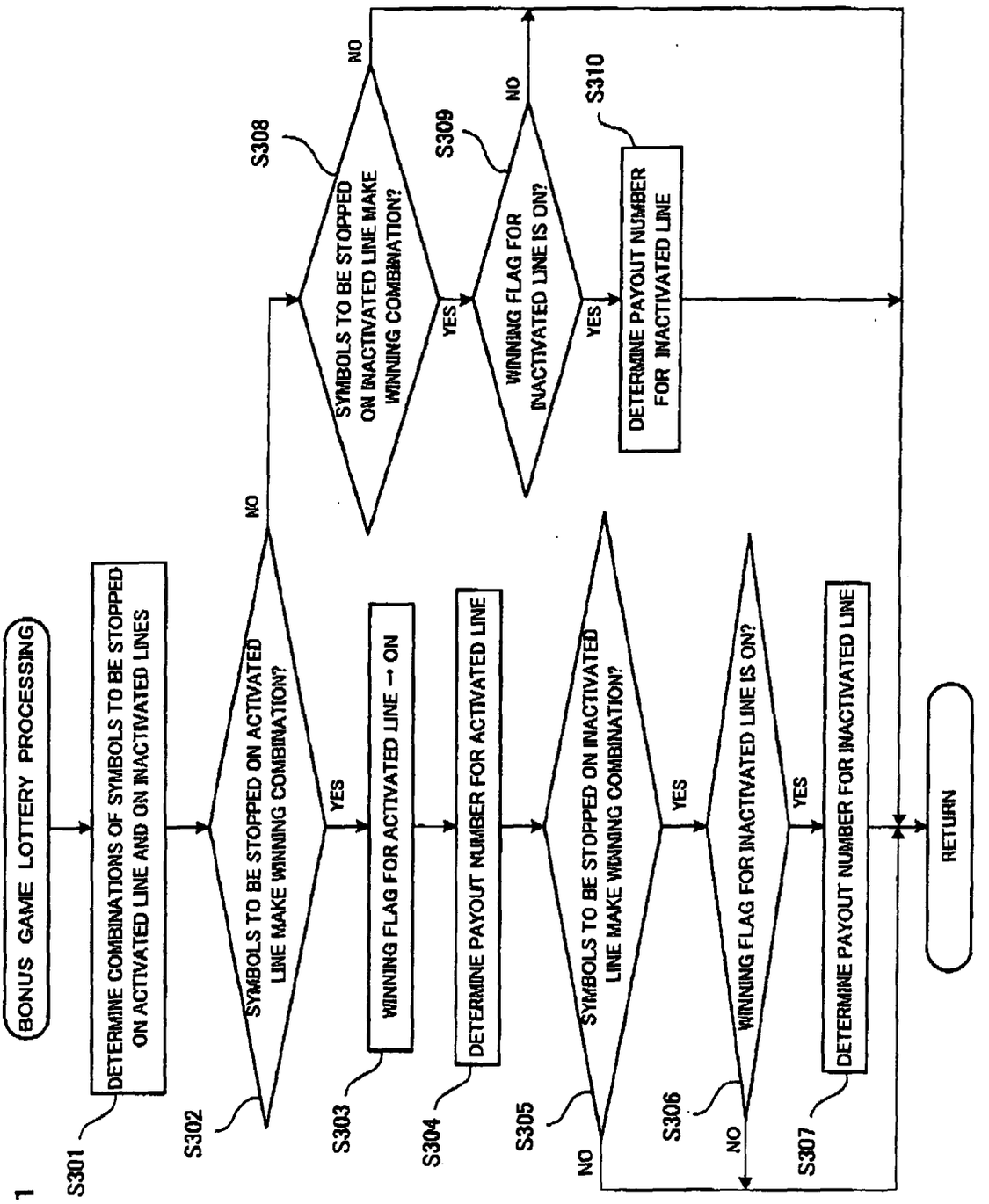

BONUS GAME LOTTERY PROCESSING
S301
DETERMINE COMBINATIONS OF SYMBOLS TO BE STOPPED ON ACTIVATED LINE AND ON INACTIVATED LINES
S302
SYMBOLS TO BE STOPPED ON ACTIVATED LINE MAKE WINNING COMBINATION?
YES
NO
S303
WINNING FLAG FOR ACTIVATED LINE → ON
S304
DETERMINE PAYOUT NUMBER FOR ACTIVATED LINE
S305
SYMBOLS TO BE STOPPED ON INACTIVATED LINE MAKE WINNING COMBINATION?
YES
NO
S306
WINNING FLAG FOR INACTIVATED LINE IS ON?
YES
NO
S307
DETERMINE PAYOUT NUMBER FOR INACTIVATED LINE
S308
SYMBOLS TO BE STOPPED ON INACTIVATED LINE MAKE WINNING COMBINATION?
YES
NO
S309
WINNING FLAG FOR INACTIVATED LINE IS ON?
YES
NO
S310
DETERMINE PAYOUT NUMBER FOR INACTIVATED LINE
RETURN

