

(12) STANDARD PATENT APPLICATION (11) Application No. **AU 2004200689 A1**
(19) AUSTRALIAN PATENT OFFICE

(54) Title
Gaming Machine

(51)⁷ International Patent Classification(s)
A63F 007/02

(21) Application No: **2004200689** (22) Date of Filing: **2004.02.20**

(30) Priority Data

(31)	Number Unknown	(32)	Date 2003.10.31	(33)	Country US
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(43)	Publication Date:	2005.05.19
(43)	Publication Journal Date:	2005.05.19

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GAMING MACHINE

ABSTRACT OF THE DISCLOSURE

5 A gaming machine (1) includes: a variable display means (3L, 3C, 3R) for
producing variable display of a plurality of symbols; a front display means (5) being
provided in front of the variable display means (3L, 3C, 3R) for enabling a player to see
symbols on the variable display means through the front display means, the front display
means being capable of displaying various images; and a display scaling means for
10 making it possible to scale up or down display on the front display means (5) and/or the
variable display means (3L, 3C, 3R).

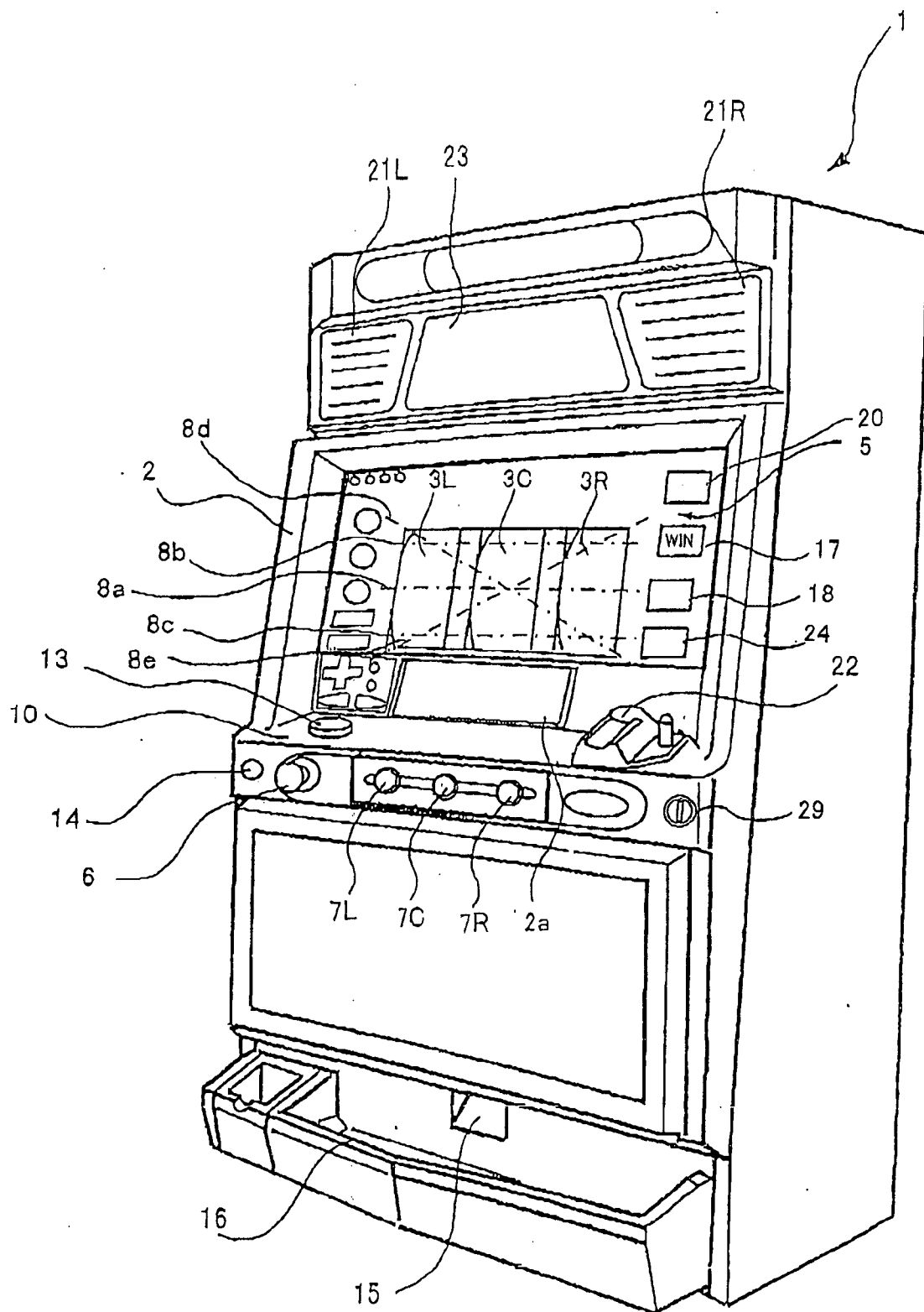


Fig. 1

AUSTRALIA

PATENTS ACT 1990

COMPLETE SPECIFICATION

FOR A STANDARD PATENT

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Invention Title:	Gaming Machine

The following statement is a full description of this invention, including the best method of performing it known to me/us:-

GAMING MACHINE

BACKGROUND OF THE INVENTION

5 Field of the Invention

[0001]

The present invention relates to a gaming machine such as a slot machine or a Japanese pinball machine (a so-called "pachinko machine", which will be simply referred to as "pinball
10 machine") including a variable display means for variable displaying various symbols provided for playing a game and a control means such as a microcomputer for controlling the various display.

Description of the Related Art

15 [0002]

Hitherto, as a conventional gaming machine of the above described type, for example, a slot machine including stopping means has been known (a so-called "pinball slot machine" or a so-called "Pachi-Slot machine" in Japan). FIG. 43 shows a
20 conventional pinball slot machine X.

[0003]

The pinball slot machine X has a variable display means having the configuration wherein three rotation reels 104 to 106 for displaying various display of a plurality of symbols are
25 disposed in display windows 101 to 103 provided in a front panel

100 and reel stop buttons 107 to 109 for stopping the rotation reels 104 to 106 are provided. When a predetermined symbol combination becomes complete through the variable display means, the player gains a prize.

5 [0004]

Printed in front of the front panel 100 are a one-medal pay line 111 at the middle stage which becomes activated with insertion of one medal, two two-medal pay lines 112a and 112b which become activated with insertion of two medals, and two
10 three-medal pay lines 113a and 113b which become activated with insertion of three medals for nine symbols (three columns X three rows) displayed through the display windows 101 to 103. In the figure, numeral 114 denotes a game medium (such as medal, coin, or the like) slot and numeral 115 denotes a start lever for
15 starting a game. In addition to the above-described variable display means having the mechanical configuration using the rotation reels 104 to 106, a variable display means having a display screen such as a liquid crystal screen, on which various display of symbols can be produced is also available.

20 [0005]

As a gaming manner, a game is started as the player inserts game medium into the game medium slot 114. As the player handles the start lever 115, control means controls the variable display means for rotating the reels 104 to 106, thereby producing various
25 display of symbols.

[0006]

For the symbols variably displayed, the rotating reels 104 to 106 are stopped in order automatically in a given time or as the player operates the reel stop buttons 107 to 109. At this time, if the symbols on the reels 104 to 106 appearing in the display windows 101 to 103 become a specific combination (winning symbol combination), game medium are paid out to the player as the prize of the win.

[0007]

10 The pinball slot machine X has different winning game states. Particularly, in some pinball slot machines, when the winning game of a predetermined winning combination is completed, the player is placed in a gaming state in which the player is given a better condition than the usual state for a predetermined time period in addition to paying out a predetermined number of medals. Such winning combinations include a winning combination for allowing the player to play a predetermined number of games giving a relatively large prize to the player, which will be hereinafter referred to as big bonus (BB), and a winning combination for allowing the player to play a predetermined number of games giving a relatively small prize to the player, which will be hereinafter referred to as regular bonus (RB).

[0008]

25 In the pinball slot machine X, internal lottery processing (simply, internal lottery) is performed and the symbol

combination stopped and displayed along the line of the pay lines 111 to 113 made activated, which will be hereinafter referred to as activated line, is determined based on the lottery result and a stop operation timing of the reel stop buttons 107 to 109
5 pressed by the player. That is, to complete a winning game for paying out medals or coins to the player, it is required that the winning combination be won according to the internal lottery processing, which will be hereinafter referred to as internal winning, and that the player perform stop operation at the timing
10 at which the symbol combination indicating completion of the winging game of the winning combination gaining the internal winning, which will be hereinafter referred to as symbol combination, can be stopped on the activated line.

[0009]

15 That is, even if the internal winning is accepted, if the player cannot perform the stop operation at a good timing, the player cannot complete the winning game. Thus, the gaming machines requiring that the player have a technique for performing the stop operation at the good timing (the relative
20 importance of intervention of the technique called "observation push" is high) are mainstream at present.

[0010]

In such gaming machines, recently, various techniques for designing the front panel 100 and displaying the pay lines 111
25 to 113 and symbols have been proposed to enhance the game

amusement and easily determine a winning game.

[0011]

For example, in a gaming machine described in JP-A-4-220276,
three sets of liquid crystal shutters are placed in rows in front
5 of display windows corresponding to three rotation reels and when
each game is over, the symbols corresponding to the winning symbol
combination are displayed through the display window; on the
other hand, the liquid crystal shutters corresponding to the
remaining six symbols which are not the winning symbol
10 combination are switched to opacity, so that only the three
winning game symbols corresponding to the winning symbol
combination on the pay line are displayed on the symbol display
window.

[0012]

15 In a gaming machine described in JP-A-2000-350805, an
optically transparent information display panel including a
matrix display unit that can display a dot pattern with a
plurality of rows and a plurality of columns of dots is provided
at the rear of a front panel or in the proximity of the rear of
20 the front panel and moreover the information display panel is
implemented as a transparent EL (electro-luminescent) panel for
displaying optically transparent characters and symbols in dot
patterns.

SUMMARY OF THE INVENTION

[0013]

In the above-described gaming machine including the liquid crystal shutters (JP-A-4-220276), the symbols which do not correspond to the winning game are hidden and the symbols corresponding to the winning game combination can be clearly displayed, however, other lines than the activated line are also displayed and a large number of lines are always displayed. Thus, the symbols on the reels become hard to see and various indicator lamps and indicators need to be added, resulting a problem that the structure of the gaming machine becomes complicated.

[0014]

In the gaming machine including the information display panel (JP-A-2000-350805), it is possible only to display the activated line and to extensively display an effect image. However, because of the optically transparent panel, the symbols on the reels are always seen through the dot patterns and an effect image is always transparent-displayed and it is feared that the effect image may overlap the symbols on the reels, making them hard to see.

[0015]

Moreover, the related techniques described above are the technique for switching the liquid crystal shutters to opacity for enhancing the visibility of the necessary symbols on the reels and the technique using the optically transparent information

display panel for the player to see any other information image while seeing through the symbols on the reels; the related techniques lack the technical philosophy of displaying a necessary image more sharply and impactfully and do not make a strong appeal of amusement of playing a game to the player.

[0016]

It is therefore an object of the invention to provide a gaming machine for scaling up or down display of symbols on reels and an effect image displayed with the symbols seen through the image for more enhancing amusement of the game.

[0017]

According to the invention, there is provided a gaming machine including: variable display means for variably displaying a plurality of symbols; front display means provided in front of the variable display means and configured to enable a player to see at least one of the symbols therethrough, and to display various images; symbol combination determination means configured to determine a symbol combination; stop control means configured to stop at least one of the symbols of the variable display means based on the determination result of the symbol combination determination means; game medium payout means configured to pay out a game medium to the player in a case where a stop state of the variable display means stopped by the stop control means corresponds to a predetermined stop state; and display scaling means configured to scale up or down the display

displayed behind the display scaling means.

[0018]

The display scaling means may include a convex lens or a Fresnel lens.

5 [0019]

Further, the distance between the display scaling means and the front display means may be made relatively variable.

BRIEF DESCRIPTION OF THE DRAWINGS

10 In the accompanying drawings:

FIG. 1 is a perspective view of a slot machine according to an embodiment of the invention;

FIG. 2 is a front view of the slot machine according to the embodiment of the invention;

15 FIG. 3 is a block diagram to show the configuration of an electric circuit of the slot machine according to the embodiment of the invention;

FIG. 4 is a block diagram to show the configuration of a sub-control circuit of the slot machine according to the
20 embodiment of the invention;

FIG. 5 is a drawing to show symbol rows arranged on reels;

FIG. 6 is a drawing to show winning combinations and numbers of payout medals corresponding to winning symbol combinations;

FIG. 7 is a drawing to show an example of a ceiling
25 indication meter;

FIGS. 8A through 8C are drawings to show an example of images for notifying the player of stop order;

FIGS. 9A and 9B are drawings to show probability lottery tables;

5 FIG. 10 is a drawing to show a stop control table number section table;

FIG. 11 is a drawing to show the relationship between the stop button push order and completion/incompletion of winning game for each stop table number;

10 FIG. 12 is a drawing to show an example of a stop control table;

FIG. 13 is a drawing to show an example of a stop control table;

15 FIG. 14 is a drawing to show an example of a stop control table;

FIG. 15A is a drawing to show a ceiling-number-of-AT-times selection table and FIG. 15B is a drawing to show an AT activation lottery table;

20 FIG. 16A is a drawing to show a ceiling activation value selection table and FIG. 16B is a drawing to show a ceiling meter shift selection table;

FIG. 17 is a drawing to show examples of commands transmitted from a main control circuit to the sub-control circuit;

25 FIG. 18 is a drawing to show examples of commands

transmitted from the main control circuit to the sub-control circuit;

FIG. 19 is a flowchart to show processing of the main control circuit;

5 FIG. 20 is a flowchart to show processing of the main control circuit;

FIG. 21 is a flowchart to show processing of the main control circuit;

FIG. 22 is a flowchart to show processing of the main control
10 circuit;

FIG. 23 is a flowchart to show processing of the main control circuit;

FIG. 24 is a flowchart to show processing of the main control circuit;

15 FIG. 25 is a flowchart to show stop control table selection processing;

FIG. 26 is a flowchart to show processing of the sub-control circuit;

FIG. 27 is a flowchart to show processing of the sub-control
20 circuit;

FIGS. 28A through 28D are flowcharts to show
number-of-inserted-medals update processing,
number-of-bet-medals determination processing,
total-number-of-bet-medals update processing, and the
25 total-number-of-payout-medals update processing;

FIG. 29 is a flowchart to show ceiling meter indication processing;

FIG. 30 is a flowchart to show ceiling AT activation check processing;

5 FIG. 31 is a flowchart to show ceiling activation value selection processing;

FIG. 32 is a flowchart to show AT execution processing;

FIG. 33 is a flowchart to show push order notification processing;

10 FIG. 34 is a flowchart to show AT activation lottery processing;

FIG. 35 is a schematic representation of a panel display unit;

FIG. 36 is a rear view of the panel display unit;

15 FIG. 37 is a side view of the panel display unit;

FIG. 38 is a cross-sectional view of the panel display unit taken on line XXXVIII-XXXVIII in FIG. 36;

FIGS. 39A and 39B are schematic representations to show normal display state and scaled-up display state;

20 FIG. 40 is a schematic representation of display scaling means according to another embodiment of the invention;

FIG. 41 is a schematic representation of display scaling means according to another embodiment of the invention;

FIG. 42 is a schematic representation of display scaling
25 means according to another embodiment of the invention; and

FIG. 43 is a schematic representation to show an example of a gaming machine in a related technique.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

5 [0020]

A gaming machine of the invention includes: variable display means for variably displaying a plurality of symbols; front display means provided in front of the variable display means and configured to enable a player to see at least one of
10 the symbols therethrough, and to display various images; symbol combination determination means configured to determine a symbol combination; stop control means configured to stop the various display of the variable display means based on the determination result of the symbol combination determination means; game
15 medium payout means configured to pay out a game medium to the player in a case where a stop state of the variable display means stopped by the stop control means corresponds to a predetermined stop state; and display scaling means configured to scale up or down the display displayed behind the display scaling means.

20 [0021]

That is, the gaming machine includes the variable display means having a plurality of rotation reels with symbols drawn thereon and the front display means made up of a panel display, being provided in front of the variable display means for enabling
25 the player to see the symbols through the front display means

and making it possible to produce some information display containing images and alternative lamps in various images and moreover includes the display scaling means for making it possible to scale up or down display on the front display means
5 and the symbols on the rotation reels seen through the front display means.

[0022]

As display of the necessary image is thus scaled up or down, a stronger impact is given to the player; and as an effect image
10 is scaled up, sharper display is produced, so that amusement of the gaming machine for the player to enjoy the effect image is still more enhanced and it is made possible for the player to be satisfied with playing a game without getting tired of the game.

15 [0023]

As the display scaling means, a convex lens or a Fresnel lens can be provided and it is made possible to scale up or down display according to a simple configuration.

[0024]

20 In the above configuration, the distance between the display scaling means and the front display means is made preferably to be variable, and an appropriate move mechanism for this purpose is provided. For example, to move the display scaling means, a motor and the like may be used as the drive source
25 for moving the display scaling means and the display scaling means

may be moved in the back and forth direction through an actuator drivingly associated with the motor.

[0025]

Alternatively, it is also possible to configure the display
5 scaling means so as to form in a proper size to be usually stored in a hidden position and to be moved in parallel with a panel of display means as required for scaling up or down any desired part in a spot-like manner.

[0026]

10 A liquid crystal panel or an EL (electro-luminescence) panel can be preferably used as the panel display of the display means and the following structure can be adopted.

[0027]

For example, assuming that the liquid crystal panels are
15 used as the panel display, the liquid crystal panels are disposed as two layers and the liquid crystal panel placed on the rotation reel side is formed with a cut-off portion through which the symbols on the rotation reels can be exposed.

[0028]

20 According to the configuration, the player can see the symbols on the rotation reels through one liquid crystal panel and thus if the two liquid crystal panels are used to display an image, the symbols on the rotation reels are always displayed comparatively sharply.

25 [0029]

A shape of a hole and a size of a cut-off portion may be configured appropriately. For example, one hole shaped like a large rectangle through which the whole of three rotation reels can be seen may be adopted or three slip-shaped holes may be provided with a one-to-one correspondence with the three rotation reels. Alternatively, three symbols can be seen on one rotation reel, generally, and thus nine comparatively small rectangular holes to such an extent that each symbol can be seen therethrough may be adopted.

10 [0030]

A gaming machine according to an embodiment of the invention will be discussed more specifically with reference to the accompanying drawings.

[0031]

15 FIG. 1 is a perspective view to show the appearance of a gaming machine 1 of a first embodiment according to the invention. FIG. 2 is a front view of the gaming machine 1 of a first embodiment according to the invention.

[0032]

20 The gaming machine 1 is a so-called "pinball slot machine" (Pachi-Slot machine) including three rotation reels for producing various display of symbols and allows the player to play a game using game medium such as a card storing information of the game play value given to the player as well as coins, medals,
25 and tokens. In the following description, it is assumed that

the player uses medals.

[0033]

A panel display unit 5 implemented as a liquid crystal display as front display means is provided at the front of a cabinet 2 forming the whole of the gaming machine 1.

[0034]

In the cabinet 2, three rotation reels 3L, 3C, and 3R each with a symbol row made up of different types of symbols drawn on the outer peripheral surface are provided in a row for rotation for providing variable display means. The player can observe the symbols on the reels through display windows 4L, 4C, and 4R seen through the panel display unit 5. Each reel rotates at a constant speed (for example, 80 revolutions per minute).

[0035]

Although the internal configuration of the panel display unit 5 forming the main part of the invention is described later in detail, the panel display unit 5 is provided fully with a screen 5a through which the rotation reels 3L, 3C, and 3R can be seen, as shown in the figure. When viewed from the player, the following components appear.

[0036]

The vertically oriented rectangular display windows 4L, 4C, and 4R are seen at the center of the display screen 5a, and a center line 8a, a top line 8b, and a bottom line 8c in the horizontal direction and a cross down line 8d and cross up line

8e in the slanting directions as pay lines are visible in the display windows 4L, 4C, and 4R. As the pay lines, one, three, or five lines are made activated as the player operates a 1-BET switch 11, a 2-BET switch 12, or a MAX-BET switch 13, which will
5 be described later, or inserts medals into a medal insertion slot 22. Which pay lines are made activated is indicated as the corresponding lines are lighted and a BET lamp 9a, 9b, or 9c, which will be described below, is lighted.

[0037]

10 That is, the 1-BET lamp 9a, the 2-BET lamp 9b, the MAX-BET lamp 9c, and a deposited-number-of-game-play-medals display unit 19 are provided on the left of the display windows 4L, 4C, and 4R. The 1-BET lamp 9a, the 2-BET lamp 9b, or the MAX-BET lamp 9c is lighted in response to the number of medals bet to
15 play one game, which will be hereinafter referred to as the BET count. In the embodiment, one game is over when all reels stop or when game medium have been paid out if game medium are paid out. When the BET count is "1" and one pay line is made activated, the 1-BET lamp 9a is lighted; when the BET count is "2" and three
20 pay lines are made activated, the 2-BET lamp 9b is lighted; and when the BET count is "3" and all the five pay lines are made activated, the MAX-BET lamp 9c is lighted. A game play start indicator lamp 25 provided below the BET lamps 9a, 9b, and 9c is lighted when at least one pay line is made activated. Further,
25 the deposited-number-of-game-play-medals display unit 19

displays the deposited number of medals.

[0038]

A WIN lamp 17, a payout display unit 18, and a game play medal insert lamp 24 are provided on the right of the display windows 4L, 4C, and 4R. The WIN lamp 17 is lighted at a predetermined probability when the internal winning is accepted as BB or RB. The WIN lamp 17 is also lighted when the winning game of BB or RB is complete. The payout display unit 18 is made up of seven-segment LEDs for displaying the number of medals paid out when the winning game is complete. The game play medal insert lamp 24 is blinked when insertion of game play medals can be accepted.

[0039]

A number-of-bonus-game-operation-times display unit 20 is provided in the upper right corner of the display screen 5a. The number-of-bonus-game-operation-times display unit 20 displays the number of RB games that can be played, the possible number of winning games of RB (described later).

[0040]

A game play stop indicator 31, a replay indicator 32, an RB operation indicator 33, and a BB operation indicator 34 are provided in a row in the upper left corner of the display screen 5a. The game play stop indicator 31 is lighted when the time interval between the preceding drum rotation and the current drum rotation is less than a predetermined time (in the embodiment,

4.1 seconds). The replay indicator 32 is lighted when replay is operated. The RB operation indicator 33 is lighted during the RB operation. The BB operation indicator 34 is lighted during the BB operation.

5 [0041]

The display screen 5a also displays the "stop order" required for realizing completion of the winning game when the internal winning of "small prize of bell" is accepted in "stop operation assistance time period" (described later).

10 [0042]

A frontward projection portion 10 of a horizontal plane is formed below the display windows 4L, 4C, and 4R seen through the display screen 5a, and an indication section 2a for indicating information concerning the gaming machine 1 is provided between
15 the frontward projection portion 10 and the display windows 4L, 4C, and 4R.

[0043]

A medal insertion slot 22 is provided on the right of the indication section 2a, and the 1-BET switch 11, the 2-BET switch
20 12, and the MAX-BET switch 13 are provided at the lower position to the left of the indication section 2a. A cross button 26, a "O" button 27, and a "X" button 28 are provided at the upper position to the left of the indication section 2a.

[0044]

25 The 1-BET switch 11 enables the player to bet one of the

credited medals by one push operation on a game. The 2-BET switch 12 enables the player to bet two of the credited medals by one push operation on a game. The MAX-BET switch 13 enables the player to bet as many medals as the maximum number of medals that
5 can be bet on a game by one push operation. As the player operates any of the BET switches, the corresponding pay lines are made activated as described above.

[0045]

The player can switch the display screen 5a and make entry
10 by operating the cross button 26, the "O" button 27, and the "X" button 28.

[0046]

A deposited medal adjusting switch 14 for the player to switch between credit and payout of the medals obtained by playing
15 games by pushbutton operation is provided on the left of the front of the frontward projection portion 10. As the deposited medal adjusting switch 14 is switched, medals are paid out from a game play medal payout opening 15 in a lower part of the front and are stored in a game play medal tray 16. On the right of the
20 deposited medal adjusting switch 14, a start lever 6 for rotating the reels for starting various display of symbols in the display windows 4L, 4C, and 4R (starting a game) as the player operates the start lever 6 is attached so that it can be turned in a predetermined angle range.

25 [0047]

A door opening/closing and closing release device 29 is provided to the right of the front of the frontward projection portion 10. As the door opening/closing and closing release device 29 is turned to the right with a predetermined key, the front door is opened/closed; as the device 29 is turned to the left, closing is released.

[0048]

Speakers 21L and 21R are provided on the upper left and right of the cabinet 2, and a payout table panel 23 for displaying winning symbol combination and the number of payout medals is provided between the two speakers 21L and 21R. Three stop buttons 7L, 7C, and 7R for stopping rotation of the three rotation reels 3L, 3C, and 3R are provided at the center of the front of the frontward projection portion 10 and below the indication section 2a.

[0049]

The invention is characterized by the fact that the described gaming machine 1 includes display scaling means for making it possible to scale up and down display on the front display means and/or the variable display means.

[0050]

Referring to FIGS. 35 through 39, the display scaling means of the main part of the invention will be discussed in detail while the configuration of the panel display unit 5 will be described. In the description that follows, a flat panel display

is a two-layer liquid crystal panel having liquid crystal panels 501 and 502, and the second liquid crystal panel 502 placed on the side of the rotation reels 3L, 3C, and 3R is formed with a cut-off portion through which the symbols on the rotation reels 3L, 3C, and 3R can be exposed. According to the configuration, the player can see the symbols on the rotation reels 3L, 3C, and 3R through the first liquid crystal panel 501. As a result, even in a case where the two liquid crystal panels 501 and 502 are used to display an image, the symbols on the rotation reels 3L, 3C, and 3R are always displayed comparatively sharply.

[0051]

As shown in FIG. 35, the panel display unit 5 according to the embodiment has a multi-layer structure implemented as a multi-layer panel body 5' including, from the outermost side (front), transparent protective glass 500, the first and second liquid crystal panels 501 and 502 substantially constituting the front display means and an acrylic plate 503 having a predetermined thickness forming a part of a backlight structure. Moreover, a Fresnel lens 504 that can be moved back and forth by a scaling mechanism section A is disposed between the first and second liquid crystal panels 501 and 502. In the embodiment, the scaling mechanism section A and the Fresnel lens 504 substantially make up display scaling means. A transparent acrylic plate may be used in place of the protective glass 500.

[0052]

The multi-layer panel body 5' is attached to a front opening 2b of the cabinet 2 so as to face from the back of the front opening 2b, and the portion exposed from the cabinet 2 forms the display screen 5a. Numerals 2c and 2c' denote upper and lower panel mounting bosses and numeral 2d denotes a panel mounting screw.
[0053]

A cold-cathode tube 2e for functioning as a backlight of the first and second liquid crystal panels 501 and 502 and a cold-cathode tube 2f capable of applying light to the symbols on the rotation reels 3L, 3C, and 3R are placed side by side in the lower part inside the multi-layer panel body 5'. The cold-cathode tube 2e applies light toward an end part of the acrylic plate 503 for allowing light to pass through the acrylic plate 503, thereby illuminating the full face of the acrylic plate 503. In the figure, numeral 2g denotes a shade disposed so as to involve the cold-cathode tubes 2e and 2f for making it possible to efficiently guide light of the cold-cathode tubes 2e and 2f to the acrylic plate 503 and the rotation reels 3L, 3C, and 3R. The shade 2g is bent roughly in a U-lettered shape in cross section and is fastened to the lower panel mounting boss 2c' together with the multi-layer panel body 5'.
[0054]

The display scaling means of the main part of the invention will be discussed in detail. As shown in FIGS. 35 through 38, the Fresnel lens 504 is formed like a rectangular shape of roughly

the same dimensions as the first and the second liquid crystal panels 501, 502, is retained by a lens frame 507, and is disposed so as to be able to move back and forth between a front frame 505 and a rear frame 506.

5 [0055]

Anchor pins 508 are projected in the proximity of the four corners of the lens frame 507 and on the other hand, hold pieces 509 each shaped roughly like a letter L are formed in the proximity of the four corners of the front frame 505 and each horizontal
10 long hole 510 into which the anchor pin 508 is inserted for regulating the move direction of the anchor pin 508 is made in the side part of each hold piece 509 and further tab pieces 511 that can be superposed inside of the hold pieces 509 are provided in the proximity of the four corners of the rear frame 506. Each
15 tab piece 511 is formed with an inclined long hole 512 into which the anchor pin 508 is inserted for functioning as a cam for relatively moving the anchor pin 508 along a slope.

[0056]

A long hole 513 is made in an upper frame part 506a of the
20 rear frame 506 and a motor shaft M1 of a motor M substantially implementing the scaling mechanism section A is inserted into the long hole 513. Moreover, a cam 514 eccentric with respect to the shaft core and having a peripheral surface touching the upper and lower inner margins of the long hole 513 is attached
25 to the motor shaft M1.

[0057]

Therefore, when the motor M is run, as shown in FIG. 37, the cam 514 moves the rear frame 506 up and down. As a result, the inclined long hole 512 relatively moves the Fresnel lens 504 back and forth through the anchor pin 508. The move direction of the anchor pin 508 is regulated by the horizontal long hole 510 made in the hold piece 509 of the front frame 505 and therefore the Fresnel lens 504 makes a back-and-forth horizontal move.

[0058]

As the Fresnel lens 504 moves back and forth, the distance from the first liquid crystal panel 501 becomes relatively variable and the displayed symbols on the rotation reels 3L, 3C, and 3R of variable display means can be scaled up or down on the display screen 5a as shown in FIGS. 39A and 39B. By positioning the Fresnel lens 504 at the center as the standard position, as the Fresnel lens 504 is moved forward, the displayed symbols can be scaled up; as the Fresnel lens 504 is moved backward, the displayed symbols can be scaled down.

[0059]

In the embodiment, the Fresnel lens 504 is disposed behind the first liquid crystal panel 501. However, as the Fresnel lens 504 is disposed in front of the first liquid crystal panel 501, it is made possible to scale up or down an image displayed by the first liquid crystal panel 501.

[0060]

FIG. 40 shows a scaling mechanism section A according to another embodiment of the invention. A panel display unit 5 has a multi-layer structure including a first liquid crystal panel 501, a front frame 505, a Fresnel lens 504, a second liquid crystal panel 502, an acrylic plate 503, and a rear frame 506.

[0061]

In the embodiment, as shown in the figure, four bolt shafts M1' joined at base ends to a motor M' are disposed so as to pierce the rear frame 506 and on the other hand, a screw boss 521 provided on a lens frame 507 of the Fresnel lens 504 is screwed into each bolt shaft M1'. As the bolt shaft M1' rotates, the Fresnel lens 504 can be moved back and forth, and a spring 522 is placed between the lens frame 507 and the front frame 505. Numeral 523 denotes a spring disposing seat.

[0062]

According to the configuration, as the motor M' is driven, the distance between the Fresnel lens 504 and the first liquid crystal panel 501 becomes relatively variable and still symbols displayed on rotation reels 3L, 3C, and 3R can be scaled up or down. Also in the embodiment, by positioning the Fresnel lens 504 at the center as the standard position, as the Fresnel lens 504 is moved forward, the displayed symbols can be scaled up; as the Fresnel lens 504 is moved backward, the displayed symbols can be scaled down.

[0063]

A scaling mechanism section A shown in FIG. 41 will be discussed as still another embodiment of the invention. Also in the embodiment, a panel display unit 5 has a multi-layer structure including a first liquid crystal panel 501, a front frame 505, a Fresnel lens 504, a second liquid crystal panel 502, an acrylic plate 503, and a rear frame 506.

[0064]

In the embodiment, as shown in the figure, the front frame 505 and the rear frame 506 are joined by four connecting rods 525, and a lens frame 507 provided with an inch worm motor M" using a piezoelectric element is attached to the connecting rods 525.

[0065]

According to the configuration, as the inch worm motor M" is driven, the Fresnel lens 504 can be moved back and forth together with the lens frame 507.

[0066]

In the embodiments described above, the Fresnel lens 504 is used as one component of the scaling means, but a convex lens can also be used.

[0067]

The convex lens is comparatively thick. Thus, in a case where the convex lens is used, it is preferable to adopt a configuration to produce scaled-up display in a spot-like manner.

[0068]

As shown in FIG. 42, an arm 531 is joined through an inch worm motor M" to a shaft 530 placed between a front frame 505 and a rear frame 506 for rotation, and a spot convex lens 532 is provided at the tip of the arm 531. The shaft 530 is joined at the base end to a motor M' through a gear mechanism 533. In the figure, numeral 534 denotes a bearing of the shaft 530.

[0069]

According to the configuration, the spot convex lens 532 can be moved in parallel with panel display unit 5. The motor M' is drive as required and the spot convex lens 532 is rotated and moved in the area of display screen 5a and further the inch worm motor M" is driven as required, thereby moving the spot convex lens 532 back and forth, making it possible to produce scaled-up display in a spot-like manner under an appropriate magnification.

[0070]

In the example shown in the figure, the spot convex lens 532 is singly used. However, the spot convex lenses 532 can be provided in a one-to-one correspondence with a plurality of shafts 530 provided between the front frame 505 and the rear frame 506 for increasing the number of spots where scaled-up display can be produced.

[0071]

The motors M and M' and the inch worm motor M" described

above are controlled by a control signal from a microcomputer
40 (described later).

[0072]

In the description of the configurations in the embodiments,
5 the first and second liquid crystal panels 501 and 502 are used
as the front display means. However, an EL
(electro-luminescent) panels can also be used in place of the
liquid crystal panels. In any way, to use such electronic
displays, slim and compact display means can be formed and moving
10 image display is made possible, making it possible to produce
extensive information display.

[0073]

Thus, in the embodiment, the panel display unit 5 is
provided with the display scaling means, whereby it is made
15 possible to scale up or down display of the necessary image and
a stronger impact is given to the player; as the image is scaled
up, and sharper display is produced. Therefore, the amusement
of the gaming machine for the player to enjoy an effect image
is still more enhanced, and it is made possible for the player
20 to be satisfied with playing a game without getting tired of the
game.

Further, as described above, by superposing the first and
second liquid crystal panels 501 and 502 on each other and
displaying the same images at the same positions of the first
25 and second liquid crystal panels 501 and 502, the images overlap

and can be displayed more clearly. Further, by displaying a different image on one liquid crystal panel, both images are displayed as they are combined and magical display is made possible. Specifically, while displaying character image and text information and further the pay lines, lamps, and display parts on the first liquid crystal panel 501, a background image can be displayed on the second liquid crystal panel 502. As the image on the other liquid crystal panel 502 (501) is changed with the image on one liquid crystal panel 501 (502) intact, it is made possible to produce extensive video display including magical display.

[0074]

The two liquid crystal panels 501 and 502 are thus superposed on each other for producing image display, whereby clearer display and at times, more extensive display is made possible. As a result, enjoyment in gaming for the player can be increased and it becomes possible to display even information notification impressively.

[0075]

By configuring so as that the video display is not produced in the range of the second liquid crystal panel 502 corresponding to the rotation reels 3L, 3C, and 3R and the symbols on the rotation reels 3L, 3C, and 3R can be seen through the second liquid crystal panel 502, the symbols on the rotation reels 3L, 3C, and 3R can be sufficiently seen through the first liquid crystal panel

501, so that symbol variation on the rotation reels 3L, 3C, and 3R can also be visually recognized at all times.

[0076]

Moreover, the display scaling means makes it possible to
5 give the player a stronger impact with the symbol display.

[0077]

Operation of the player for operating the start lever 6
for rotating the three reels 3L, 3C, and 3R and operating the
three stop buttons 7L, 7C, and 7R for stopping rotation of the
10 reels 3L, 3C, and 3R will be discussed.

[0078]

In the embodiment, the stop operation performed when all
reels 3L, 3C, and 3R rotate is called "first stop operation,"
the stop operation next performed is called "second stop
15 operation," and the stop operation performed following the
second stop operation is called "third stop operation."
Operating the left stop button 7L as the first stop operation
is called "forward push." Operating the center stop button 7C
as the first stop operation is called "center push." Operating
20 the right stop button 7R as the first stop operation is called
"reverse push."

[0079]

Since the gaming machine 1 is provided with the three stop
buttons 7L, 7C, and 7R, there are six different operation orders
25 of the stop buttons. Then, the operation orders are

distinguished from each other as follows: The left stop button 7L is abbreviated to "left," the center stop button 7C to "center," and the right stop button 7R to "right." To indicate the stop order, the abbreviations of the stop buttons 7L, 7C, and 7R are listed from left to right in the stop operation order. For example, when the player operates the left stop button 7L as the first stop operation, the center stop button 7C as the second stop operation, and the right stop button 7R as the third stop operation, the stop order is indicated as "left center right." In the embodiment, the six different stop orders of "left center right," "left right center," "center left right," "center right left," "right left center," and "right center left" are available.

[0080]

FIG. 5 shows symbol rows each made up of 21 symbols represented on each reel 3L, 3C, 3R. The symbols are given code numbers from "00" to "20" and are stored in ROM 32 described later as a data table. The symbol rows each made up of symbols of "blue 7," "red 7," "BAR," "bell," "plum," "Replay," and "cherry" are represented on the reels 3L, 3C, and 3R. The reels 3L, 3C, and 3R are rotated so that the symbol rows move in the arrow direction.

[0081]

A table in FIG. 6 lists the winning combinations and the numbers of payout medals corresponding to the winning symbol combinations in each gaming state.

[0082]

The gaming state is classified into the three states of ordinary gaming state (the mode in which the gaming machine (player) is in the state is also represented as "during general gaming"), ordinary gaming state in BB (the mode in which the gaming machine (player) is in the state is also represented as "during BB operation"), and RB gaming state (the mode in which the gaming machine (player) is in the state is also represented as "during RB operation"). Usually, the mode in which the gaming machine (player) is in the ordinary gaming state is represented as "during general gaming," the mode in which the gaming machine (player) is in the ordinary gaming state in BB is represented as "during BB operation," and the mode in which the gaming machine (player) is in the RB gaming state is represented as "during RB operation."

[0083]

The ordinary gaming state may be further classified depending on whether or not the internal winning of BB or RB is accepted. However, the winning combinations having the possibility of accepting internal winning are similar and therefore the gaming state is classified into the three states in the table.

[0084]

The types of winning combinations having the possibility of accepting internal winning are determined according to a

probability lottery table (described later) and the probability lottery table is provided for each gaming state. That is, the types of prizes having the possibility of accepting internal winning become the same for games in the same gaming state.

5 [0085]

As shown in FIG. 6, when "blue 7-blue 7-blue 7" or "red 7-red 7-red 7" is placed in a row along the activated line in the ordinary gaming state, a winning game of BB is complete and 15 medals are paid out to the player and the gaming state of the next game enters the BB gaming state.

[0086]

The RB gaming state occurs when the symbol combination along the activated line is "BAR-BAR-BAR" in the ordinary gaming state or when the symbol combination along the activated line is "Replay-Replay-Replay" in the ordinary gaming state in BB (JAC IN). At this time, 15 medals are paid out to the player. The RB gaming state is a gaming state in which the player easily gains a prize of paying out 15 medals to the player with completion of the predetermined symbol combination "Replay-Replay-Replay" as the player bets one medal. The maximum number of games that can be played by the player in one RB gaming state (the number of RB games that can be played) is 12. The number of winning games that can be gained in the RB gaming state (the possible number of winning games of RB) is up to eight. That is, the RB gaming state exits if the number of games reaches 12 or if the

number of winning games reaches eight. When the RB gaming state exits, a transition to the ordinary gaming state is made.

[0087]

One BB exits if the player has played 30 games in the
5 ordinary gaming state in BB or if a transition to the RB gaming state is made three times and the third RB exits. When the BB gaming state exits, a transition to the ordinary gaming state is made.

[0088]

10 When the symbol combination along the activated line is "Replay-Replay-Replay" in the ordinary gaming state, a winning game of replay is complete. When a winning game of replay is complete, as many medals as the number of inserted medals are automatically inserted, so that the player can play a game without
15 consuming medals.

[0089]

As symbol combination "bell-bell-bell" is placed in a row along the activated line in the ordinary gaming state or the ordinary gaming state in BB, a winning game of small prize of
20 bell is complete. When the internal winning of small prize of bell is accepted, whether or not the winning game is complete is determined by the table number (described later) and the stop order of the stop buttons 7L, 7C, and 7R by the player. Specifically, the symbol combination "bell-bell-bell" is placed
25 in a row along the activated line and the winning game of small

prize of bell is complete only if the player operates the stop buttons 7L, 7C, and 7R in the stop order of the six stop orders corresponding to the table number. If the player operates the stop buttons 7L, 7C, and 7R in any order other than the stop order
5 corresponding to the table number, the winning game of small prize of bell becomes incomplete.

[0090]

It is possible to realize completion of winning games of "small prize of cherry," "small prize of plum," and the like,
10 in the ordinary gaming state or the ordinary gaming state in BB. The numbers of medals paid out to the player are as shown in the figure.

[0091]

In the ordinary gaming state, "stop operation assistance
15 time period (in which referred to as "AT" in later description)" is provided for notifying the player of the stop order for realizing completion of a winning game when the internal winning of small prize of bell is accepted. When the internal winning of small prize of bell is accepted in the time period, the player
20 can surely realize completion of a winning game.

[0092]

FIG. 7 is a drawing to describe an example of "ceiling indication meter" of indication means for indicating the progress until a relief measure occurs. The scale shown in the
25 figure indicates the difference between the total number of

medals used for playing games and the total number of payout medals. That is, usually, the number of used medals is greater than the number of payout medals during the general gaming and thus the scale of the meter grows until a bonus is won. The scale
5 of the meter starts at "1" when BB exits, and when the scale reaches "8", a relief measure (so-called "ceiling") is activated.

[0093]

In the embodiment, the ceiling indication meter is
10 displayed on the display screen 5a. At this time, the second liquid crystal display 502 is driven and the background of the scale portion is masked, whereby the liquid crystal display can be recognized remarkably clearly. In a case where the Fresnel lens 504 is disposed in front of the first liquid crystal display
15 501, the display scaling means according to the invention can be used to produce scaled-up display.

[0094]

Hereinafter, the images (stop order notification images) displayed on the display screen 5a when the internal winning of
20 small prize of bell is accepted in the assistance time period will be discussed with reference to FIG. 8.

[0095]

Also in this case, the second liquid crystal display 502 is driven and the background of the scale portion is masked,
25 whereby the image for notifying the player of the stop order on

the liquid crystal display can be recognized extremely clearly and can also be scaled up. In FIG. 8, the stop order required for a winning game is "left right center."

[0096]

5 FIG. 8A shows the image displayed at the game start time. The symbol of a bell is displayed in the left symbol display area of the image, indicating that the internal winning of small prize of bell is accepted. Further, a message of "=LEFT= PUSH!" is displayed below the symbol of the bell, notifying the player that
10 the stop operation required for a winning game is to operate the left stop button 7L as the first stop operation.

[0097]

 FIG. 8B shows the image displayed after the player performs the first stop operation. Another symbol of a bell is displayed
15 in the right symbol display area of the image and a message of "=RIGHT= PUSH!" is displayed below the symbol of the bell, notifying the player that the player is to operate the right stop button 7R as the second stop operation.

[0098]

20 FIG. 8C shows the image displayed after the player performs the second stop operation. Another symbol of a bell is displayed in the center symbol display area of the image and a message of "=CENTER= PUSH!" is displayed below the symbol of the bell, notifying the player that the player is to operate the center
25 stop button 7C as the third stop operation. If the player

performs the first stop operation and the second stop operation responsive to the messages displayed on the display screen 5a, "bell-bell-bell" is placed in a row along the activated line and the winning game of small prize of bell is complete after the
5 player performs the third stop operation.

[0099]

In FIGS. 8A through 8C, the player is notified of the stop button to next operate in order as the stop order notification mode. However, the player may be notified of the stop order at
10 a time at the game start time. For example, the stop order can also be displayed as "left right center" on the display screen 5a.

[0100]

FIG. 3 shows the circuit configuration including a main
15 control circuit 81 for controlling the game processing operation of the gaming machine 1, peripherals (actuators) electrically connected to the main control circuit 81, and a sub-control circuit 82 for controlling the panel display unit 5 of liquid crystal display and the speakers 21L and 21R based on a control
20 command transmitted from the main control circuit 81.

[0101]

The main control circuit 81 includes the microcomputer 40 placed on the circuit board as the main component and a random number sampling circuit. The microcomputer 40 includes a CPU
25 41 for performing the control operation in accordance with a

preset program, and ROM 42 and RAM 43, both of which are provided as a storage.

[0102]

Connected to the CPU 41 are a clock pulse generation circuit 44 for generating a reference clock pulse, a frequency divider 45, a random number generator 46 for generating sampled random numbers, and a sampling circuit 47. For sampling random numbers, random number sampling may be executed in the microcomputer 40, namely, the operation program of the CPU 41. In this case, the random number generator 46 and the sampling circuit 47 can be omitted or can also be left for backup of the random number sampling operation.

[0103]

The ROM 42 of the microcomputer 40 stores probability lottery tables used to determine random number sampling performed each time the player operates the start lever 6 (start operation), stop control tables for determining the reel stop state in response to operation of the stop buttons, various control commands to be transmitted to the sub-control circuit 82, and the like. The commands include a demonstration display command, a start command, an all reel stop command, a winning symbol combination (prize) command, and the like. The commands will be discussed later. The sub-control circuit 82 does not input commands and information, to the main control circuit 81 and one-way communications are conducted from the main control

circuit 81 to the sub-control circuit 82.

[0104]

In the circuitry shown in FIG. 3, the actuators whose operation is controlled by a control signal from the microcomputer 40 include a hopper (containing a drive section for paying out medals) 50 as game play value giving means for storing medals and paying out a predetermined number of medals according to an instruction of a hopper drive circuit 51, stepping motors 59L, 59C, and 59R for rotating the reels 3L, 3C, and 3R, and the motor M (M', M'') of the display scaling means.

[0105]

Further, a motor drive circuit 59 for driving and controlling the stepping motors 59L, 59C, and 59R, a hopper drive circuit 51 for driving and controlling the hopper 50, a individual lamp drive circuit 55 for driving and controlling the various lamps, and a individual display unit drive circuit 58 for driving and controlling the various display units are connected to the output section of the CPU 41 through an I/O port 48. Each of these drive circuits receives a control signal such as a drive command output from the CPU 41 and controls the operation of the corresponding actuator.

[0106]

The main input signal generation means for generating an input signal required for generating a control command by the microcomputer 40 include a start switch 6S, the 1-BET switch 11,

the 2-BET switch 12, the MAX-BET switch 13, the deposited medal
adjusting switch 14, an inserted medal sensor 22S, a reel stop
signal circuit 56, a reel position detecting circuit 60, and a
payout completion signal circuit 61. These components are also
5 connected to the CPU 41 through the I/O port 48.

[0107]

The start switch 6S detects the player operating the start
lever 6. The inserted medal sensor 22S detects a medal inserted
to the medal insertion slot 22. The reel stop signal circuit
10 56 generates a stop signal as the player operates each stop button
7L, 7C, 7R. The reel position detecting circuit 60 receives a
pulse signal from a reel rotation sensor and supplies a signal
for detecting the position of each reel 3L, 3C, 3R to the CPU
41. The payout completion signal circuit 61 generates a signal
15 for detecting completion of medal payout when the count of a medal
detection unit 50S (the number of medals paid out from the hopper
50) reaches the specified number of medals.

[0108]

In the circuitry shown in FIG. 3, the random number
20 generator 46 generates random numbers contained in a given
numeric value range and the sampling circuit 47 samples one random
number at the appropriate timing after the player starts the start
lever 6. The symbol combination is determined based on the
random number thus sampled and the probability lottery table
25 stored in the ROM 42. After the symbol combination is determined,

random number sampling is again performed to select a stop control table.

[0109]

After rotation of each of the reels 3L, 3C, and 3R is started,
5 the number of drive pulses supplied to each of the stepping motors 59L, 59C, and 59R and the counts are written into a predetermined area of the RAM 43. A reset pulse is obtained every revolution of the reel 3L, 3C, 3R and the reset pulses are input to the CPU 41 through the reel position detecting circuit 60. The drive
10 pulse counts written in the RAM 43 are cleared to "0" according to the reset pulses thus obtained. Accordingly, the counts corresponding to the rotation positions of the reels 3L, 3C, and 3R within the range of one revolution are stored in the RAM 43.

[0110]

15 A symbol table is stored in the ROM 42 to relate the rotation positions of the reels 3L, 3C, and 3R and the symbols drawn on the outer peripheral surfaces of the reels to each other. In the symbol table, the code numbers given in sequence every given rotation pitch of each reel 3L, 3C, 3R based on the rotation
20 position where the reset pulse is generated and the symbol codes indicating the symbols provided in one-to-one correspondence with the code numbers are related to each other.

[0111]

Further, a winning symbol combination table is stored in
25 the ROM 42. The winning symbol combination table lists the

symbol combinations of winning games, the numbers of payout medals for the winning games, and the winning game determination codes representing the winning games in association with each other. The winning symbol combination table is referenced at
5 the stop control time of the left reel 3L, the center reel 3C, the right reel 3R and when the winning game is confirmed after all reels are stopped.

[0112]

When the internal winning is accepted according to lottery
10 processing based on the random number sampling (probability lottery processing), the CPU 41 sends the stop control signal of the reels 3L, 3C, and 3R to the motor drive circuit 49 based on the operation signal sent from the reel stop signal circuit 56 at the timing at which the player operates the stop buttons
15 7L, 7C, and 7R, and the selected stop control table.