FIG. 12A

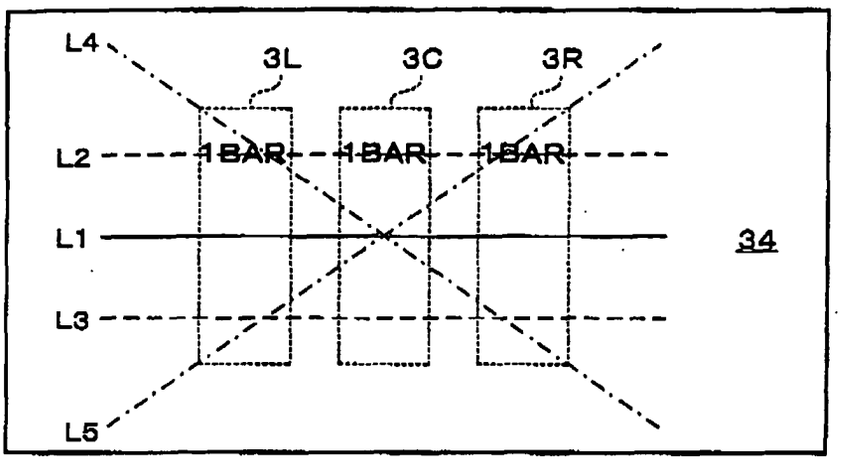


FIG. 12B

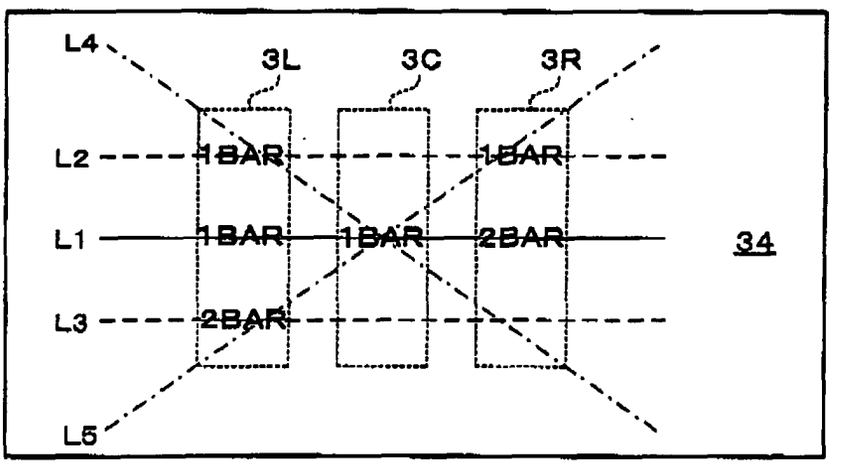


FIG. 12C

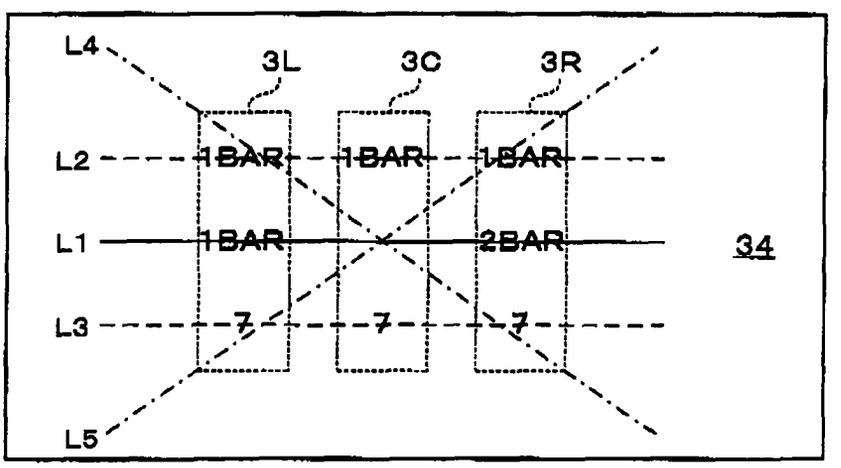


FIG. 13

No	3L	3C	3R
00	1BAR	1BAR	1BAR
01			
02			
03	1BAR		1BAR
04	1BAR	7	2BAR
05	2BAR		
06	1BAR	1BAR	1BAR
07	1BAR		2BAR
08	7	7	7
09	BONUS		
10		BONUS	BONUS
11	3BAR	3BAR	3BAR
12		2BAR	2BAR
13	7	1BAR	3BAR
14			