[0113]

In the stop state indicating completion of the winning game of symbol combination, the CPU 41 supplies a payout command signal to the hopper drive circuit 51 for paying out a predetermined
20 number of medals to the player from the hopper 50. At the time, the medal detection unit 50S counts the number of medals paid out from the hopper 50. When the count reaches the specified number of medals, a medal payout completion signal is input to the CPU 41, which then stops driving the hopper 50 through the
25 hopper drive circuit 51 and terminates the medal payout

processing.

[0114]

FIG. 4 is a block diagram to show the configuration of the sub-control circuit 82. The sub-control circuit 82 performs display control of various lamp indications (1-BET lamp 9a, 2-BET lamp 9b, MAX-BET lamp 9c, and WIN lamp 17), various display units (payout display unit 18, deposited-number-of-game-play-medals display unit 19, and number-of-bonus-game-operation-times display unit 20), and other extensive images on the panel display unit 5 and also performs drive control of the second liquid crystal panel 502 and output control of sound from the speakers 21L and 21R based on the control commands from the main control circuit 81. In a case where the shutter is mechanically structured, the sub-control circuit 82 is configured to execute other controls such as a control of a motor as a shutter drive source.

[0115]

The sub-control circuit 82, which is implemented on a separate circuit board from the circuit board implementing the main control circuit 81, is made up of a microcomputer (sub-microcomputer) 83 as the main component, an image control circuit 91 as display control means of the panel display unit 5, a sound source IC 88 for controlling sound output from the speakers 21L and 21R, and a power amplifier 89.

[0116]

The sub-microcomputer 83 includes a sub-CPU 84 for performing the control operation following a control command transmitted from the main control circuit 81, program ROM 85 as storage means, and work RAM 86. The sub-control circuit 82 does
5 not include a clock pulse generation circuit, a frequency divider, a random number generator, or a sampling circuit, but executes random number sampling in an operation program of the sub-CPU 84.

[0117]

10 The sub-microcomputer 83 includes a number-of-notification-times counter and a number-of-AT-times stock counter in a predetermined storage area. The number-of-notification-times counter stores the remaining number of notification times of the push order in the stop
15 operation assistance time period. When the value of the counter is "1" or more, the gaming machine (player) is in the stop operation assistance time period. The number-of-AT-times stock counter stores information concerning the remaining number of times of occurrence of the stop operation assistance time period.

20 [0118]

The program ROM 85 stores a control program executed in the sub-CPU 84. The work RAM 86 is used as temporary storage means for the sub-CPU 84 to execute the control program.

[0119]

25 The image control circuit 91 includes an image control CPU

92, an image control work RAM 93, image control program ROM 94, image ROM 96, video RAM 97, and an image control IC 98. The image control CPU 92 determines the display contents on the panel display unit 5 in accordance with an image control program stored in the image control program ROM 94 based on the parameters set in the sub-microcomputer 83. The image control program ROM 94 stores the image control program involved in display on the panel display unit 5 and various selection tables. The image control work RAM 93 is used as temporary storage means for the image control CPU 92 to execute the image control program. The image control IC 98 forms an image responsive to the display contents determined by the image control CPU 92 and outputs the image to the panel display unit 5. The image ROM 96 stores dot data for forming an image. The video RAM 97 is used as temporary storage means for the image control IC 98 to form an image.

[0120]

Hereinafter, the probability lottery tables will be discussed with reference to FIGS. 9A and 9B.

[0121]

The probability lottery tables are referenced in probability lottery processing. FIG. 9A shows the probability lottery table used during general gaming and FIG. 9B shows the probability lottery table used during general gaming in BB for determining the symbol combination of each game.

[0122]

In each table, the random number range is from "0" to "16383" and one extracted from the numeric values in the range is used to determine the symbol combination.

[0123]

5 For example, if the extracted random number is "2851" during general gaming, the symbol combination of the game becomes "bell." If the extracted random number lies in the range of from "11036" to "16383" during general gaming, the symbol combination of the game becomes "blank."

10 [0124]

Hereinafter, the stop control tables used when the internal winning of small prize of bell is accepted will be discussed with reference to FIGS. 10 to 14.

[0125]

15 A stop control table number section table shown in FIG. 10 is a table for determining the stop control table referenced for performing stop control of the reels 3L, 3C, and 3R if the internal winning of small prize of bell is accepted. That is, if the internal winning of small prize of bell is accepted, any
20 one of the six stop control tables is referenced and stop control is performed based on the stop control table.

[0126]

FIG. 11 shows the relationship between the stop control order of the reels 3L, 3C, and 3R in each table selected in FIG.
25 10 and completion/incompletion of winning game. For example,

when the table number selected according to the stop control table number section table in FIG. 10 is "1", if the stop order is "left center right," the player wins the game of bell. However, if the stop order is not "left center right," the player loses the game of bell. That is, to win the game of bell, the symbol combination needs to be bell and the player needs to stop the reels 3L, 3C, and 3R in the stop order corresponding to the stop control order in the corresponding table number.

[0127]

10 Specific stop control of the reels 3L, 3C, and 3R when the symbol combination is bell will be discussed with reference to FIGS. 12 through 14.

[0128]

15 The stop control table lists the stop operation positions and the stop control positions of the reels 3L, 3C, and 3R. The stop operation position represents the code number of the symbol positioned on the center line 8a (specifically, the symbol whose center is positioned above the center line 8a and is nearest to the position of the center line 8a) when the player operates the stop button 7L, 7C, 7R provided corresponding to the reel 3L, 3C, 3R. The stop control position represents the code number of the symbol stopped and displayed at the position of the center line 8a when each of the reels stopped by the player actually stops. In the embodiment, the number of slide frames is four at the maximum. For example, when "cherry" with code number 12

20

25

arrives at the position of the center line 8a while the right reel 3R is rotating, if the player operates the stop button 7R, stop control of the right reel 3R can be performed so as to stop and display "blue 7" with code number 08 at the position of the center line 8a.

[0129]

FIG. 12 shows a winning stop control table. The winning stop control table is used when stop control of the reels is performed so that "bell-bell-bell" is placed in a row along the activated line and the winning game of small prize of bell is complete after the internal winning of small prize of bell is accepted.

[0130]

In FIG. 12, the stop control position of the left reel 3L is any of code number "03", "08", "11", "15", or "19" and the symbols corresponding to these code numbers are bell.

[0131]

In FIG. 12, the stop control position of the center reel 3C is any of code number "03", "07", "11", "15", or "19" and the symbols corresponding to these code numbers are bell.

[0132]

In FIG. 12, the stop control position of the right reel 3R is any of code number "01", "05", "10", "14", or "18" and the symbols corresponding to these code numbers are bell.

[0133]

If the winning stop control table shown in FIG. 12 is thus used for stop control of the reels 3L, 3C, and 3R, "bell-bell-bell" is stopped and displayed at the position of the center line 8a, namely, at the centers of the display windows 4L, 4C, and 4R, and the winning game is complete.

[0134]

FIG. 13 shows a "forward push, center push losing stop control table". This table is used when stop control of the reels is performed so that "bell-bell-bell" is not placed in a row along the activated line (the winning game of small prize of bell is incomplete) after the internal winning of small prize of bell is accepted. The stop control positions corresponding to the stop operation positions of the left reel 3L and the center reel 3C are the same as those shown in FIG. 11.

[0135]

In FIG. 13, the stop control position of the right reel 3R is any of code number "02", "06", "11", "15", or "19" and the symbols corresponding to these code numbers are "Replay."

[0136]

If the forward push, center push losing stop control table shown in FIG. 13 is thus used for stop control of the reels 3L, 3C, and 3R, "bell-bell" is stopped and displayed at the centers of the display windows 4L and 4C, and "Replay" is stopped and displayed at the center of the display window 4R and thus the winning game of small prize of bell becomes incomplete.

[0137]

FIG. 14 shows a reverse push losing stop control table. This table is used when stop control of the reels is performed so that "bell-bell-bell" is not placed in a row along the activated line (the winning game of small prize of bell is incomplete) after the internal winning of small prize of bell is accepted. The stop control positions corresponding to the stop operation positions of the center reel 3C and the right reel 3R are the same as those shown in FIG. 11.

10 [0138]

In FIG. 14, the stop control position of the left reel 3L is any of code number "04", "09", "12", "17", or "20" and the symbols corresponding to these code numbers are "Replay."

[0139]

15 If the reverse push losing stop control table shown in FIG. 14 is thus used for stop control of the reels 3L, 3C, and 3R, "Replay" is stopped and displayed at the center of the left display window 4L and "bell-bell" is stopped and displayed at the centers of the display windows 4C and 4R, and thus the winning
20 game of small prize of bell becomes incomplete.

[0140]

In the embodiment, the six different stop orders are adopted and only when the player performs stop operation in any one of the six stop orders, "bell-bell-bell" is placed in a row
25 along the activated line and the winning game is complete. Thus,

whether or not "bell-bell-bell" is placed in a row along the activated line may be determined when the player performs the second stop operation. This case applies, for example, if the table number "1" (the corresponding stop order is "left center right") is adopted and the player operates the left reel 3L as the first stop operation. That is, if the player performs the first stop operation, whether or not "bell-bell-bell" is placed in a row along the activated line may be not necessarily clear. In the embodiment, "bell-bell-bell" is always placed in a row along the center line 8a. Then, in the embodiment, the two losing stop control tables are used as shown in FIGS. 12 and 13. If the table number is 2, 3, 4, 5, or 6, as the player performs stop operation in the stop order of "left right center," "center left right," "center right left," "right left center," or "right center left," the winning game of small prize of bell becomes complete.

[0141]

A ceiling-number-of-AT-times selection table and an AT activation lottery table will be discussed with reference to FIGS. 15A and 15B. The random number range is "0" to "0495" for the ceiling-number-of-AT-times selection table and "0" to "255" for the AT activation lottery table.

[0142]

One AT corresponds to 10 games. The ceiling-number-of-AT-times selection table is used to determine

how many times the AT is to be generated. The number of AT times selected in one AT lottery is any of one, two, five, 10, or 30.

[0143]

In the table, the lottery value is subtracted from the
5 extracted random number in order from the top row to the bottom
row and the value in the row where the result becomes minus is
adopted as the number of AT times. For example, if the extracted
random number is "4021", "2356" of the lottery value in the first
row is subtracted from "4021" and a value "1665" is obtained.
10 Since this value is plus, further "1512" of the lottery value
in the second row is subtracted from "1665" and a value "153"
is obtained. Since this value is plus, further "196" of the
lottery value in the third row is subtracted from "153" and a
value "-43" is obtained. Here, the minus value results and thus
15 the number of AT times becomes five.

[0144]

The AT activation lottery table is used to determine
whether or not one AT is to be activated. The random number range
is "0" to "255". Here, if activation is selected, the number
20 of stop button push order notification times is set to 10 (games).
That is, here the AT is started. The lottery method is similar
to that with the ceiling-number-of-AT-times selection table
described above.

[0145]

25 A ceiling activation selection table and a ceiling meter

shift selection table will be discussed with reference to FIGS. 16A and 16B. The random number range is "0" to "255" for the ceiling activation selection table. The numeric values listed in the ceiling meter shift selection table are the numeric values each indicating the difference between the total number of medals used for playing games and the total number of payout medals, which will be hereinafter referred to as the medal number difference value, used as the reference for determining whether or not the scale of the meter is to be shifted.

10 [0146]

The ceiling activation selection table is used after BB exits for determining the medal number difference value to activate the next ceiling. When "1200" in the table is selected, when the difference between the total number of medals used for playing games and the total number of payout medals reaches "1200", the ceiling AT of a relief measure is activated. Likewise, when "1500" is selected, the difference reaches "1500", the ceiling AT is activated; and when "1800" is selected, the difference reaches "1800", the ceiling AT is activated.

20 [0147]

Next, the ceiling meter shift selection table is used to determine indication of the ceiling meter level based on the selected medal number difference value to activate the ceiling AT and the current medal number difference value. As a specific indication method, the level in the row of the value closest to

the current medal number difference value and not exceeding it among the numeric values under the column of the current selected medal number difference value to activate the ceiling AT is indicated. For example, if the current selected medal number difference value to activate the ceiling AT is "1200" and the
5 current medal number difference value is "821", level 5 is indicated. Here, if the medal number difference value reaches "900", the meter indication shifts to level 6.

[0148]

10 The commands will be discussed with reference to FIGS. 17 and 18. The commands are transmitted only in one way from the main control circuit 81 to the sub-control circuit 82. The main control circuit 81 and the sub-control circuit 82 are connected by 16 data signal lines and one signal line. Each command is
15 made up of two, four, or six bytes; to transmit the command over the 16 data signal lines, the command is transmitted in one, two, or three sequences as one command.

[0149]

Among the commands, a start command will be discussed. The
20 type of symbol combination of the game and the gaming state and the stop control table number selected if the symbol combination is bell are transmitted as one command. Other commands are similar to the start command. FIGS. 17 and 18 show the commands by way of example; in addition to the commands, information
25 required for the sub-control circuit 82 to perform control is

transmitted.

[0150]

Next, the control operation of the CPU 41 of the main control circuit 81 will be discussed with reference to main flowcharts
5 of FIGS. 19 through 25.

[0151]

To begin with, power is turned on (step (ST) 1) and the CPU 41 initializes all output ports (ST2). Subsequently, whether or not a power down error occurs is determined (ST3).
10 If a power down error occurs, the process proceeds to ST2; if a power down error does not occur, the process proceeds to ST4. At ST4, the CPU 41 is initialized. Subsequently, whether or not a RAM error occurs is determined (ST5). If a RAM error occurs, the RAM error is indicated. Specifically, "rr" is indicated on
15 medal payout indicator made up of seven-segment LEDs. The RAM error is an error in which RAM 78 cannot normally be written or read.

[0152]

If a RAM error does not occur, whether or not a setting
20 key switch is on is determined (ST6). If the setting key switch is on, six-stage setting processing is performed and then the process goes to ST12. If the setting key switch is off, the process goes to ST8. At ST8, whether or not battery backup is normal is determined. If battery backup is normal, the return
25 address and the unused area of the RAM 78 are cleared and then

all registers are restored to the output state at the power shutdown time (ST9) and an input port is updated to the state at the power restoration time and the state returns to the state at the power shutdown time (ST10).

5 [0153]

If battery backup is not normal, the setup values are initialized (ST11). Subsequently, all areas of the RAM 78 are cleared (ST12). ST12 and the later steps are also executed after the six-stage setting processing is performed if it is determined
10 at ST6 that the setting key switch is on. Subsequently, the setup values are stored (ST13) and communication data is initialized (ST14). Then, the CPU 41 clears the RAM 78 at the game over time (ST15). Subsequently, whether or not a request for automatic medal inserted exists is determined (ST16). The case where a
15 request for automatic medal inserted exists is when a winning game of replay is complete in the preceding game play. If a request for automatic medal inserted exists, as many medals as requested are automatically inserted (ST17) and a game play medal insertion command is transmitted to the sub-control circuit 82
20 and then the process proceeds to ST20. If a request for automatic medal inserted does not exist, medal inserted from the medal insertion slot and the BET button is accepted (ST19) and the process proceeds to ST20.

[0154]

25 At ST20, whether or not the start lever is on is determined.

If the start lever is on, whether or not a time of 4.1 seconds has elapsed since the preceding game play is determined (ST21). Specifically, whether or not the time has elapsed is determined based on the value of a one-play monitor timer set at ST24
5 described later. If the time of 4.1 seconds has not elapsed since the preceding game play, the game start wait time is consumed (ST22) and the process proceeds to ST23.

[0155]

At ST23, the CPU 41 extracts a random number for lottery.
10 Specifically, the CPU 41 extracts one from the random numbers ranging from "0" to "16383". Subsequently, the one-play monitor timer is set (ST24) and gaming state monitor processing for determining the current gaming state is performed (ST25). Next, probability lottery processing is performed (ST26). In the
15 probability lottery processing, the symbol combination is determined based on the random number extracted at ST23 and the probability lottery table corresponding to the current gaming state determined in the gaming state monitor processing. In the probability lottery table, the random numbers corresponding to
20 internal winning are predetermined for each winning combination as described above.

[0156]

Next, the CPU 41 performs winning indicator lamp lighting lottery processing (ST27) and performs stop control table
25 selection processing (described later in detail) (ST28). As

transmission processing at the game play start time, a start command is transmitted to the sub-control circuit 82 (ST29) for initializing to start reel rotation (ST30).

[0157]

5 Next, the CPU 41 determines whether or not the stop button is on (ST31). If the stop button is ON, the process proceeds to ST33; if the stop button is OFF, the process proceeds to ST32. At ST32, whether or not the value of an automatic stop timer is 0 is determined. If the value of the automatic stop timer is
10 0, the process proceeds to ST33; if the value of the automatic stop timer is not 0, the process proceeds to ST31. At ST33, the number of slide frames is determined from winning request (symbol combination), the symbol position (rotation position of reel at the stop operation time), and the selected stop control table.

15 [0158]

The reel is rotated for as many frames as the number of slide frames determined at ST33 (ST34). Next, a request for stopping the reel is set (ST35) and a reel stop command is transmitted the sub-control circuit 82 (ST36).

20 [0159]

Whether all reels stop is determined (ST37). If all reels stop, the process proceeds to ST38; if not all reels stop, the process proceeds to ST31. Effect processing at the game over time is performed (ST38) and then winning game retrieval is
25 executed (ST39). Subsequently, whether or not a winning game

flag is normal is determined (ST40). If the winning game flag is normal, the process proceeds to ST42; if the winning game flag is not normal, an illegal error is indicated (ST41).

[0160]

5 Next, whether or not the number of medals paid out for the winning game is 0 is determined (ST42). Specifically, whether or not the winning game of prize (except replay) is complete is determined. If the winning game is complete, medals are deposited or paid out in response to the state (during BB
10 operation or during RB operation) and the winning combination (ST43).

[0161]

 Next, the CPU 41 determines whether or not the state is during BB or RB operation (ST44). If the state is during BB or
15 RB operation, the process proceeds to ST45; if the state is not during BB or RB operation, the process proceeds to ST48. At ST45, the number of BB, RB games is checked. Whether or not BB exits is determined (ST46). When BB exits, a BB exit command is transmitted and then the RAM at the BB exit time is cleared (ST47)
20 and the process proceeds to ST 49. If it is not determined at ST46 that BB exits, the process proceeds to ST49. If it is not determined at ST44 that the state is during BB or RB operation, BB, RB winning game check processing is performed (ST48) and the process proceeds to ST49. At ST49, bonus 7SEG control processing
25 is performed and the process proceeds to ST15.

[0162]

Next, the stop control table selection processing performed at ST28 will be discussed. To begin with, the CPU 41 determines whether or not the symbol combination of the game is bell is determined (ST50). If the symbol combination of the game is bell, the process proceeds to ST51; if the symbol combination of the game is not bell, the process proceeds to ST52. At ST51, a random number is extracted and one stop control table is selected based on the stop control table selection table. At ST52, the stop control table predetermined for each symbol combination is selected.

[0163]

Hereinafter, control processing of the sub-control circuit 82 will be discussed with reference to FIGS. 26 through 34.

[0164]

To begin with, an outline of the control processing of the sub-control circuit 82 will be discussed with reference to FIGS. 26 and 27. First, the sub-CPU 84 determines whether or not a game play medal insertion command is received, namely, whether or not game play medals used for playing one game have been inserted (ST101). The game play medal insertion command contains information indicating the number of inserted game play medals. When the game play medal insertion command is received, the process proceeds to ST102. At ST102, the number of inserted medals changed during the start lever acceptance state is updated.

Then, the process returns to ST101.

[0165]

If a game play medal insertion command is not received, whether or not a start command is received, namely, whether or not one game is started is determined (ST103). If a start command is received, the number of bet medals on the game (the number of used game medium) is determined (ST104) and then the total number of bet medals is updated (ST105). Next, processing concerning ceiling meter indication is performed (ST106), whether or not ceiling AT is to be activated is checked (ST107), and AT execution processing, namely, processing concerning push order notification is performed (ST108). Then, the process returns to ST101.

[0166]

If it is not determined at ST103 that a start command is received, whether or not a winning game command is received, namely, whether or not a predetermined winning combination is won is determined (ST109). If a winning game command is received, the total number of payout medals is updated (ST110). Then, the process returns to ST101.

[0167]

If it is not determined at ST109 that a winning game command is received, whether or not a BB exit command is received, namely, whether or not BB exits in the game is determined (ST111). If a BB exit command is received, the total number of bet medals

and the total number of payout medals stored in the RAM are cleared and the scale of the ceiling meter is set to "1" for indication (ST112). As the total number of bet medals and the total number of payout medals are cleared, determination as to whether or not the relief measure is to be activated can be started after BB.
[0168]

Ceiling activation value selection processing is performed for determining the next ceiling activation value (ST113). If it is not determined at ST111 that a BB exit command is received, ST112 and ST113 are skipped and the process returns to ST101.
[0169]

FIGS. 28A through 28D describe the number-of-inserted-medals update processing at ST102, the number-of-bet-medals determination processing at ST104, the total-number-of-bet-medals update processing at ST105, and the total-number-of-payout-medals update processing at ST110.
[0170]

The number-of-inserted-medals update processing shown in FIG. 28A is to once store the transmitted number of inserted medals in a predetermined area of the RAM (ST110). The number-of-bet-medals determination processing shown in FIG. 28B is to determine that the number of inserted medals stored in the RAM at ST110 is the number of bet medals on the game and store the number of medals in the RAM (ST111). The reason why the number of inserted medals is monitored in the number-of-inserted-medals

update processing and the number of bet medals is determined after the start command is received is that if the player operates the 1-BET switch 11, the 2-BET switch 12, or the MAX-BET switch 13 and inserts game play medals, the number of inserted medals can
5 be changed before the player operates the start lever and therefore the number of bet medals must be determined when the player operates the start lever.

[0171]

In the total-number-of-bet-medals update processing shown
10 in FIG. 28C, the number of bet medals on the game determined at ST111 is added to the total number of bet medals (the number of used game medium). For example, if the number of bet medals on the game is three, three is added. This processing is performed for each game, whereby it is made possible to calculate the total
15 number of bet medals. In the total-number-of-payout-medals update processing shown in FIG. 28D, when medals are paid out, the number of payout medals is added to the total number of payout medals. For example, if the winning combination of plum is won, six is added; if the player does not win any games, "0" is added.
20 This processing is performed for each game, whereby it is made possible to calculate the total number of payout medals.

[0172]

FIG. 29 shows the ceiling meter indication processing at ST106. In the processing, first the indication level of the
25 ceiling meter is determined based on the number of medals at each

level corresponding to the setup ceiling number of medals based on the ceiling meter shift selection table and the current medal number difference value (ST118). Whether or not the current indicated level is to be shifted is determined (ST119). If the
5 level is to be shifted, the current level is incremented by one for indicating the meter level (ST120); if the level is not to be shifted, the process is returned to the main routine.

[0173]

FIG. 30 shows the ceiling AT activation check processing
10 at ST107. The ceiling AT refers to the stop operation assistance time period activated as a relief measure. The representation of "ceiling" is used because it is activated when a predetermined value (setup ceiling value) is reached. The predetermined value is determined in the ceiling activation value selection
15 processing performed after BB exits; and is any one of "1200", "1500", or "1800".

[0174]

In the ceiling AT activation check processing, first whether or not the internal winning of BB is accepted in the game
20 or whether or not the current gaming state is during BB internal winning is determined (ST121). If the internal winning of BB is accepted in the game or the current gaming state is during BB internal winning, the total number of bet medals and the total number of payout medals stored in the RAM are cleared (ST122)
25 and the process is returned to the main routine. In doing so,

once the internal winning of BB is accepted, unless the BB exits, the relief measure is not activated.

[0175]

If the internal winning of BB is not accepted in the game
5 and the current gaming state is not during BB internal winning, whether or not the current medal number difference value reaches the setup ceiling value is determined (ST123). If the current medal number difference value is equal to or greater than the setup ceiling value, the ceiling-number-of-AT-times selection
10 table is set (ST124), random number lottery is executed based on the table (ST125), and the value selected by the lottery is added to the number-of-AT-times stock counter (ST126). If it is determined at ST123 that the current medal number difference value is less than the setup ceiling value, the process is
15 returned to the main routine.

[0176]

FIG. 31 shows the ceiling activation value selection processing at ST113. This processing is performed after BB exits for determining the number of games activated by the next relief
20 measure, namely, the ceiling value. In the processing, a random number lottery is held based on the ceiling activation value selection table, any value of 1200, 1500, or 1800 is selected, and the selected value is held in the RAM until the next BB exits and a new ceiling value is selected. The ceiling value is thus
25 selected and determined, whereby the ceiling value is not fixed,

making the player hard to determine when the next relieve measure will be activated.

[0177]

FIG. 32 shows the AT execution processing at ST108.

5 [0178]

First, whether or not the value of the number-of-notification-times counter is 1 or more is determined (ST201). If the number-of-notification-times counter is 1 or more, push order notification processing is performed (ST204).

10 If the number-of-notification-times counter is less than 1, whether or not the value of the number-of-AT-times stock counter is 1 or more is determined (ST202). If the value of the number-of-AT-times stock counter is less than 1, the process is returned to the main routine; if the value of the
15 number-of-AT-times stock counter is 1 or more, AT activation lottery processing is performed (ST203).

[0179]

If the number-of-notification-times counter is 1 or more, it means that the gaming machine (player) is in the AT. If the
20 value of the number-of-AT-times stock counter is 1 or more, it means that the AT is concealed.

[0180]

FIG. 33 shows the push order notification processing at ST204. First, the number-of-push-order-notification-times
25 counter is decremented by one (ST205). Whether or not the symbol

combination of the game is bell is determined (ST206). If the symbol combination of the game is not bell, the process is returned to the main routine. If the symbol combination of the game is bell, the player is notified of information to complete
5 the winning game of bell based on the selected stop order control table number (ST207) and the process is returned to the main routine.

[0181]

FIG. 34 shows the AT activation lottery processing at
10 ST203.

[0182]

First, a random number lottery is held based on the AT activation lottery table (ST208). Whether or not AT activation is accepted is determined as the result of the lottery (ST209).
15 If AT activation is not accepted, the process is returned to the main routine. If AT activation is accepted, a value of 10 is added to the number-of-push-order-notification-times counter (ST210), the value of the number-of-AT-times stock counter is decremented by one (ST211), and the process is returned to the
20 main routine.

[0183]

In the processing described above, to produce various displays (indications) on the panel display unit 5, the first and second liquid crystal panels 501 and 502 are driven and
25 controlled separately, whereby while the visibility of the

portions of the rotation reels 3L, 3C, and 3R is maintained good, it is made possible to display information displayed on the display screen 5a more clearly and more extensively than in the related techniques and it is also made possible to scale up display, by the display scaling means as required, whereby a stronger impact is given to the player and the display can be vividly retained in the players memory.

[0184]

The invention has been described with reference to the embodiments, but is not limited to the specific embodiments. In the embodiment, the total number of payout medals and the total number of bet medals are cleared when the internal winning of BB is accepted, during the internal winning of BB, or when the winning combination of BB is won. However, the timing can be set arbitrarily and the step of clearing the total number of payout medals and the total number of bet medals may be skipped.

[0185]

In the embodiment, the stop operation assistance time period is activated each time the medal number difference value reaches the predetermined number of medals. However, the relief measure may be activated a predetermined number of times (for example, only once) after BB exits.

[0186]

In the AT, the player is notified of the push order for the game whose winning is complete or incomplete depending on

the push order. In addition, AT in which the player is notified of symbol combination may be adopted. Further, as the advantageous situation for the user, BB and RB, as well as AT can also be adopted if it enables the player to gain a large number of game medium.

[0187]

Further, the invention can be applied not only to pinball slot machines as in the embodiments, but also to other types of gaming machines such as a pinball machine.

10 [0188]

As described above, according to the invention, the gaming machine has variable display means for producing various display of a plurality of symbols, front display means being provided in front of the variable display means for enabling a player to see symbols on the variable display means through the front display means, the front display means being capable of displaying various images, symbol combination determination means for determining a symbol combination, a plurality of operation means for the player to stop the various display of the variable display means, stop control means for performing stop control of the various display operation of the variable display means based on the determination result of the symbol combination determination means and operating the operation means, and game medium payout means for paying out game medium to the player if the stop state of the variable display means

stopped by the stop control means is a predetermined stop state,
and also includes display scaling means for making it possible
to scale up or down display on the front display means and/or
the variable display means. Thus, a stronger impact is given
5 to the player and as the image is scaled up, sharper display is
produced, so that amusement of the gaming machine for the player
to enjoy an effect image is still more enhanced and it is made
possible for the player to be satisfied with playing a game
without getting tired of the game.

10 [0189]

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

[0190]

In the above description, it is described of the pinball
20 slot machines that have a plurality of stop buttons. However,
the present invention can be applied to other gaming apparatus
that is configured without a stop button and is featured so that
the reels start spinning by activation of a start lever or a start
button and stop automatically after a prescribed time elapsed.

25

ENGLISH TRANSLATION OF TEXT IN FIGURES

FIG. 3

5 PANEL DISPLAY UNIT
6S START SWITCH
9a 1-BET LAMP
9b 2-BET LAMP
9c MAX-BET LAMP
11 1-BET SWITCH
12 2-BET SWITCH
13 MAX-BET SWITCH
14 DEPOSITED MEDAL ADJUSTING SWITCH
17 WIN LAMP
18 NUMBER-OF-PAYOUT-MEDALS DISPLAY UNIT
19 DEPOSITED-NUMBER-OF-GAME-MEDALS DISPLAY UNIT
20 NUMBER-OF-BONUS-GAME-OPERATION-TIMES DISPLAY UNIT
21L, 21R SPEAKER
22S INSERTED MEDAL SENSOR
24 GAME PLAY MEDAL INSERT LAMP
25 GAME PLAY START INDICATOR LAMP
26 CROSS BUTTON
27 o BUTTON
28 x BUTTON
41 MAIN CPU
42 PROGRAM ROM
43 CONTROL RAM
44 CLOCK PULSE GENERATOR
45 FREQUENCY DIVIDER
46 RANDOM NUMBER GENERATOR
47 SAMPLING CIRCUIT
48 I/O PORT
49 MOTOR DRIVE CIRCUIT
50 HOPPER
50S MEDAL DETECTION UNIT
51 HOPPER DRIVE CIRCUIT
55 INDIVIDUAL LAMP DRIVE CIRCUIT
56 REEL STOP SIGNAL CIRCUIT
58 INDIVIDUAL DISPLAY UNIT DRIVE CIRCUIT
60 REEL POSITION DETECTING CIRCUIT
61 PAYOUT COMPLETION SIGNAL CIRCUIT
62 RESET SWITCH
63 SETTING KEY SWITCH
82 SUB-CONTROL CIRCUIT
M (M', M'') MOTOR

FIG. 4

5 PANEL DISPLAY UNIT

21L, 21R LOUDSPEAKER
 26 CROSS BUTTON
 27 o BUTTON
 28 x BUTTON
 81 MAIN CONTROL CIRCUIT
 84 SUB-CPU
 85 PROGRAM ROM
 86 WORK RAM
 87 IN PORT
 88 SOUND SOURCE IC
 89 POWER AMPLIFIER
 92 IMAGE CONTROL CPU
 93 IMAGE CONTROL WORK RAM
 94 IMAGE CONTROL PROGRAM ROM
 95 IN PORT
 96 IMAGE ROM
 97 VIDEO RAM
 98 IMAGE CONTROL IC

FIG. 5

	LEFT REEL		CENTER REEL		RIGHT REEL
00	RED 7	00	RED 7	00	RED 7
01	CHERRY 01		PLUM	01	BELL
02	BLUE 7 02		REPLAY 02		REPLAY
03	BELL	03	BELL	03	BAR
04	REPLAY 04		CHERRY 04		PLUM
05	RED 7	05	REPLAY 05	05	BELL
06	CHERRY 06		CHERRY 06		REPLAY
07	BLUE 7 07		BELL	07	CHERRY
08	BELL	08	BAR	08	BLUE 7
09	REPLAY 09		CHERRY 09		CHERRY
10	PLUM	10	REPLAY 10		BELL
11	BELL	11	BELL	11	REPLAY
12	REPLAY 12		BLUE 7 12		CHERRY
13	BAR	13	REPLAY 13		PLUM
14	RED 7	14	CHERRY 14		BELL
15	BELL	15	BELL	15	REPLAY
16	PLUM	16	BAR	16	CHERRY
17	REPLAY 17		PLUM	17	BLUE 7
18	PLUM	18	REPLAY 18		BELL
19	BELL	19	BELL	19	REPLAY
20	REPLAY 20		CHERRY 20		CHERRY

FIG. 6

PRIZES AND NUMBERS OF PAID-OUT MEDALS CORRESPONDING TO WINNING SYMBOL

COMBINATIONS IN EACH GAMING STATE

SYMBOL COMBINATION	GENERAL GAMING STATE	GENERAL GAMING STATE IN BB
RB GAMING STATE		
RED 7-RED 7-RED 7	BB, 15 MEDALS	
BLUE 7-BLUE 7-BLUE 7	BB, 15 MEDALS	
BAR-BAR-BAR	RB, 15 MEDALS	
BELL-BELL-BELL	MINOR PRIZE OF BELL, 15 MEDALS	
PLUM-PLUM-PLUM	MINOR PRIZE OF PLUM, SIX MEDALS	
REPLAY-REPLAY-REPLAY	REPLAY, 0 MEDAL	RB (JAC IN), 15 MEDALS
CHERRY-ANY-ANY	MINOR PRIZE OF CHERRY, TWO OR FOUR MEDALS	
	MINOR PRIZE OF CHERRY, TWO OR FOUR MEDALS	

FIG. 7

CEILING INDICATION METER

FIG. 8

- (1) IMAGE FOR NOTIFYING PLAYER THAT PLAYER IS TO OPERATE LEFT STOP BUTTON
- (2) IMAGE FOR NOTIFYING PLAYER THAT PLAYER IS TO OPERATE RIGHT STOP BUTTON
- (3) IMAGE FOR NOTIFYING PLAYER THAT PLAYER IS TO OPERATE CENTER STOP BUTTON

FIG. 9

(ODDS LOTTERY TABLE USED IN GENERAL GAMING STATE)

(A) ODDS LOTTERY TABLE USED IN GENERAL GAMING STATE

(RANDOM NUMBER EXTRACTION RANGE: 0-16383)

WINNING GAME PRIZE ACCEPTED RANDOM NUMBER RANGE INTERNAL WINNING ODDS
 BET COUNT = 3

BB

RB

REPLAY

MINOR PRIZE OF BELL

MINOR PRIZE OF PLUM

MINOR PRIZE OF CHERRY

(ODDS LOTTERY TABLE USED IN GENERAL GAMING STATE IN BB)

(B) ODDS LOTTERY TABLE USED IN GENERAL GAMING STATE IN BB

(RANDOM NUMBER EXTRACTION RANGE: 0-16383)

WINNING GAME PRIZE ACCEPTED RANDOM NUMBER RANGE INTERNAL WINNING ODDS
 BET COUNT = 3

BB

RB

REPLAY

(RB IN BB)

MINOR PRIZE OF BELL

MINOR PRIZE OF PLUM

MINOR PRIZE OF CHERRY

FIG. 10

STOP CONTROL TABLE NUMBER SELECTION TABLE

(RANDOM NUMBER EXTRACTION RANGE: 0-255)

TABLE NO. ACCEPTED RANDOM NUMBER RANGE SELECTION ODDS

BET COUNT = 3

FIG. 11

RELATIONSHIP AMONG TABLE NUMBERS, STOP ORDERS, AND COMPLETION/INCOMPLETION
OF WINNING GAME OF MINOR PRIZE OF BELL

	TABLE NUMBER					
	1	2	3	4	5	6
LEFT CENTER RIGHT		COMPLETE	INCOMPLETE			
LEFT RIGHT CENTER						
CENTER LEFT RIGHT						
STOP ORDER						
CENTER RIGHT LEFT						
RIGHT LEFT CENTER						
RIGHT CENTER LEFT						

FIG. 12

WINNING STOP CONTROL TABLE (INTERNAL WINNING COMBINATION: MINOR PRIZE OF
BELL)

LEFT REEL	CENTER REEL	RIGHT REEL
STOP OPERATION POSITION	STOP CONTROL POSITION	

FIG. 13

FORWARD PUSH, CENTER PUSH LOSING STOP CONTROL TABLE (INTERNAL WINNING
COMBINATION: MINOR PRIZE OF BELL)

LEFT REEL	CENTER REEL	RIGHT REEL
STOP OPERATION POSITION	STOP CONTROL POSITION	

FIG. 14

REVERSE PUSH LOSING STOP CONTROL TABLE (INTERNAL WINNING COMBINATION: MINOR
PRIZE OF BELL)

LEFT REEL	CENTER REEL	RIGHT REEL
STOP OPERATION POSITION	STOP CONTROL POSITION	

FIG. 15

(A) CEILING-NUMBER-OF-AT-TIMES SELECTION TABLE
 NUMBER OF TIMES LOTTERY VALUE

(B) AT ACTIVATION LOTTERY TABLE LOTTERY VALUE
 ACTIVATION
 CONCEALMENT

FIG. 16

(A) CEILING ACTIVATION VALUE SELECTION TABLE
 NUMBER OF MEDALS LOTTERY VALUE

(B) CEILING METER SHIFT SELECTION TABLE
 1200 MEDALS 1500 MEDALS 1800 MEDALS
 CEILING METER LEVEL
 LEVEL 1
 LEVEL 2
 LEVEL 3
 LEVEL 4
 LEVEL 5
 LEVEL 6
 LEVEL 7
 LEVEL 8

FIG. 17

START COMMAND
 1 INTERNAL WINNING COMBINATION
 2 BB
 RB
 REPLAY
 BELL
 PLUM
 CHERRY
 BLANK
 -
 3 GAMING STATE
 4 DURING GENERAL GAME
 DURING INTERNAL WINNING OF BB
 DURING INTERNAL WINNING OF RB
 DURING BB OPERATION
 DURING RB OPERATION
 -
 -

5 STOP CONTROL TABLE
 6 TABLE NO. 1
 TABLE NO. 2
 TABLE NO. 3
 TABLE NO. 4
 TABLE NO. 5
 TABLE NO. 6

BB EXIT COMMAND

1 OPERATION AT BB EXIT TIME
 2 GAME REPLAY ENABLE
 ADJUSTMENT OPERATION
 PLAY OUT OPERATION

FIG. 18

WINNING GAME COMMAND

1 WINNING GAME
 2 BB

RB

REPLAY

BELL

PLUM

CHERRY

BLANK

3 GAMING STATE
 4 DURING GENERAL GAME
 DURING INTERNAL WINNING OF BB
 DURING INTERNAL WINNING OF RB
 DURING BB OPERATION
 DURING RB OPERATION

5 WINNING GAME LINE
 6 CENTER STAGE
 UPPER STAGE
 LOWER STAGE
 RISE TO RIGHT
 FALL TO RIGHT

GAME PLAY MEDAL INPUT COMMAND

- 1 NUMBER OF INPUT MEDALS
- 2 ONE
- TWO
- THREE

FIG. 19

START
ST1 POWER ON
ST2 INITIALIZE ALL OUTPUT PORTS
ST3 POWER DOWN ERROR?
ST4 INITIALIZE CPU
ST5 RAM ERROR?
ST6 IS KEY SWITCH ON?
ST7 PERFORM SIX-STAGE SETTING PROCESSING
ST8 IS BATTERY BACKUP NORMAL?
ST9 RESTORE TO OUTPUT STATE AT POWER SHUTDOWN TIME
ST10 RETURN TO STATE AT POWER SHUTDOWN TIME

FIG. 20

ST11 INITIALIZE SETUP VALUES
ST12 CLEAR ALL AREAS OF RAM
ST13 STORE SETUP VALUES
ST14 INITIALIZE COMMUNICATION DATA
ST15 CLEAR RAM AT GAME OVER TIME
ST16 DOES AUTOMATIC MEDAL INPUT REQUEST EXIST?
ST17 AUTOMATICALLY INPUT AS MANY GAME PLAY MEDALS AS REQUESTED
ST18 TRANSMIT GAME PLAY MEDAL INPUT COMMAND
ST19 MEDAL INPUT?
ST20 IS START LEVER ON?

FIG. 21

ST21 4.1 SECONDS ELAPSED SINCE PRECEDING GAME PLAY?
ST22 CONSUME GAME START WAIT TIME
ST23 EXTRACT RANDOM NUMBER FOR LOTTERY
ST24 SET ONE-PLAY MONITOR TIMER
ST25 PERFORM GAMING STATE MONITOR PROCESSING
ST26 PERFORM ODDS LOTTERY PROCESSING
ST27 PERFORM WINNING INDICATOR LAMP LIGHTING LOTTERY PROCESSING
ST28 STOP CONTROL TABLE SELECTION PROCESSING
ST29 PERFORM TRANSMISSION PROCESSING AT GAME PLAY START TIME
ST30 INITIALIZE TO START REEL ROTATION

FIG. 22

ST31 IS STOP BUTTON ON?
ST32 IS VALUE OF AUTOMATIC STOP TIMER 0?

ST33 DETERMINE NUMBER OF SLIDE FRAMES
ST34 ROTATE DRUM FOR AS MANY FRAMES AS NUMBER OF SLIDE FRAMES
ST35 SET REQUEST FOR STOPPING DRUM
ST36 TRANSMIT REEL STOP COMMAND
ST37 ALL DRUMS STOPPED?
ST38 PERFORM EFFECT PROCESSING AT GAME OVER TIME

FIG. 23

ST39 EXECUTE WINNING GAME RETRIEVAL
ST40 IS WINNING GAME FLAG NORMAL?
ST41 INDICATE ILLEGAL ERROR
ST42 IS NUMBER OF MEDALS PAID OUT FOR WINNING GAME 0?
ST43 DEPOSIT OR PAY OUT GAME PLAY MEDALS

FIG. 24

ST44 DURING BB OR RB OPERATION?
ST45 CHECK NUMBER OF BB, RB GAMES
ST46 BB EXITED?
ST47 CLEAR RAM AT BB EXIT TIME
ST48 PERFORM BB, RB WINNING GAME CHECK PROCESSING
ST49 PERFORM BONUS 7SEG CONTROL PROCESSING

FIG. 25

STOP CONTROL TABLE SELECTION PROCESSING
ST50 IS INTERNAL WINNING COMBINATION BELL?
ST51 DETERMINE TABLE NUMBER BY LOTTERY
ST52 SELECT STOP CONTROL TABLE ACCORDING TO INTERNAL WINNING COMBINATION
RET

FIG. 26

ST101 GAME PLAY MEDAL INPUT COMMAND RECEIVED?
ST102 PERFORM NUMBER-OF-INPUT-MEDALS UPDATE PROCESSING
ST103 START COMMAND RECEIVED?
ST104 PERFORM NUMBER-OF-BET-MEDALS DETERMINATION PROCESSING
ST105 PERFORM TOTAL-NUMBER-OF-BET-MEDALS UPDATE PROCESSING
ST106 PERFORM CEILING METER INDICATION PROCESSING
ST107 PERFORM CEILING AT ACTIVATION CHECK PROCESSING
ST108 PERFORM AT EXECUTION PROCESSING

FIG. 27

ST109 WINNING GAME COMMAND RECEIVED?
ST110 PERFORM TOTAL-NUMBER-OF-PAID-OUT-MEDALS UPDATE PROCESSING
ST111 BB EXIT COMMAND RECEIVED?
ST112 CLEAR TOTAL NUMBER OF BET MEDALS AND TOTAL NUMBER OF PAID-OUT MEDALS
STORED IN RAM AND SET METER LEVEL TO 1 FOR INDICATION

ST113 PERFORM CEILING ACTIVATION VALUE SELECTION PROCESSING

FIG. 28A

NUMBER-OF-INPUT-MEDALS UPDATE PROCESSING

ST114 STORE TRANSMITTED NUMBER OF INPUT MEDALS IN RAM

RET

FIG. 28B

NUMBER-OF-BET-MEDALS DETERMINATION PROCESSING

ST115 STORE NUMBER OF INPUT MEDALS STORED IN RAM IN RAM AS NUMBER OF BET MEDALS ON THIS GAME

RET

FIG. 28C

TOTAL-NUMBER-OF-BET-MEDALS UPDATE PROCESSING

ST116 ADD NUMBER OF BET MEDALS ON THIS GAME STORED IN RAM TO TOTAL NUMBER OF BET MEDALS AND STORE RESULT IN RAM

RET

FIG. 28D

TOTAL-NUMBER-OF-PAID-OUT-MEDALS UPDATE PROCESSING

ST117 ADD NUMBER OF MEDALS CORRESPONDING TO WINNING GAME PRIZE TO TOTAL NUMBER OF PAID-OUT MEDALS AND STORE RESULT IN RAM

RET

FIG. 29

CEILING METER INDICATION PROCESSING

ST118 COMPARE NUMBER OF MEDALS AT EACH LEVEL CORRESPONDING TO SETUP CEILING NUMBER OF MEDALS BASED ON CEILING METER SHIFT SELECTION TABLE WITH CURRENT MEDAL NUMBER DIFFERENCE VALUE

ST119 LEVEL SHIFT?

ST120 INCREMENT LEVEL BY ONE FOR INDICATING METER LEVEL

RET

FIG. 30

CEILING AT ACTIVATION CHECK PROCESSING

ST121 INTERNAL WINNING OF BB OR DURING BB INTERNAL WINNING?

ST122 CLEAR TOTAL NUMBER OF BET MEDALS AND TOTAL NUMBER OF PAID-OUT MEDALS STORED IN RAM

ST123 CEILING REACHED?

ST124 SET CEILING-NUMBER-OF-AT-TIMES SELECTION TABLE

ST125 EXECUTE RANDOM NUMBER LOTTERY

ST126 ADD TO NUMBER-OF-AT-TIMES STOCK COUNTER BASED ON LOTTERY RESULT

RET

FIG. 31

CEILING ACTIVATION VALUE SELECTION PROCESSING

ST127 HOLD RANDOM NUMBER LOTTERY BASED ON CEILING ACTIVATION VALUE SELECTION
TABLE

RET

FIG. 32

AT EXECUTION PROCESSING
ST201 IS NUMBER-OF-NOTIFICATION-TIMES COUNTER 1 OR MORE?
ST202 IS NUMBER-OF-AT-TIMES STOCK COUNTER 1 OR MORE?
ST203 PERFORM AT ACTIVATION LOTTERY PROCESSING
ST204 PERFORM PUSH ORDER NOTIFICATION PROCESSING
RET

FIG. 33

PUSH ORDER NOTIFICATION PROCESSING
ST205 DECREMENT NUMBER-OF-PUSH-ORDER-NOTIFICATION-TIMES COUNTER BY ONE
ST206 IS INTERNAL WINNING COMBINATION BELL?
ST207 NOTIFY PLAYER OF PUSH ORDER BASED ON SELECTED STOP TABLE
RET

FIG. 34

AT ACTIVATION LOTTERY PROCESSING
ST208 HOLD RANDOM NUMBER LOTTERY BASED ON AT ACTIVATION LOTTERY TABLE
ST209 ACCEPTED?
ST210 SET 10 IN NUMBER-OF-PUSH-ORDER-NOTIFICATION-TIMES COUNTER
ST211 DECREMENT NUMBER-OF-AT-TIMES STOCK COUNTER BY ONE
RET

The claims defining the invention are as follows :

1. A gaming machine comprising:

variable display means for variably displaying a plurality of symbols;

5 front display means provided in front of the variable display means and configured to enable a player to see at least one of the symbols therethrough, and to display various images;

symbol combination determination means configured to determine a symbol combination;

10 stop control means configured to stop at least one of the symbols of the variable display means based on the determination result of the symbol combination determination means;

game medium payout means configured to pay out a game medium to the player in a case where a stop state of the variable display means stopped by the stop control means corresponds to a
15 predetermined stop state; and

display scaling means configured to scale up or down the display displayed behind the display scaling means.

2. The gaming machine as claimed in claim 1, wherein the
20 display scaling means is disposed in front of the variable display means.

3. The gaming machine as claimed in claim 2, wherein the display scaling means is configured to scale up or down at least one of the symbols displayed on the variable display means.

25 4. The gaming machine as claimed in claim 1, wherein the

display scaling means is disposed in front of the front display means.

5 5. The gaming machine as claimed in claim 4, wherein the display scaling means is configured to scale up or down the various images displayed on the front display means.

6. The gaming machine as claimed in claim 4, wherein the display scaling means is configured to scale up or down both at least one of the symbols displayed on the variable display means and the various images displayed on the front display means.

10 7. The gaming machine as claimed in claim 1, wherein the front display means comprises a first display panel and a second display panel, and

 wherein the first display panel and the second display panel are arranged to be in parallel with each other.

15 8. The gaming machine as claimed in claim 7, wherein the display scaling means is disposed in between the first display panel and the second display panel.

9. The gaming machine as claimed in any one of claims 1 through 8, wherein the display scaling means comprises a lens configured
20 to scale up the display displayed behind the display scaling means.

10. The gaming machine as claimed in claim 9, wherein the display scaling means comprises a convex lens.

11. The gaming machine as claimed in claim 9, wherein the
25 display scaling means comprises a Fresnel lens.

12. The gaming machine as claimed in any one of claims 9 through 11, wherein the display scaling means moves the lens with respect to the variable display means and the front display means.

5 13. The gaming machine as claimed in claim 12, wherein the display scaling means moves the lens in back and forth direction.

14. The gaming machine as claimed in claim 1 further comprising a plurality of operation means with which the player inputs a stop operation of at least one of the
10 symbols,

wherein the stop control means is configured to stop at least one of the symbols based on the determination result of the symbol combination determination means and the stop operation input to the operation means.

15 15. A gaming machine substantially as described herein with respect to each of the embodiments as illustrated in Figs. 1 - 42.