FIG. 14

WINNING FORM TABLE	1ST CREDIT	2ST CREDIT	3ST CREDIT
[BONUS-BONUS-BONUS]	2000	5000	10000
[7-7-7]	80	160	240
[3BAR-3BAR-3BAR]	40	80	120
[2BAR-2BAR-2BAR]	25	50	75
[1BAR-1BAR-1BAR]	10	20	30
[ANY BAR]	5	10	15

FIG. 15

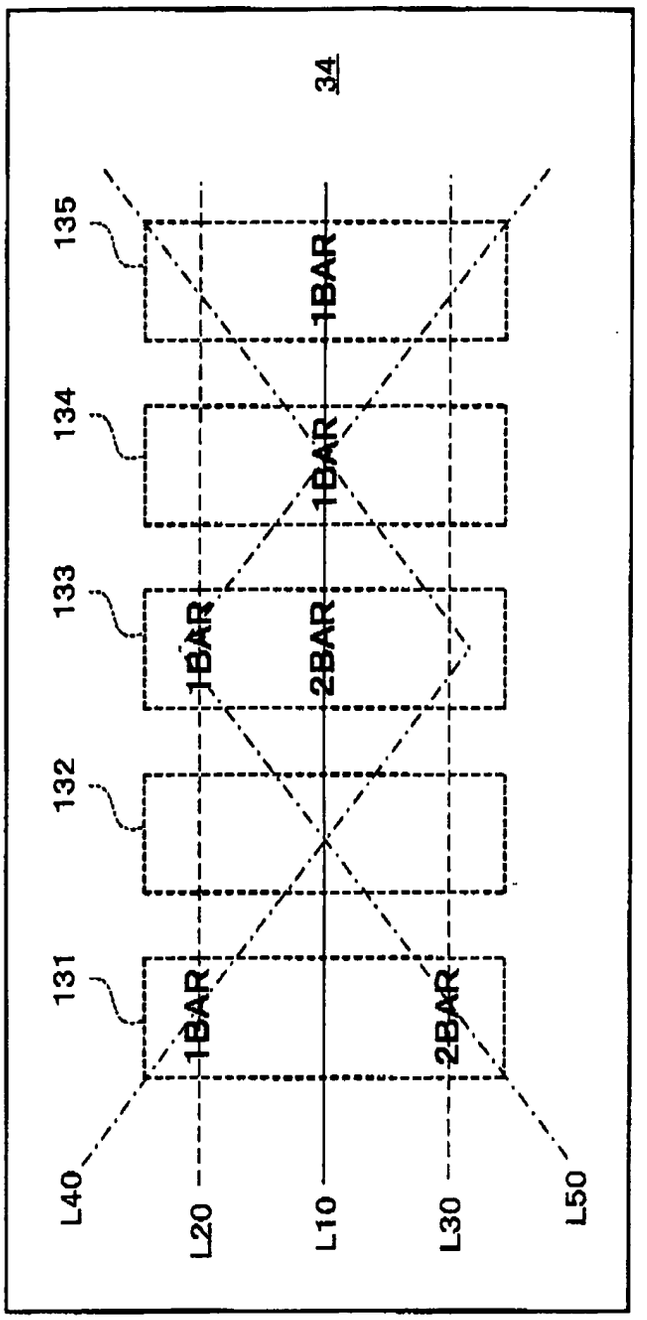
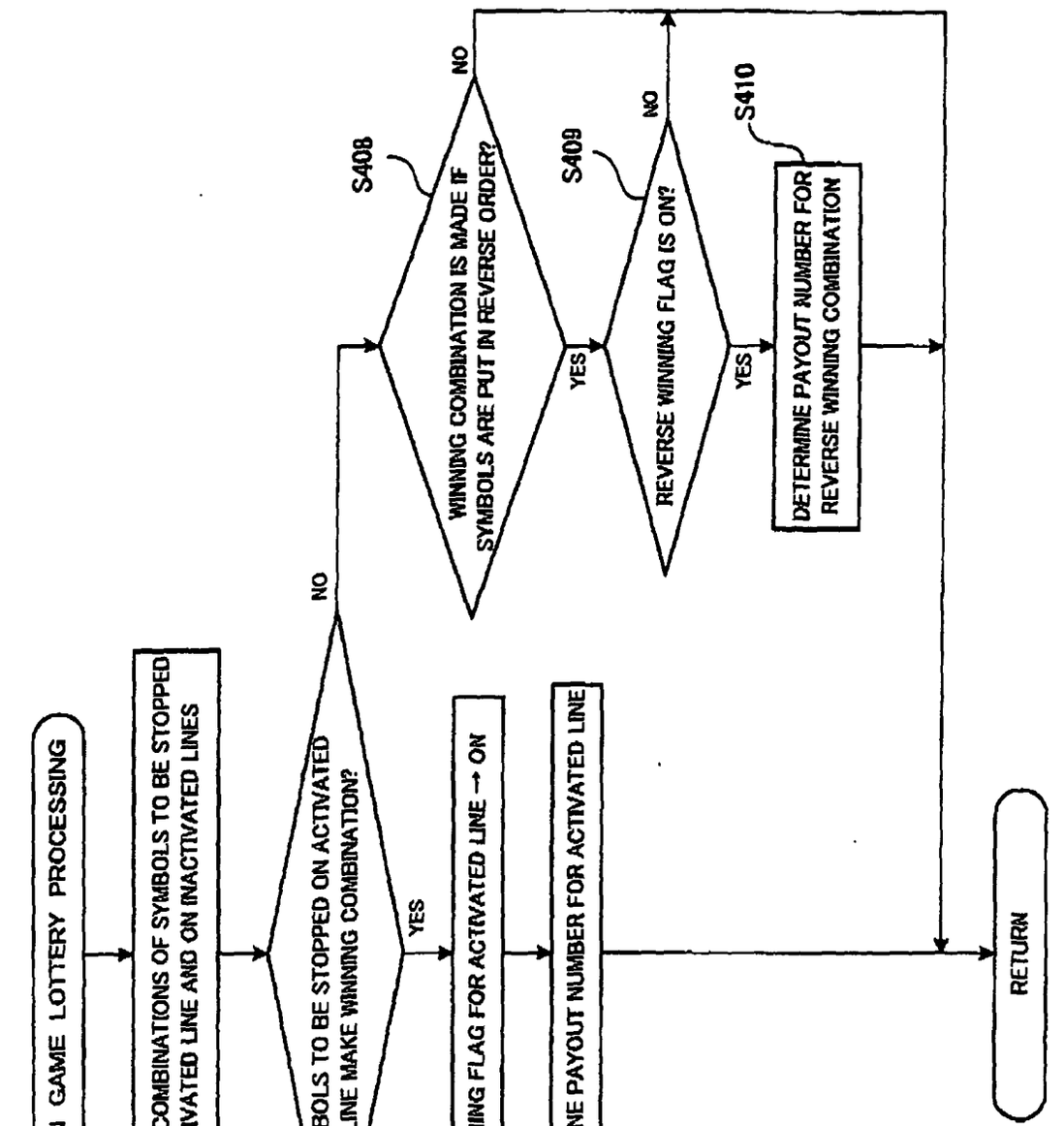

34
135
134
133
132
131
1BAR
1BAR
1BAR
2BAR
2BAR
L40
L20
L10
L30
L50

FIG. 16


MAIN GAME LOTTERY PROCESSING
S401
DETERMINE COMBINATIONS OF SYMBOLS TO BE STOPPED ON ACTIVATED LINE AND ON INACTIVATED LINES
S402
SYMBOLS TO BE STOPPED ON ACTIVATED LINE MAKE WINNING COMBINATION?
NO
YES
S403
WINNING FLAG FOR ACTIVATED LINE → ON
S404
DETERMINE PAYOUT NUMBER FOR ACTIVATED LINE
S408
WINNING COMBINATION IS MADE IF SYMBOLS ARE PUT IN REVERSE ORDER?
NO
YES
S409
REVERSE WINNING FLAG IS ON?
NO
YES
S410
DETERMINE PAYOUT NUMBER FOR REVERSE WINNING COMBINATION
RETURN