DATED this Nineteenth Day of February, 2004

20

Aruze Corp

Patent Attorneys for the Applicant

SPRUSON & FERGUSON

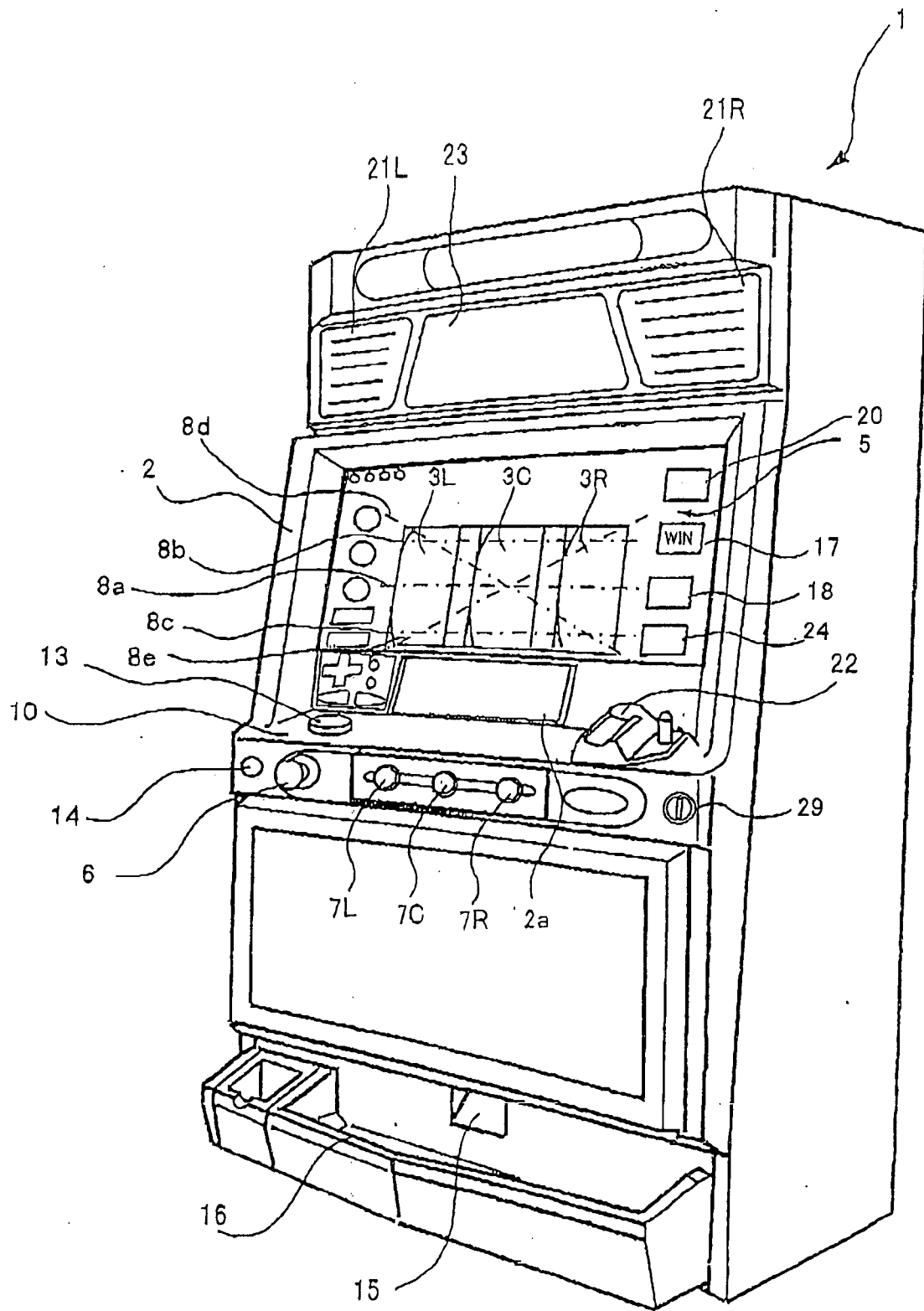


Fig. 1

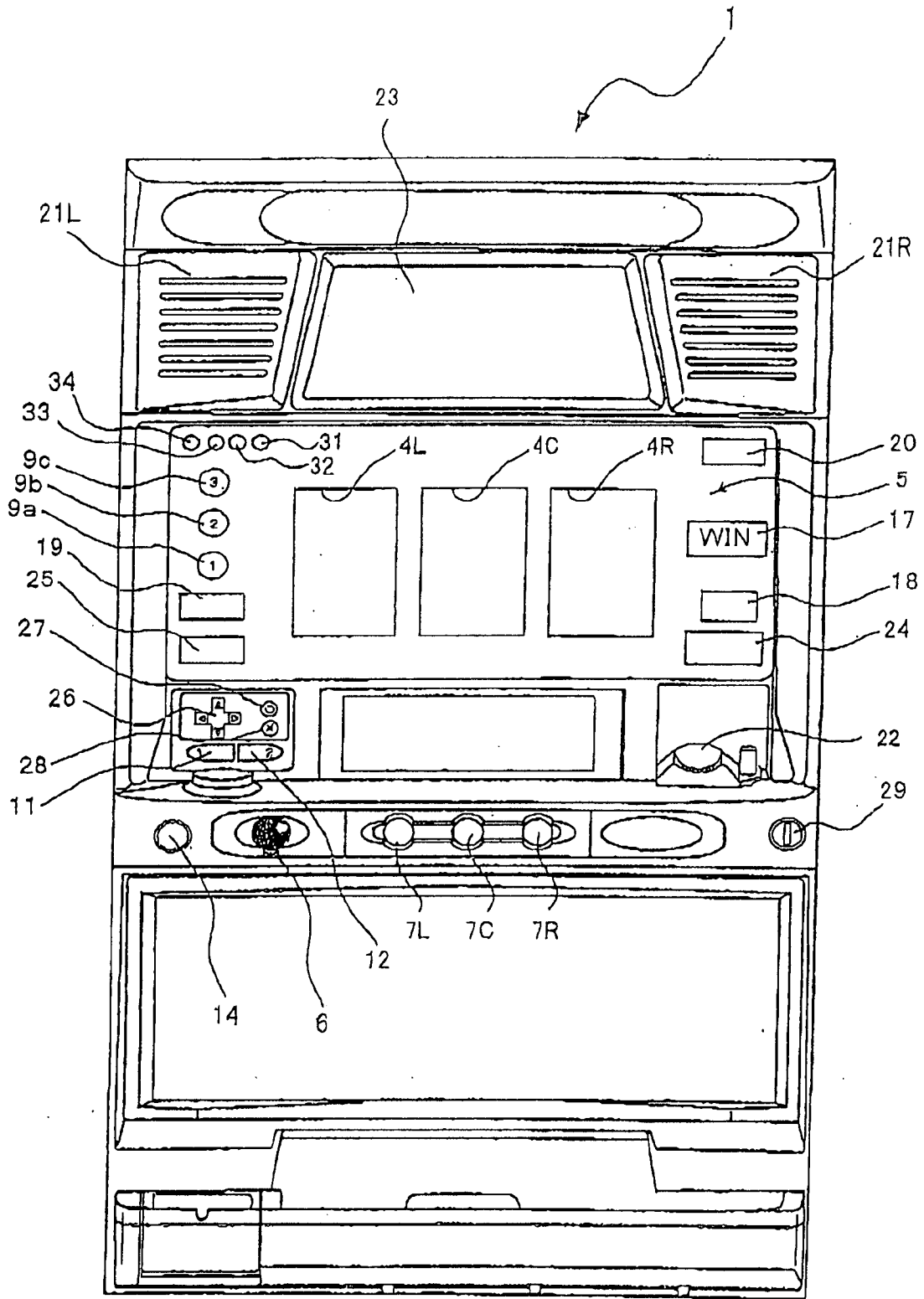


Fig. 2

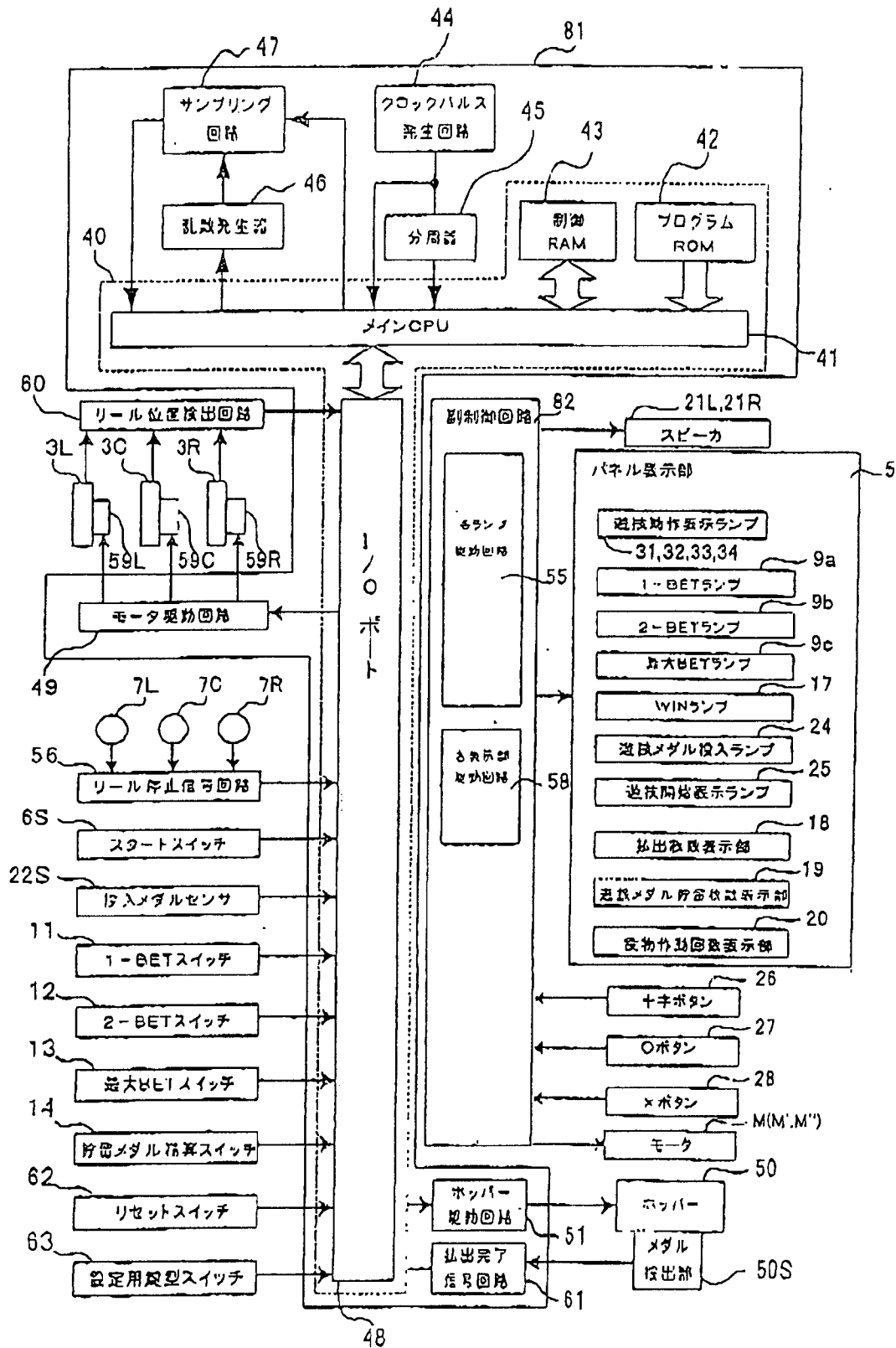


Fig. 3

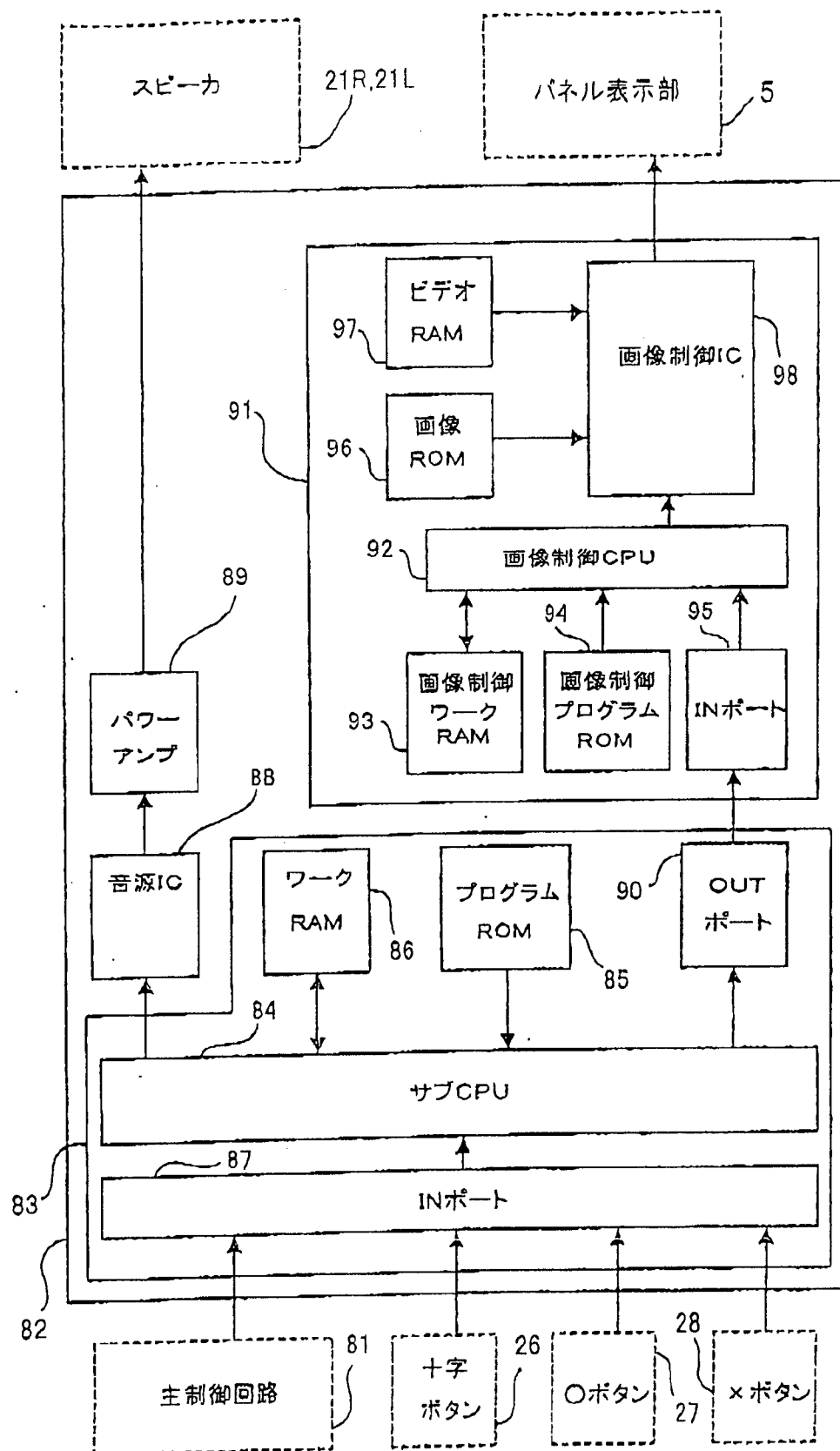


Fig. 4

左リール		中リール		右リール	
00	赤7	00	赤7	00	赤7
01	チェリー	01	プラム	01	ベル
02	青7	02	リプレイ	02	リプレイ
03	ベル	03	ベル	03	BAR
04	リプレイ	04	チェリー	04	プラム
05	赤7	05	リプレイ	05	ベル
06	チェリー	06	チェリー	06	リプレイ
07	青7	07	ベル	07	チェリー
08	ベル	08	BAR	08	青7
09	リプレイ	09	チェリー	09	チェリー
10	プラム	10	リプレイ	10	ベル
11	ベル	11	ベル	11	リプレイ
12	リプレイ	12	青7	12	チェリー
13	BAR	13	リプレイ	13	プラム
14	赤7	14	チェリー	14	ベル
15	ベル	15	ベル	15	リプレイ
16	プラム	16	BAR	16	チェリー
17	リプレイ	17	プラム	17	青7
18	プラム	18	リプレイ	18	ベル
19	ベル	19	ベル	19	リプレイ
20	リプレイ	20	チェリー	20	チェリー

Fig. 5

各遊技状態における入賞図柄組合せに対応する役及び払出枚数

図柄組合せ	一般遊技状態	BB中 一般遊技状態	RB 遊技状態
赤7-赤7-赤7	BB 15枚	—	—
青7-青7-青7	BB 15枚	—	—
BAR-BAR-BAR	RB 15枚	—	—
ベル-ベル-ベル	ベルの小役 15枚	ベルの小役 15枚	—
プラム-プラム-プラム	プラムの小役 6枚	プラムの小役 6枚	—
Replay-Replay- Replay	再遊技 0枚	RB(JAC IN) 15 枚	役物 15枚
チェリー - any - any	チェリーの小役 2又は4枚	チェリーの小役 2又は4枚	—

Fig. 6

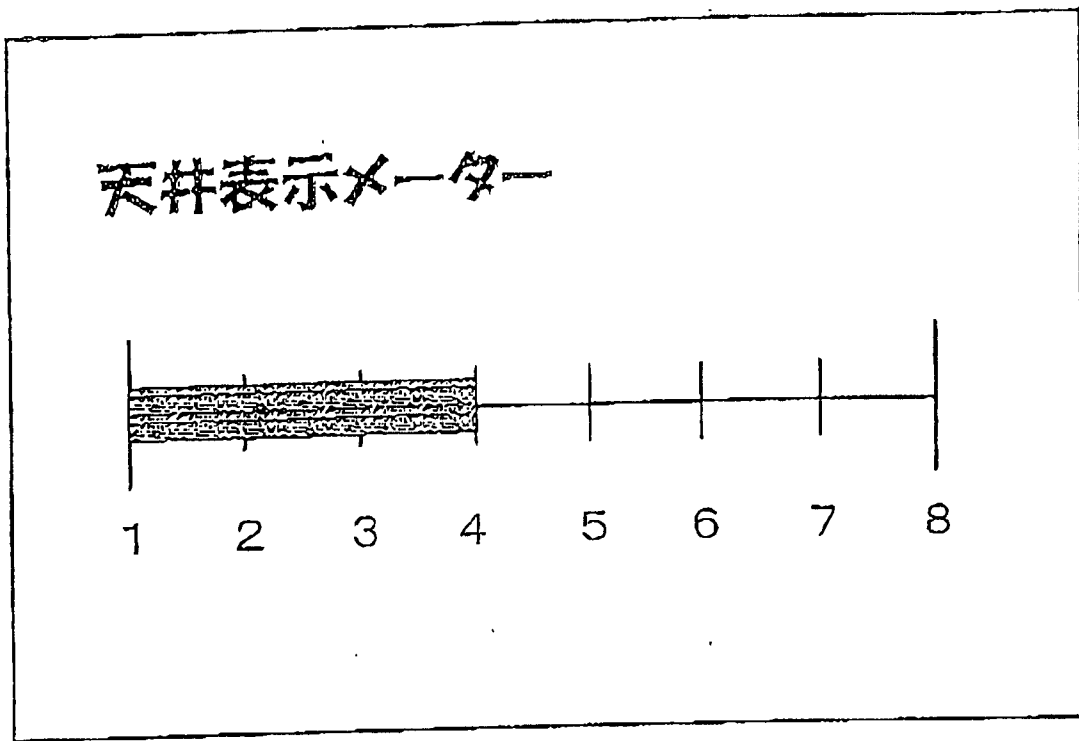


Fig. 7

Fig. 8A

左の停止ボタンを操作すべきことを報知する画像

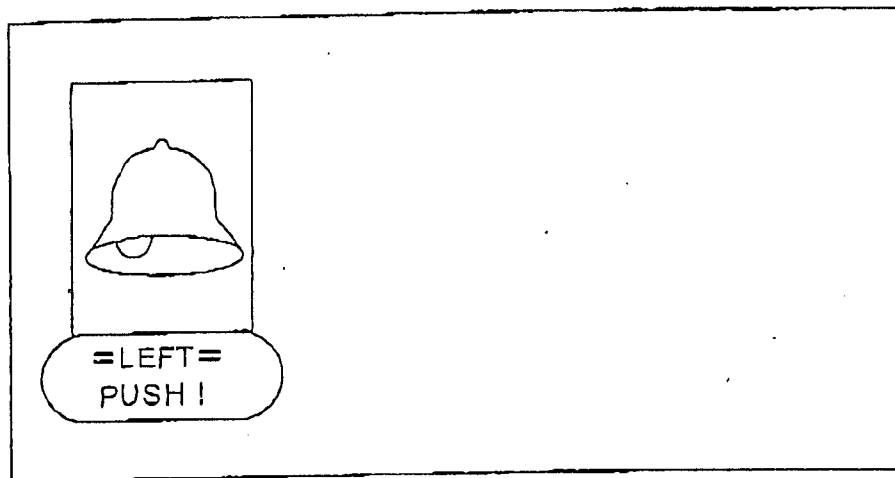


Fig. 8B

右の停止ボタンを操作すべきことを報知する画像

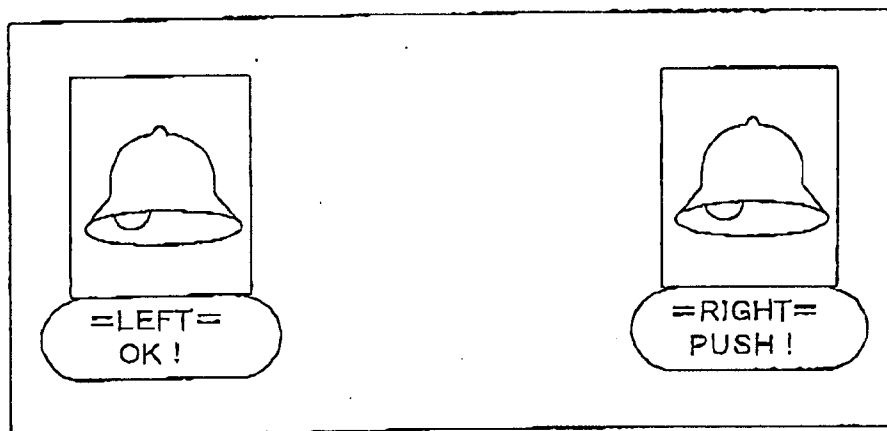


Fig. 8C

中央の停止ボタンを操作すべきことを報知する画像

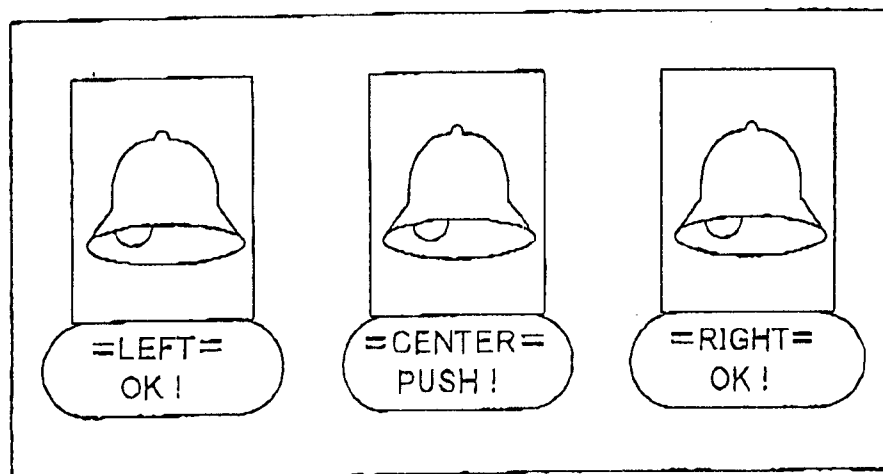


Fig. 9A

(一般遊技状態において使用される確率抽選テーブル)

一般遊技状態において使用される確率抽選テーブル

(乱数抽出範囲: 0~16383)

入賞役	当選乱数値範囲 BET数=3	内部当選確率
BB	0 ~ 54	55/16384
RB	55 ~ 82	28/16384
再遊技	83 ~ 2327	2245/16384
ベルの小役	2328 ~ 10919	8592/16384
プラムの小役	10920 ~ 10973	54/16384
チェリーの小役	10974 ~ 11036	63/16384

Fig. 9B

(BB中一般遊技状態において使用される確率抽選テーブル)

BB中一般遊技状態において使用される確率抽選テーブル

(乱数抽出範囲: 0~16383)

入賞役	当選乱数値範囲 BET数=3	内部当選確率
BB	— ~ —	0/16384
RB	— ~ —	0/16384
再遊技 (BB中のRB)	0 ~ 4199	4200/16384
ベルの小役	4200 ~ 14499	10300/16384
プラムの小役	14500 ~ 16319	1820/16384
チェリーの小役	— ~ —	0/16384

停止制御テーブルナンバー選択テーブル

(乱数抽出範囲: 0~255)

テーブルNo	当選乱数値範囲 BET数=3	選択確率
No.1	0 ~ 42	43/256
No.2	43 ~ 85	43/256
No.3	86 ~ 128	43/256
No.4	129 ~ 171	43/256
No.5	172 ~ 213	42/256
No.6	214 ~ 255	42/256

Fig. 10

テーブル番号と、停止順序と、「ベルの小役」の入賞の成否との関係

		テーブル番号					
		1	2	3	4	5	6
停止順序	左中右	成立	不成立	不成立	不成立	不成立	不成立
	左右中	不成立	成立	不成立	不成立	不成立	不成立
	中左右	不成立	不成立	成立	不成立	不成立	不成立
	中右左	不成立	不成立	不成立	成立	不成立	不成立
	右左中	不成立	不成立	不成立	不成立	成立	不成立
	右中左	不成立	不成立	不成立	不成立	不成立	成立

Fig. 11

当り用停止制御テーブル(内部当選役:ベルの小役)

左のリール		中央のリール		右のリール	
停止操作 位置	停止制御 位置	停止操作 位置	停止制御 位置	停止操作 位置	停止制御 位置
00	19	00	19	00	18
01	19	01	19	01	01
02	19	02	19	02	01
03	03	03	03	03	01
04	03	04	03	04	01
05	03	05	03	05	05
06	03	06	03	06	05
07	03	07	07	07	05
08	08	08	07	08	05
09	08	09	07	09	05
10	08	10	07	10	10
11	11	11	11	11	10
12	11	12	11	12	10
13	11	13	11	13	10
14	11	14	11	14	14
15	15	15	15	15	14
16	15	16	15	16	14
17	15	17	15	17	14
18	15	18	15	18	18
19	19	19	19	19	18
20	19	20	19	20	18

Fig. 12

順押し・中押しはずれ用停止制御テーブル(内部当選役:ベルの小役)

左のリール		中央のリール		右のリール	
停止操作 位置	停止制御 位置	停止操作 位置	停止制御 位置	停止操作 位置	停止制御 位置
00	19	00	19	00	19
01	19	01	19	01	19
02	19	02	19	02	02
03	03	03	03	03	02
04	03	04	03	04	02
05	03	05	03	05	02
06	03	06	03	06	06
07	03	07	07	07	06
08	08	08	07	08	06
09	08	09	07	09	06
10	08	10	07	10	06
11	11	11	11	11	11
12	11	12	11	12	11
13	11	13	11	13	11
14	11	14	11	14	11
15	15	15	15	15	15
16	15	16	15	16	15
17	15	17	15	17	15
18	15	18	15	18	15
19	19	19	19	19	19
20	19	20	19	20	19

Fig. 13

逆押しはずれ用停止制御テーブル(内部当選役:ベルの小役)

左のリール		中央のリール		右のリール	
停止操作 位置	停止制御 位置	停止操作 位置	停止制御 位置	停止操作 位置	停止制御 位置
00	20	00	19	00	18
01	20	01	19	01	01
02	20	02	19	02	01
03	20	03	03	03	01
04	04	04	03	04	01
05	04	05	03	05	05
06	04	06	03	06	05
07	04	07	07	07	05
08	04	08	07	08	05
09	09	09	07	09	05
10	09	10	07	10	10
11	09	11	11	11	10
12	12	12	11	12	10
13	12	13	11	13	10
14	12	14	11	14	14
15	12	15	15	15	14
16	12	16	15	16	14
17	17	17	15	17	14
18	17	18	15	18	18
19	17	19	19	19	18
20	20	20	19	20	18

Fig. 14

Fig. 15A

天井AT回数選択テーブル

回数	抽選値
1	2356
2	1512
5	196
10	28
30	4

Fig. 15B

AT発動抽選テーブル

	抽選値
発動	32
潜伏	224

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Fig.16A

天井発動値選択テーブル

枚数	抽選値
1200	64
1500	128
1800	64

Fig.16B

天井メーター移行選択テーブル

		1200枚	1500枚	1800枚
天井メーターレベル	レベル1	150	188	225
	レベル2	300	375	450
	レベル3	450	563	675
	レベル4	600	750	900
	レベル5	750	938	1125
	レベル6	900	1125	1350
	レベル7	1050	1313	1575
	レベル8	1200	1500	1800

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スタートコマンド

1	内部当選役
2	BB
	RB
	再遊技
	ベル
	プラム
	チェリー
	ハズレ
	—
3	遊技状態
4	一般遊技中
	BB内部当選中
	RB内部当選中
	BB作動中
	RB作動中
	—
	—
	—
5	停止制御テーブル
6	テーブルNo. 1
	テーブルNo. 2
	テーブルNo. 3
	テーブルNo. 4
	テーブルNo. 5
	テーブルNo. 6
	—
	—

BB終了コマンド

1	BB終了時の動作
2	遊技再開可
	精算動作
	打ち止め動作
	—
	—
	—
	—
	—

Fig. 17

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入賞コマンド		遊技メダル投入コマンド	
1	入賞役	1	投入枚数
2	BB	2	1枚
	RB		2枚
	再遊技		3枚
	ベル		—
	プラム		—
	チェリー		—
	ハズレ		—
	—		—
3	遊技状態		
4	一般遊技中		
	BB内部当選中		
	RB内部当選中		
	BB作動中		
	RB作動中		
	—		
	—		
	—		
5	入賞ライン		
6	中段		
	上段		
	下段		
	右上がり		
	右下がり		
	—		
	—		
	—		

Fig. 18

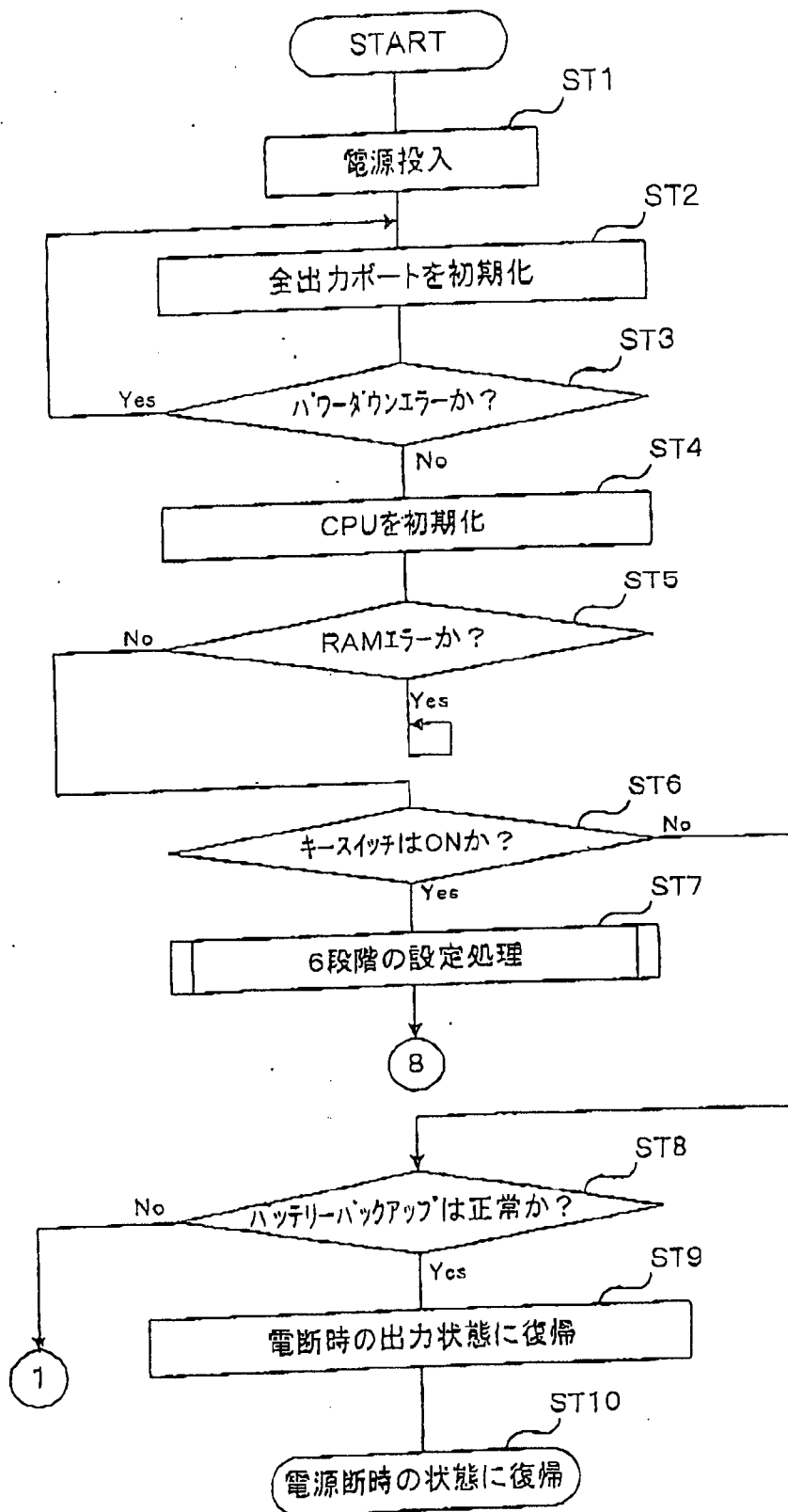


Fig. 19

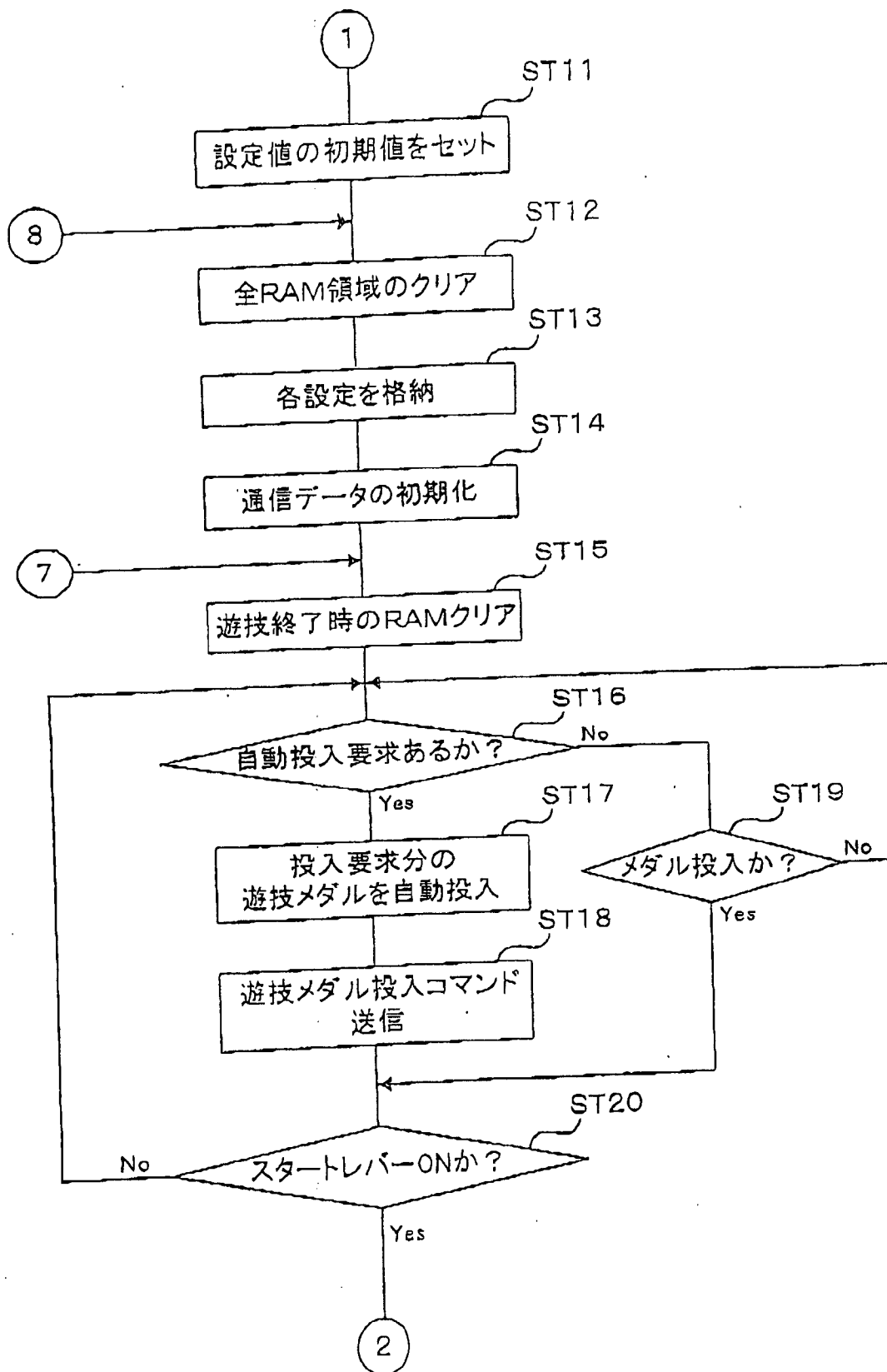


Fig. 20

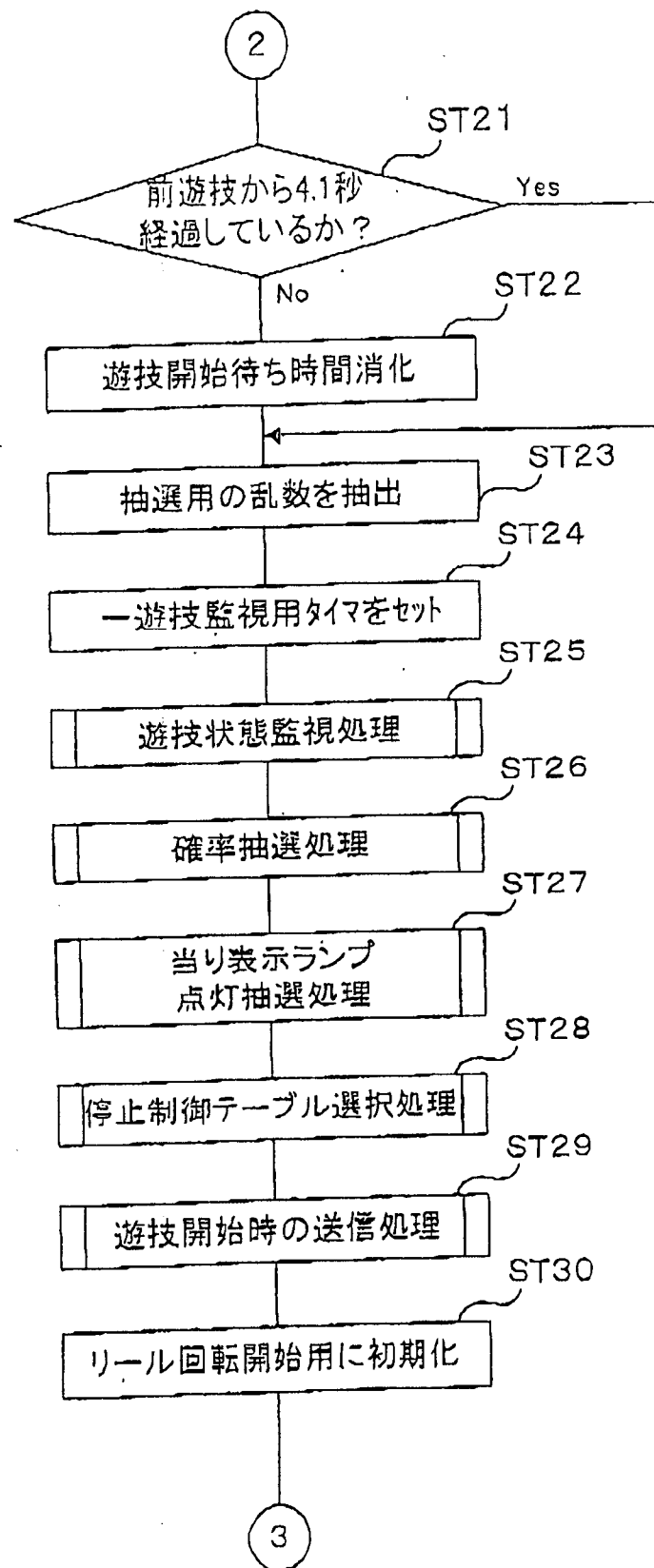


Fig. 21

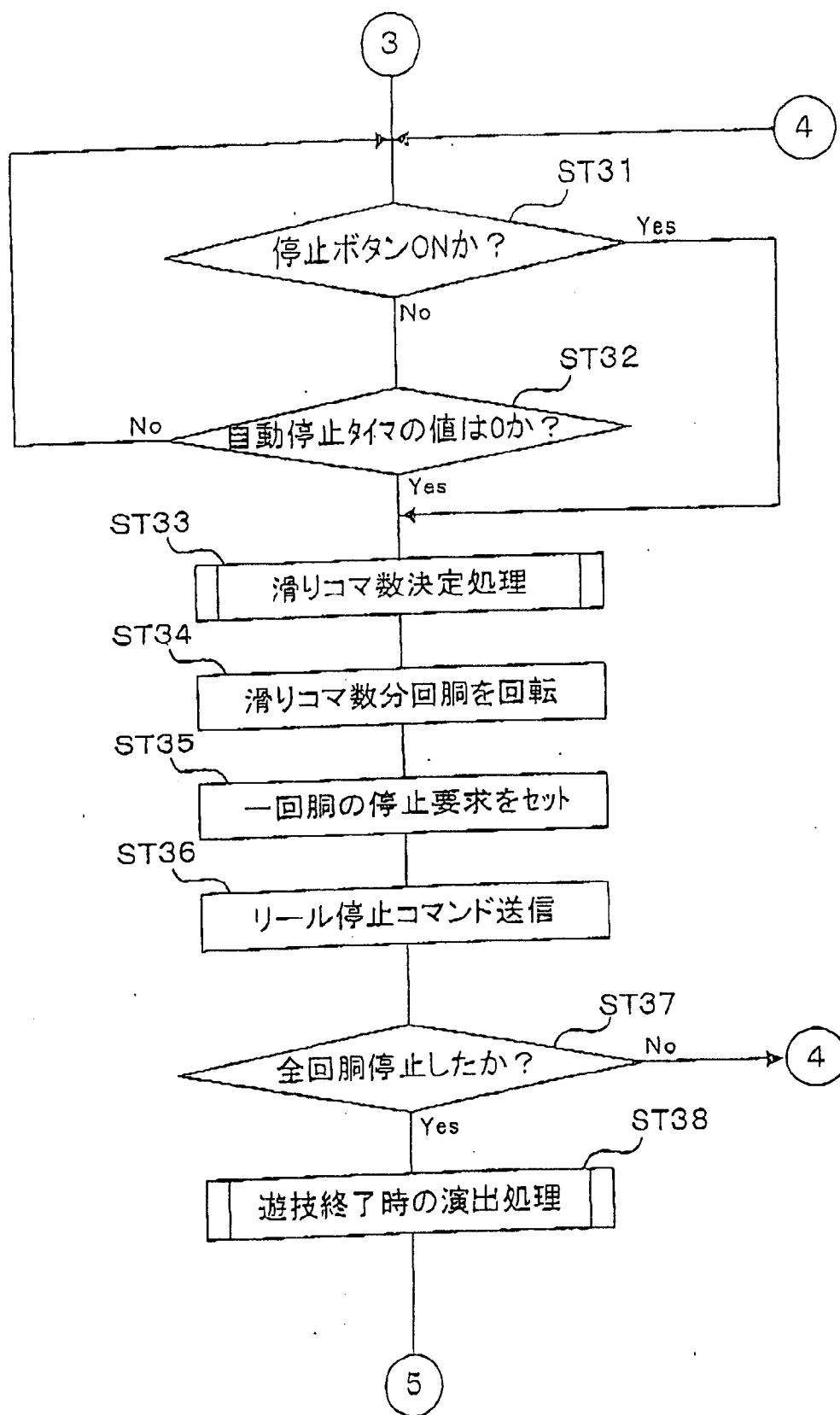


Fig. 22

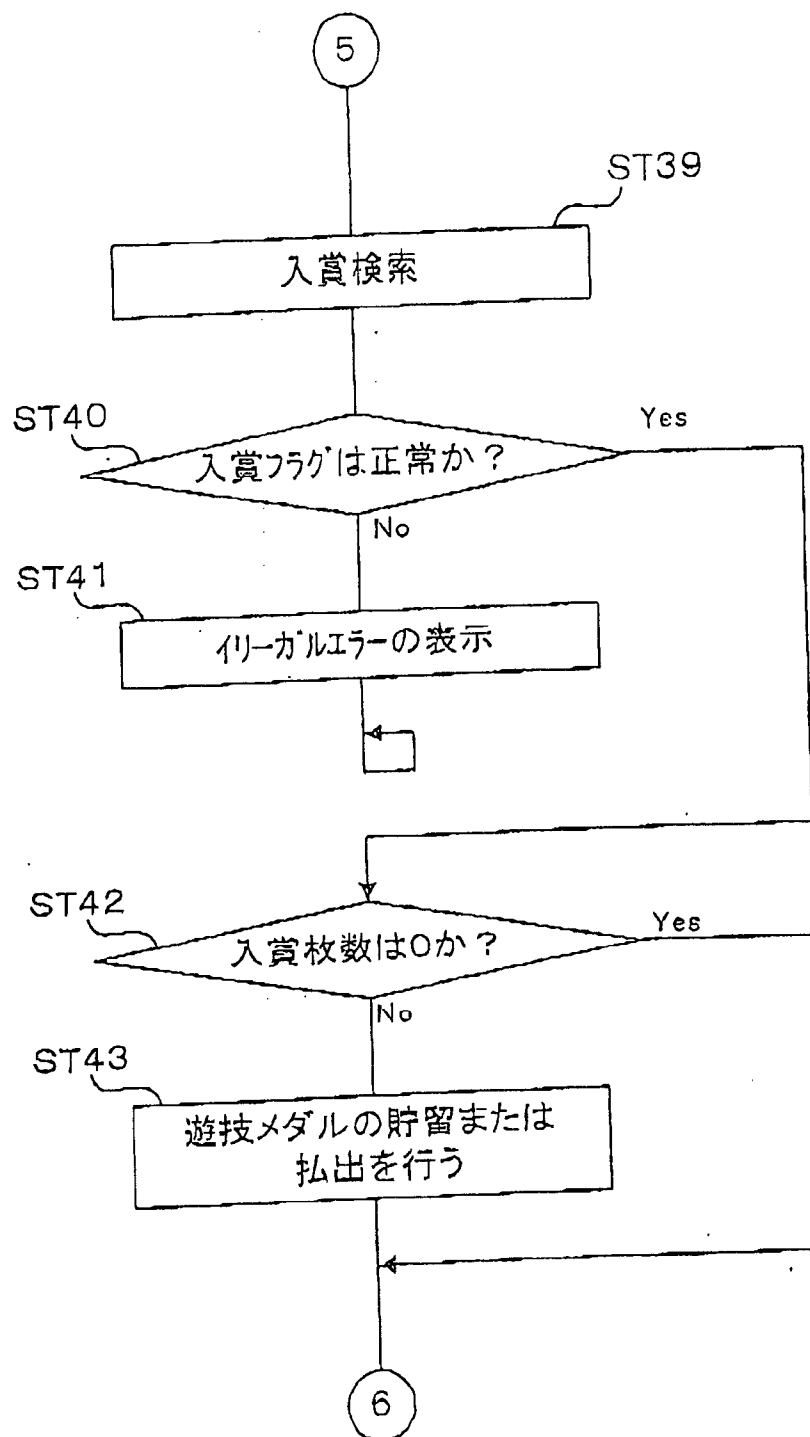


Fig. 23

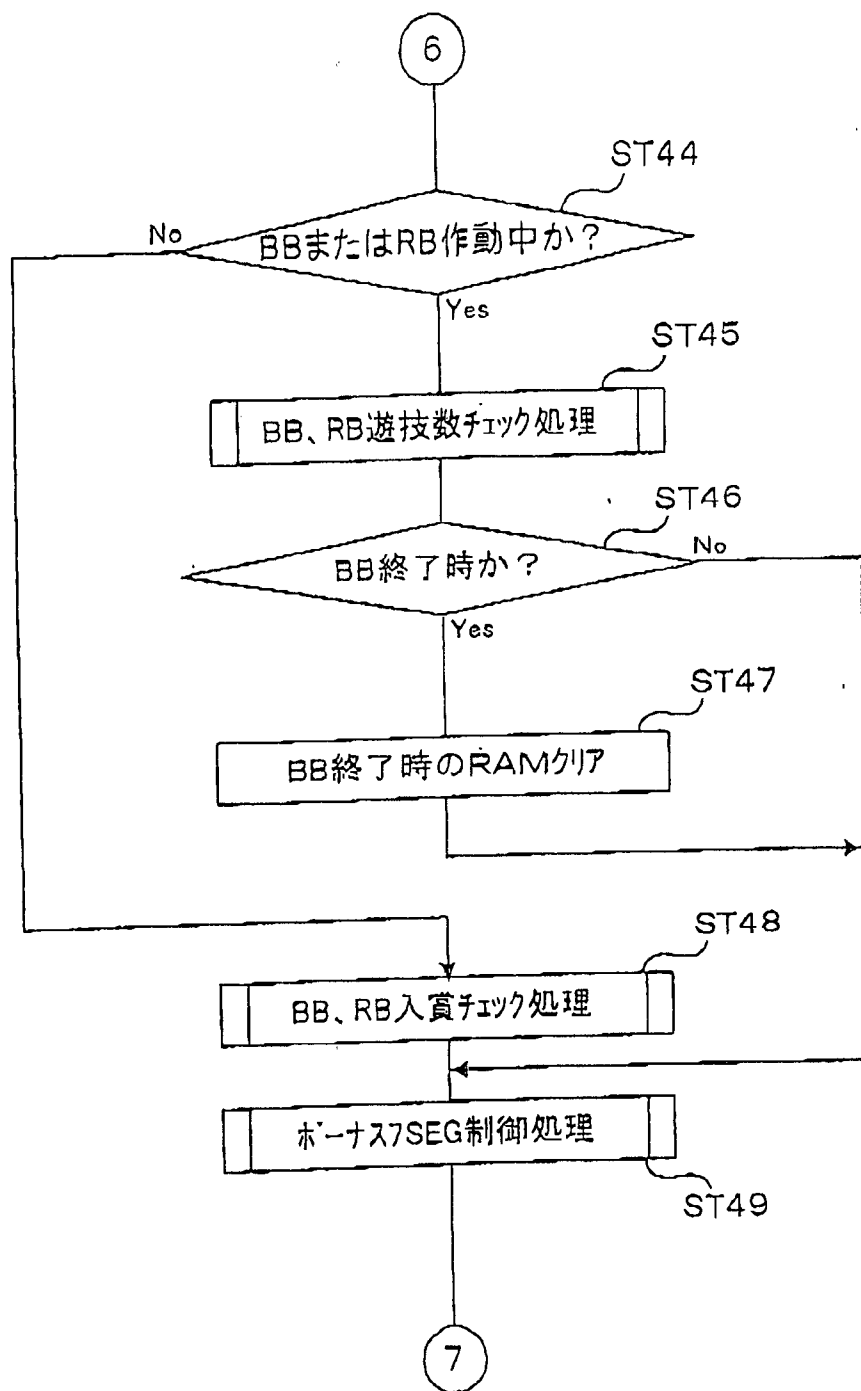


Fig. 24

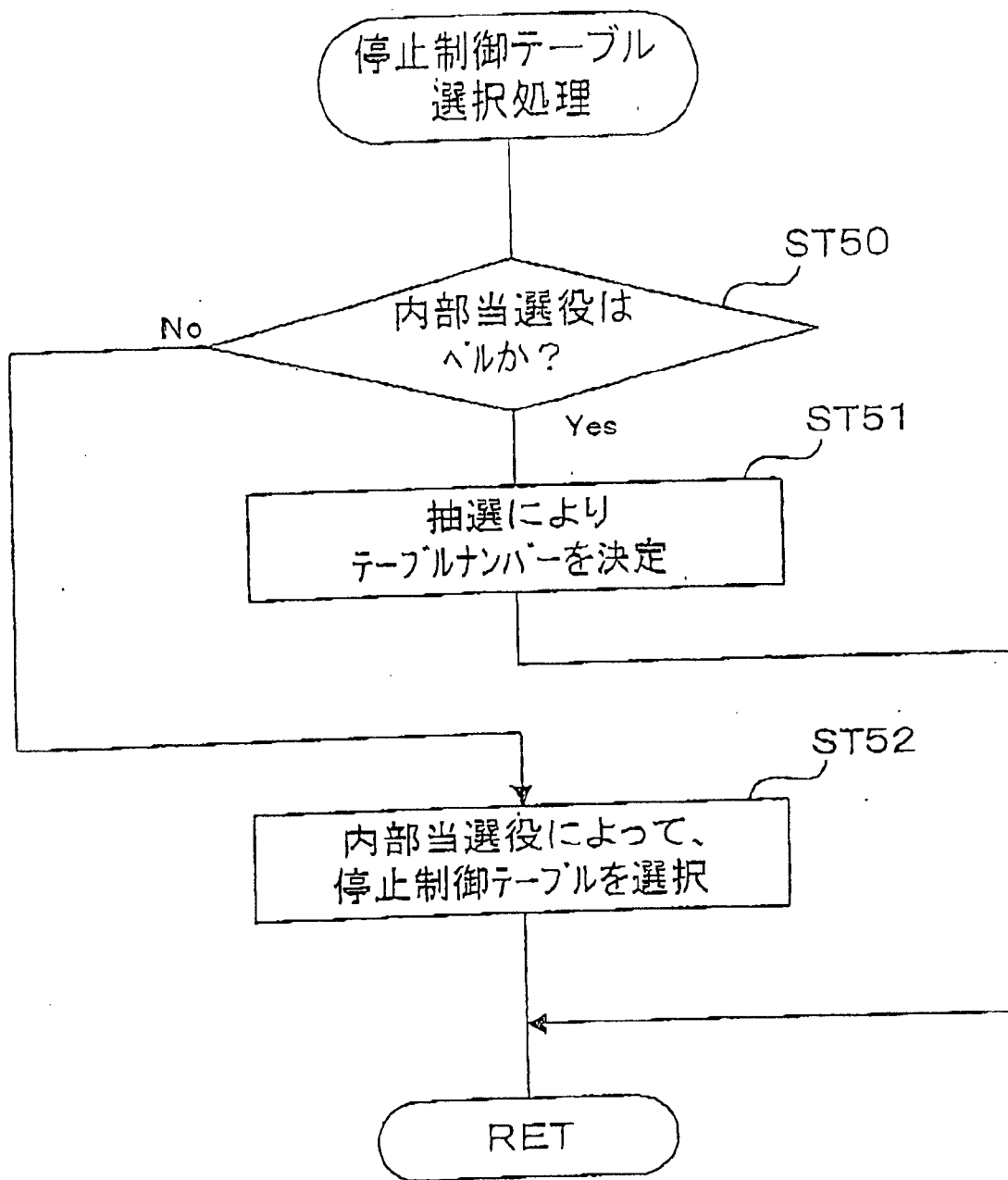


Fig. 25

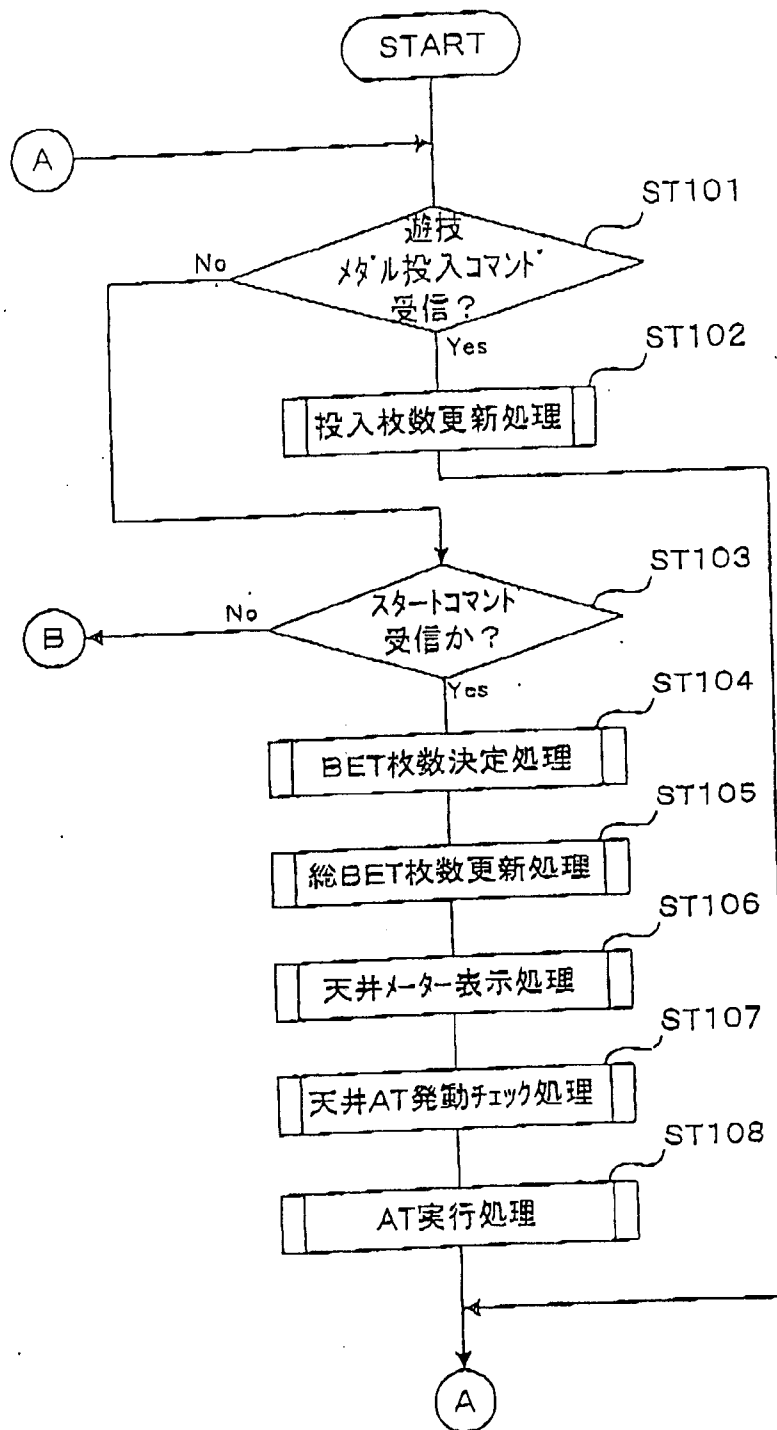


Fig. 26

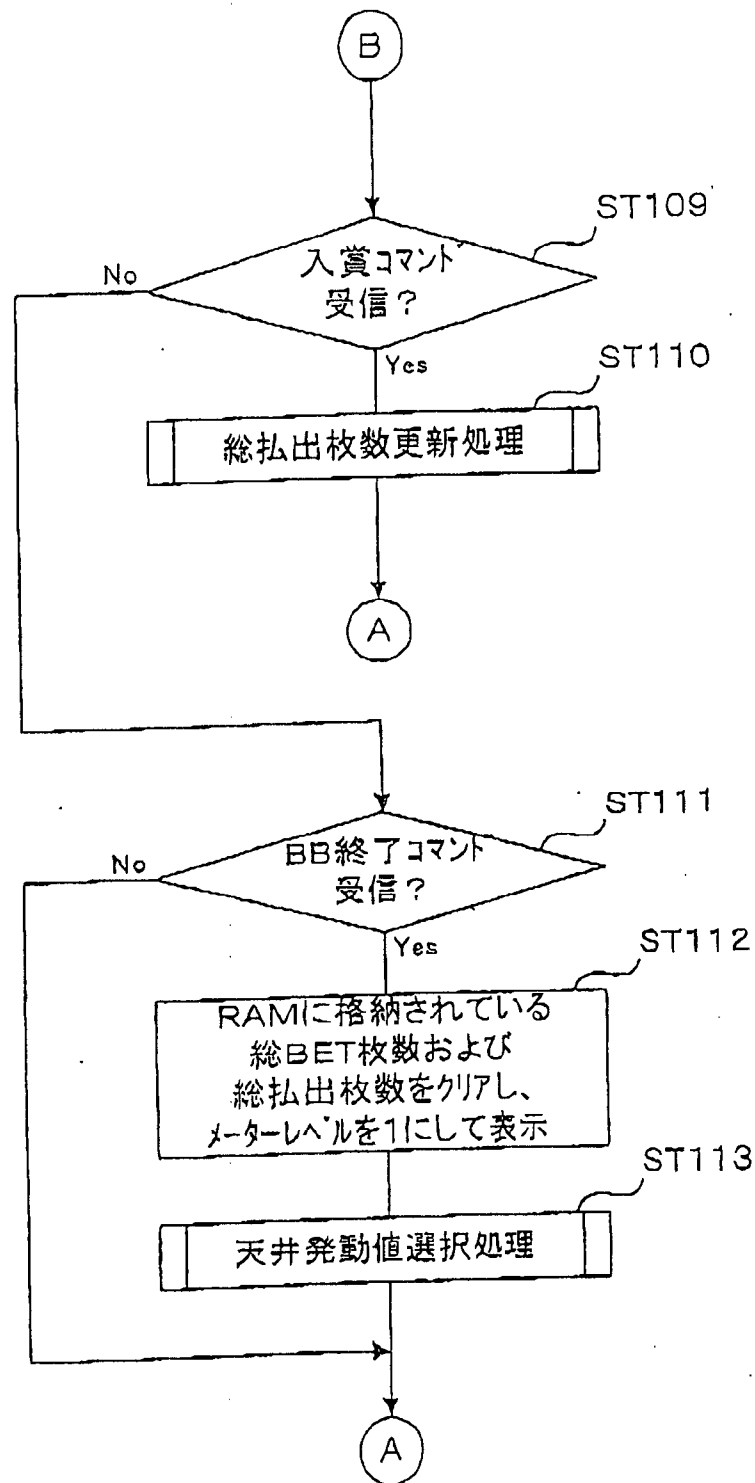


Fig. 27

Fig. 28A

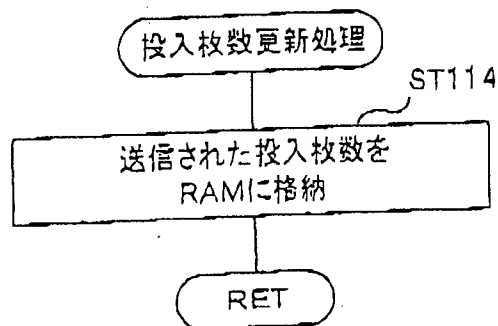


Fig. 28B

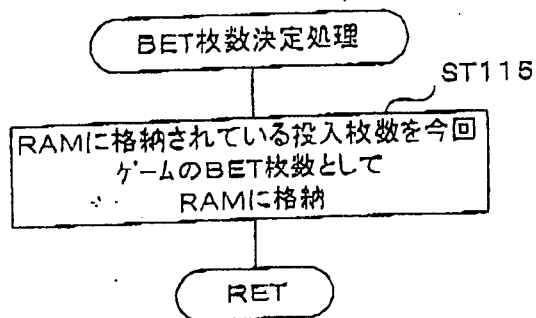


Fig. 28C

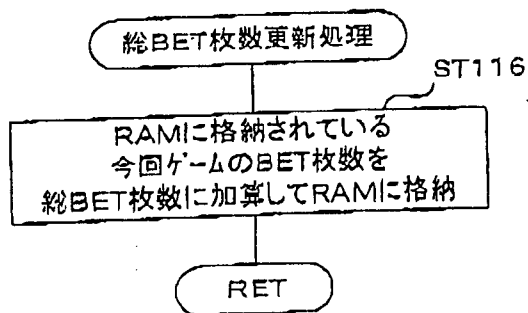
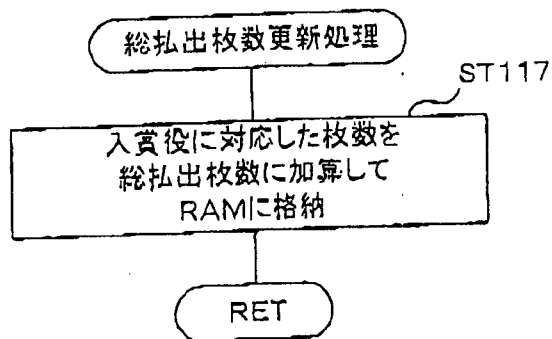


Fig. 28D



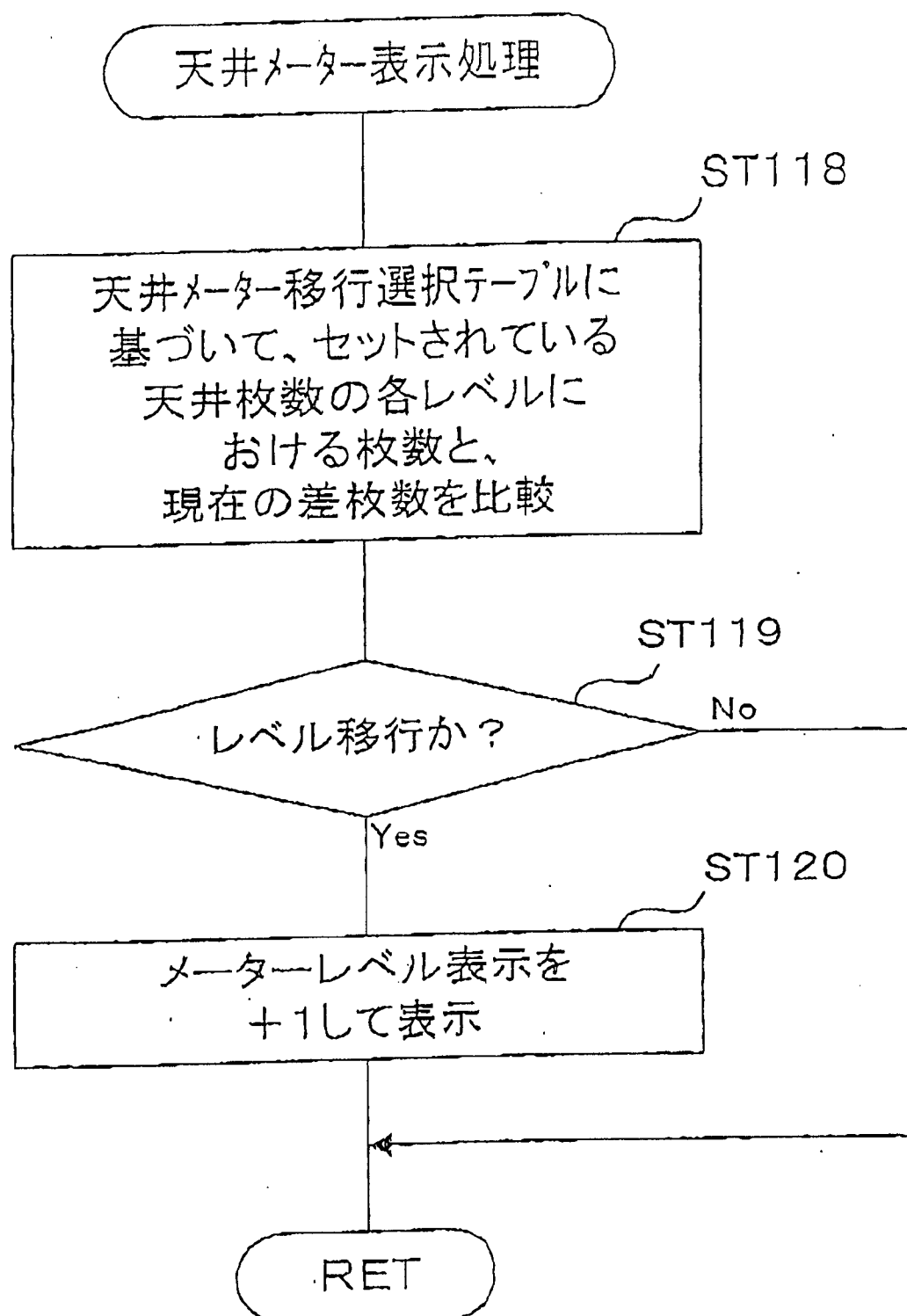


Fig. 29

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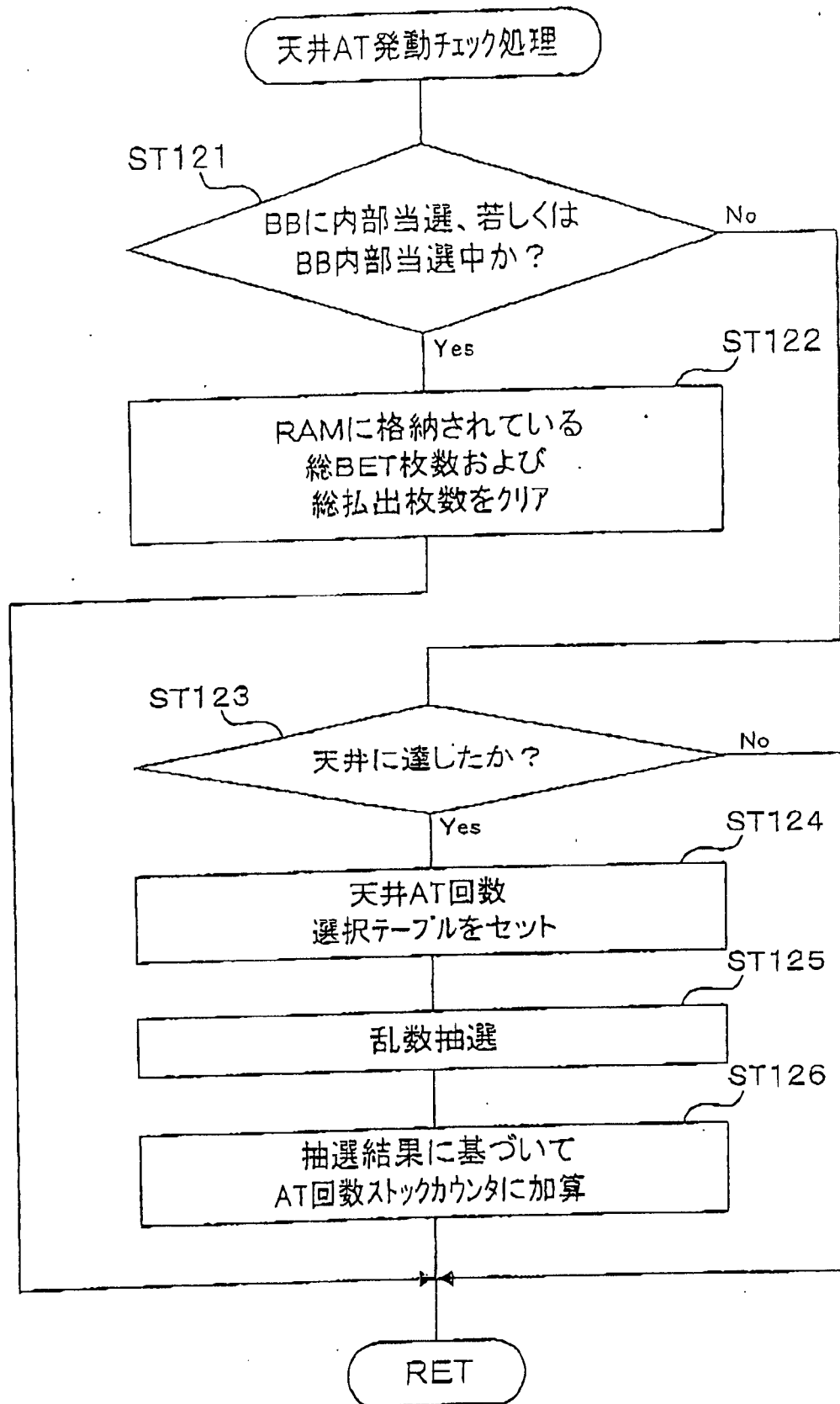


Fig. 30

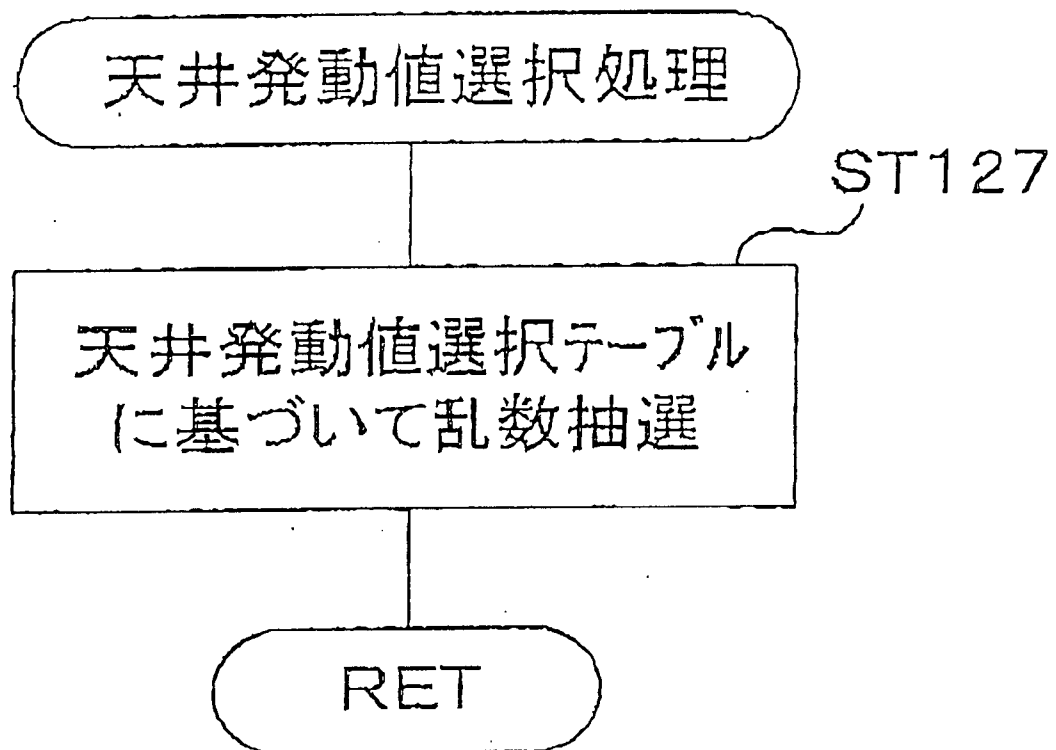


Fig. 31

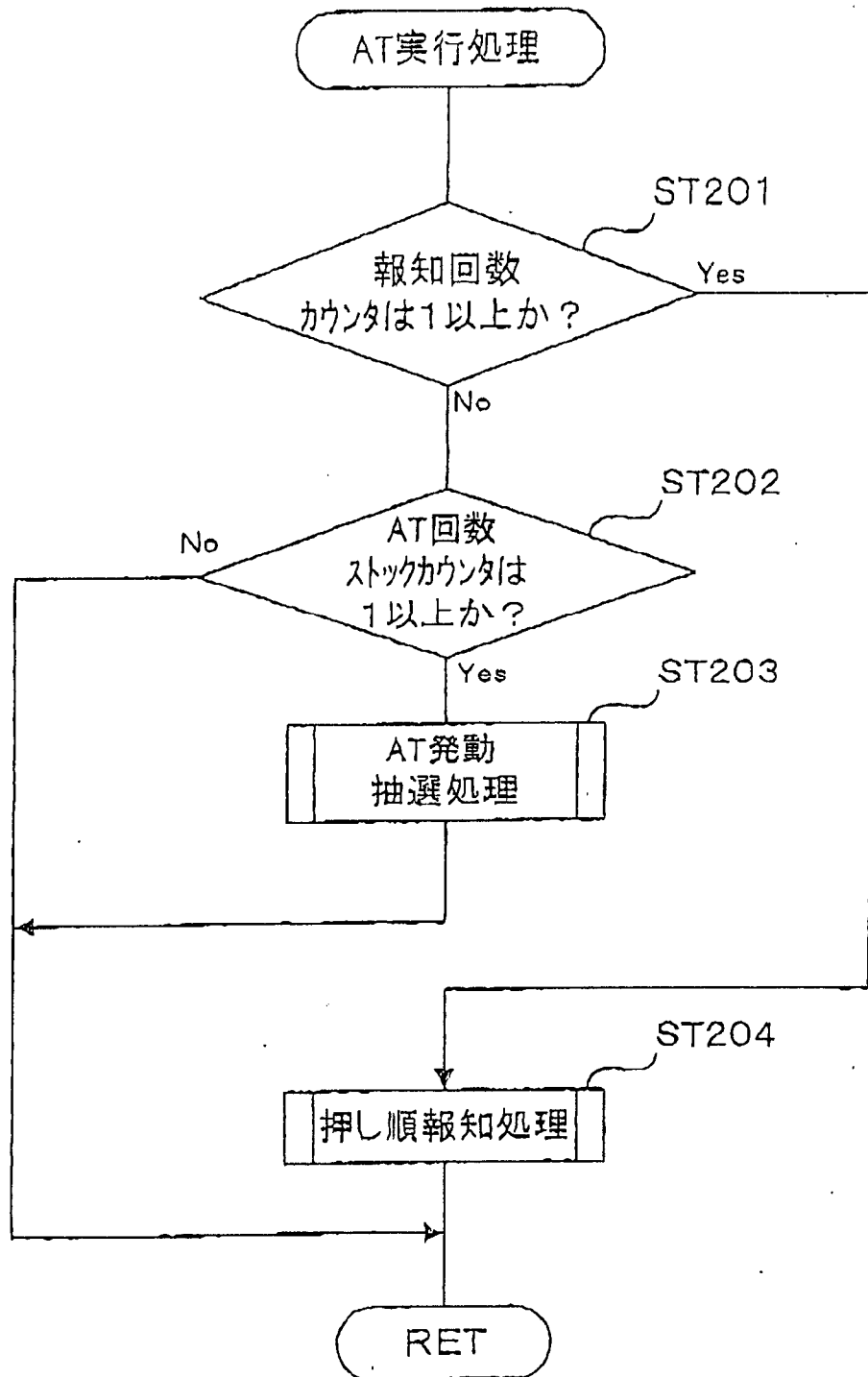


Fig. 32

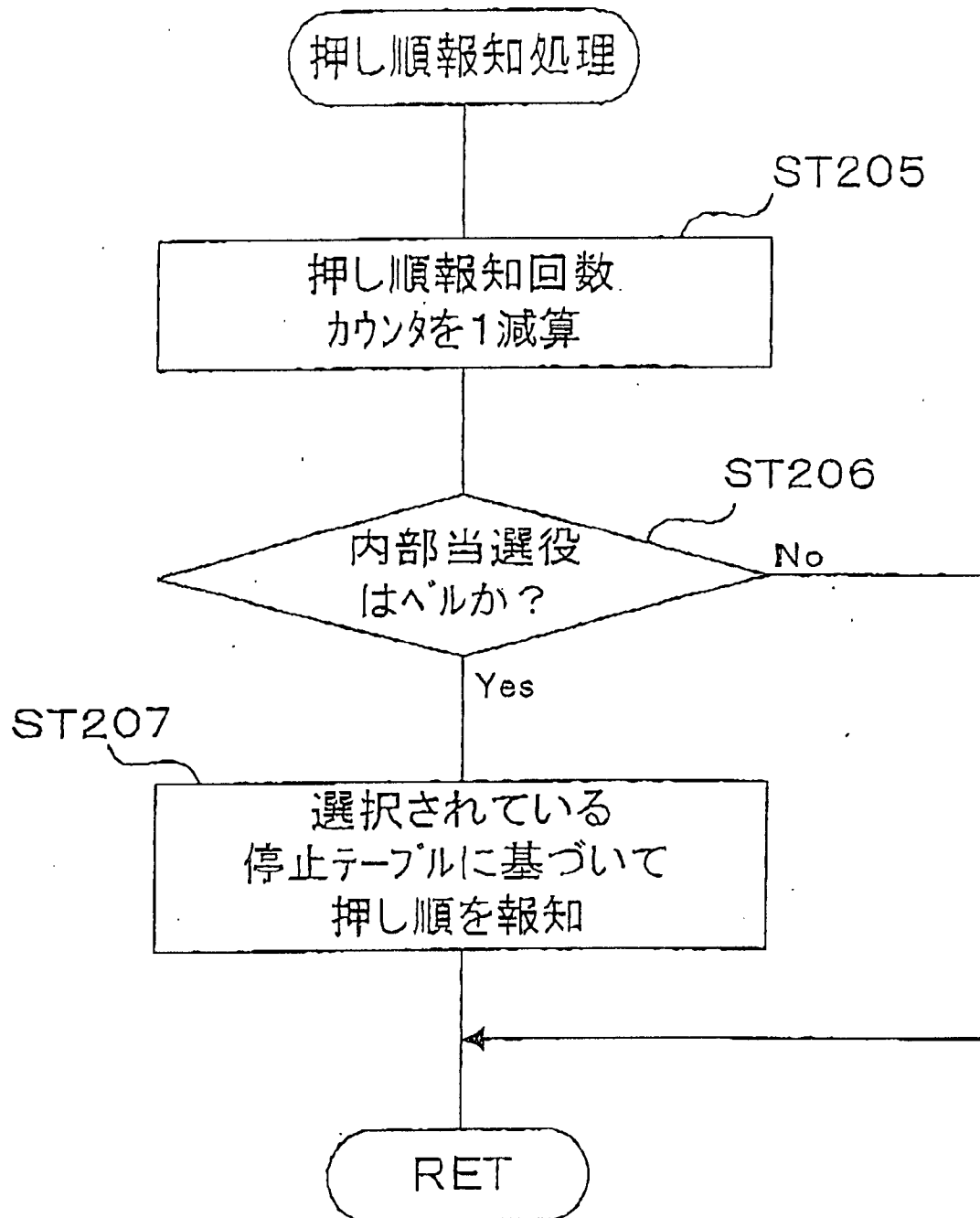


Fig. 33

Fig. 34

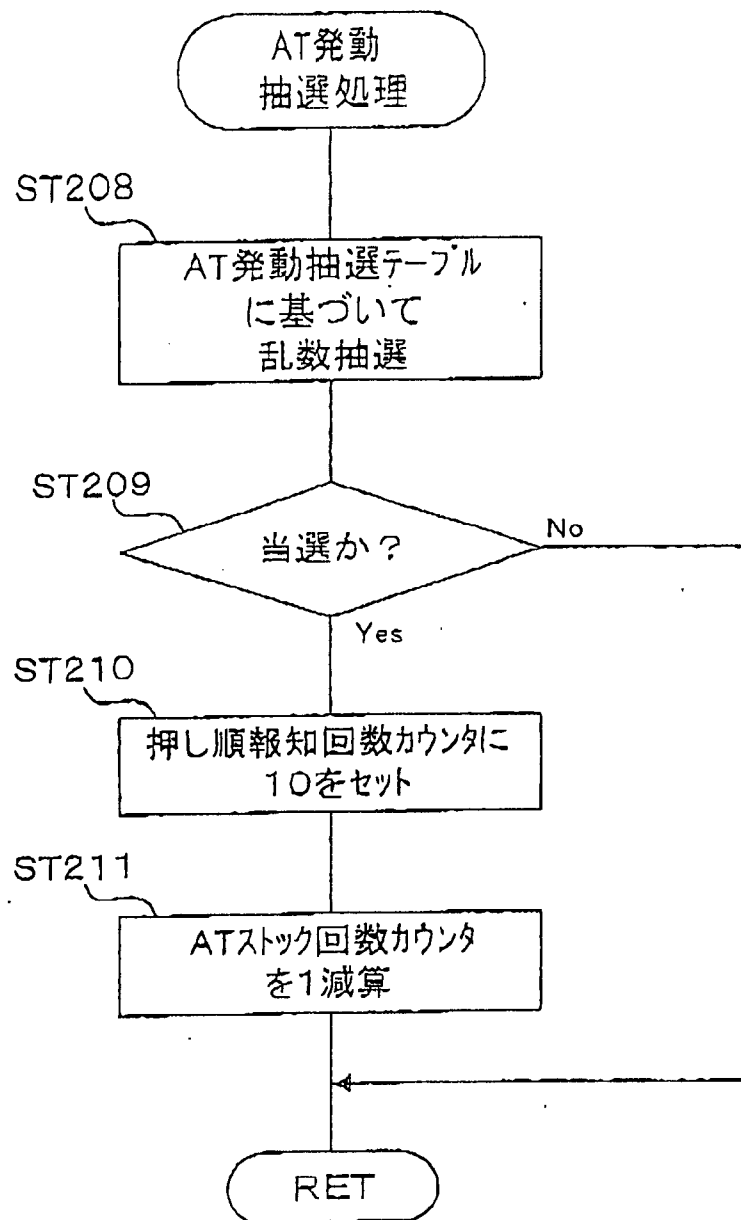
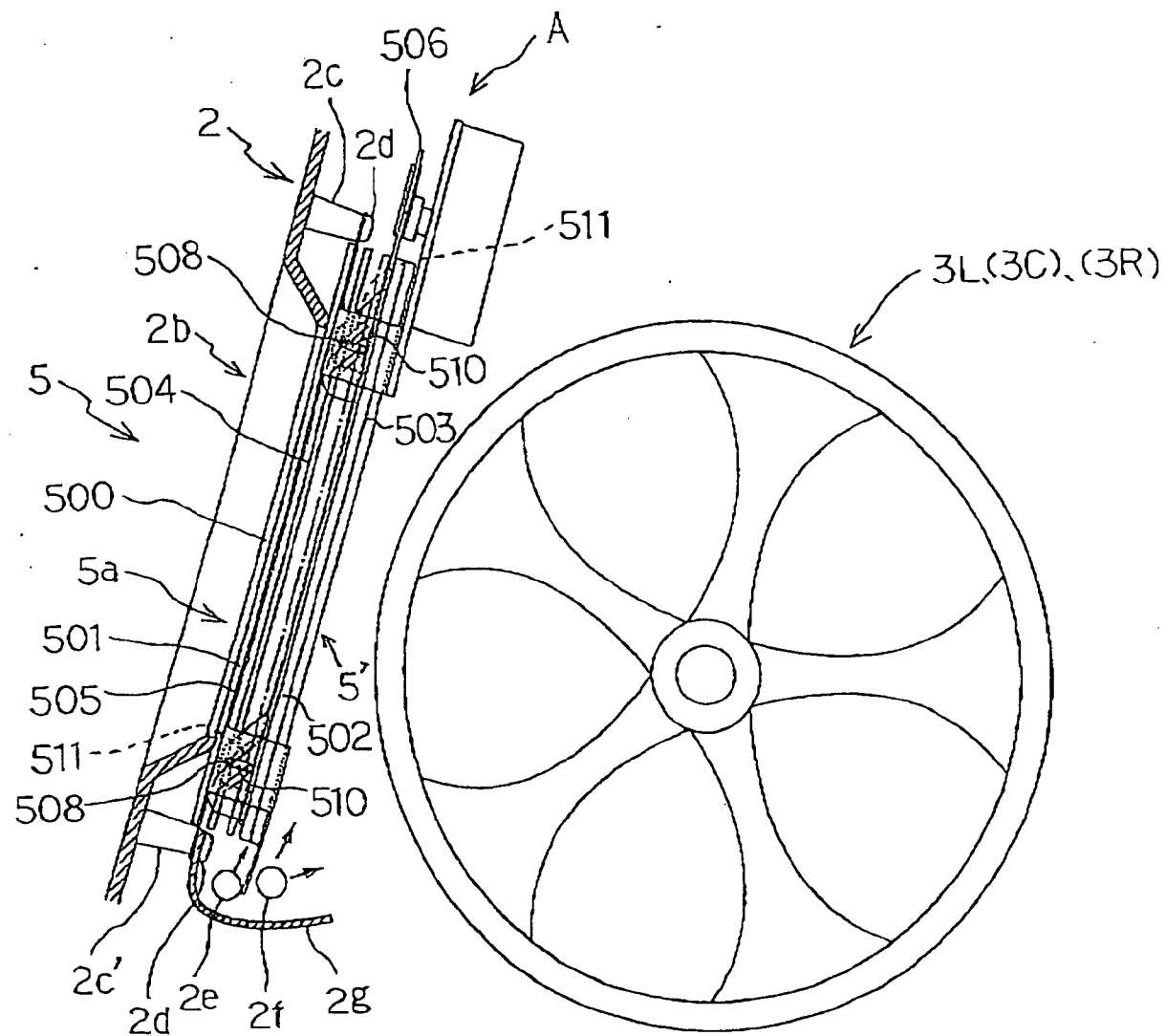


Fig. 34

Fig. 35



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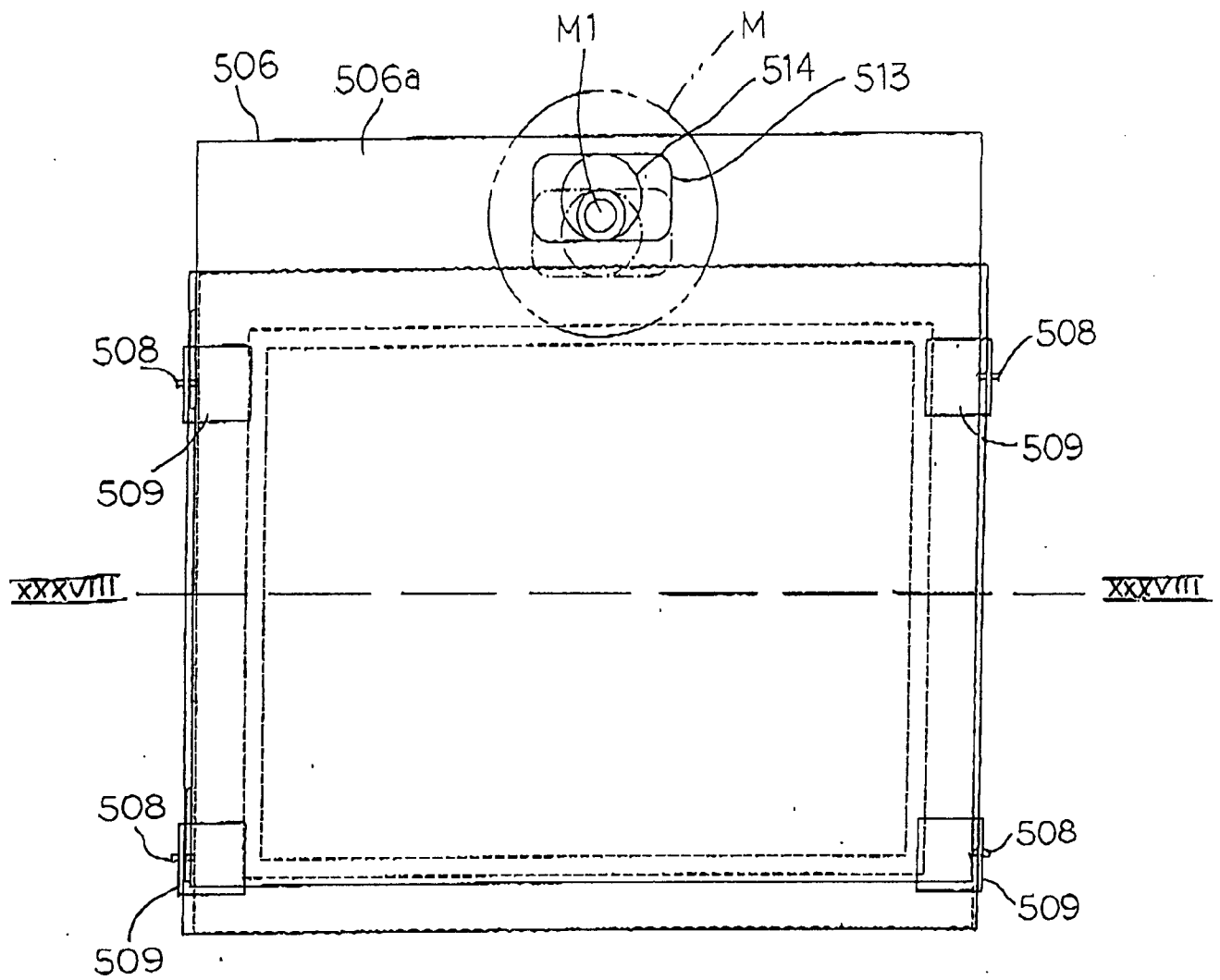


Fig. 36

Fig. 37

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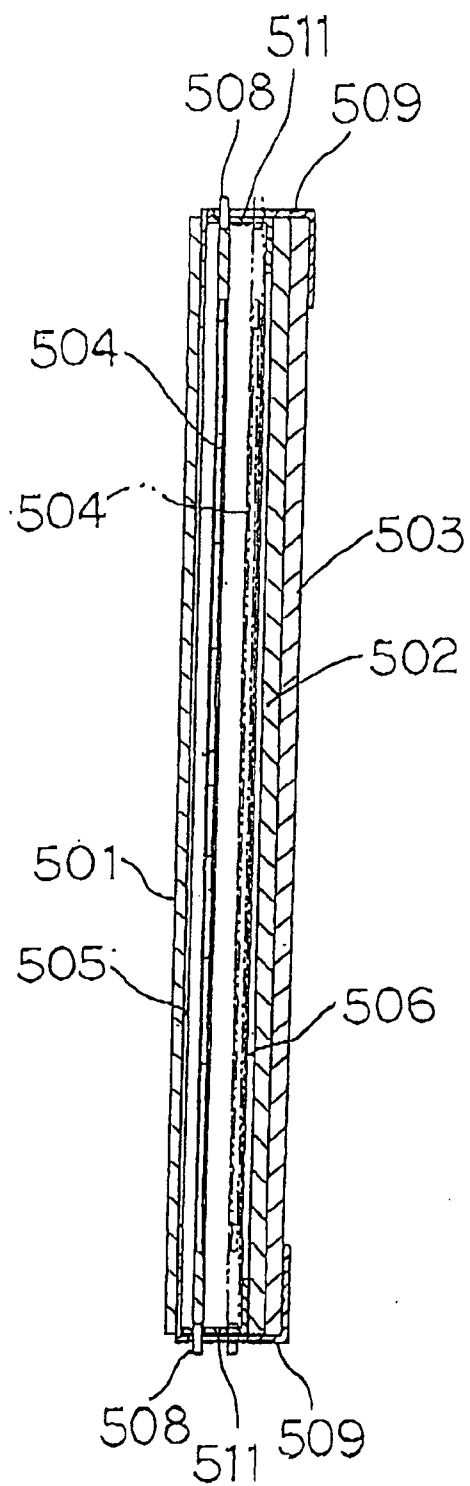


Fig. 38

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Fig. 39A

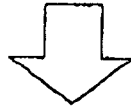
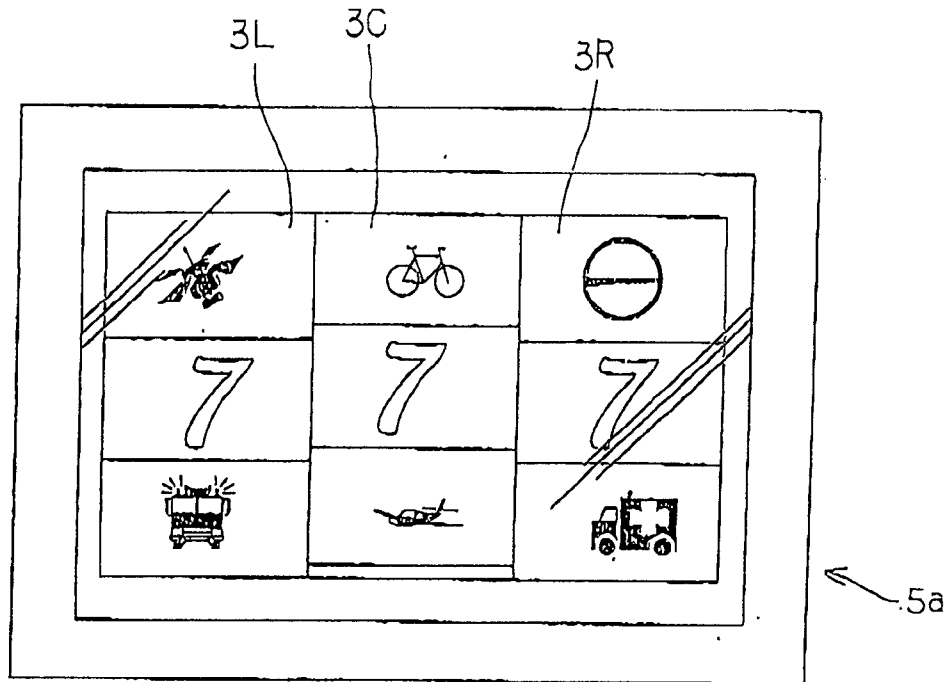
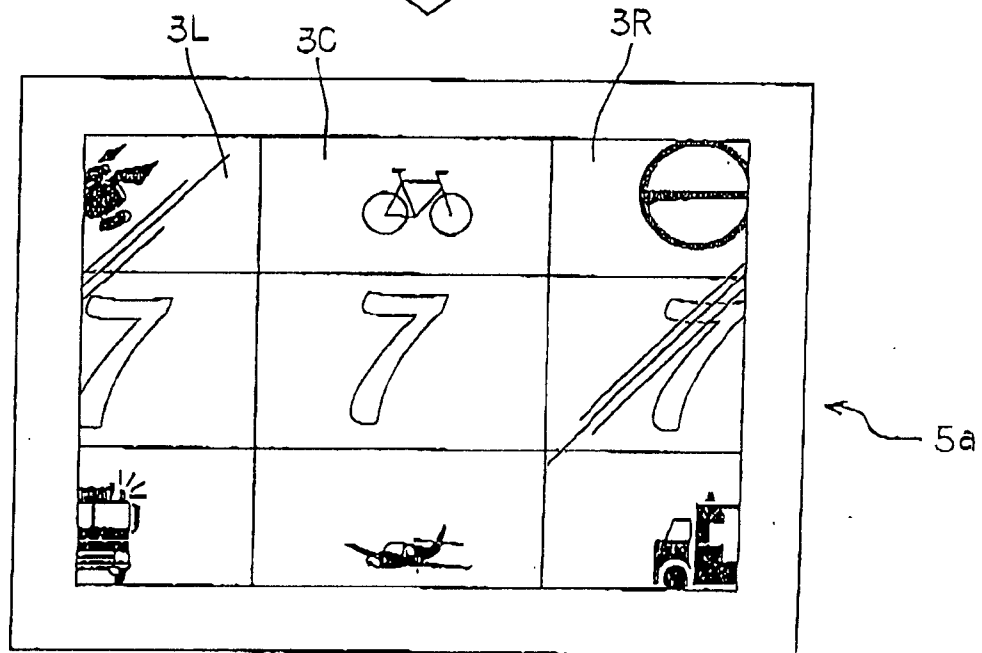


Fig. 39B



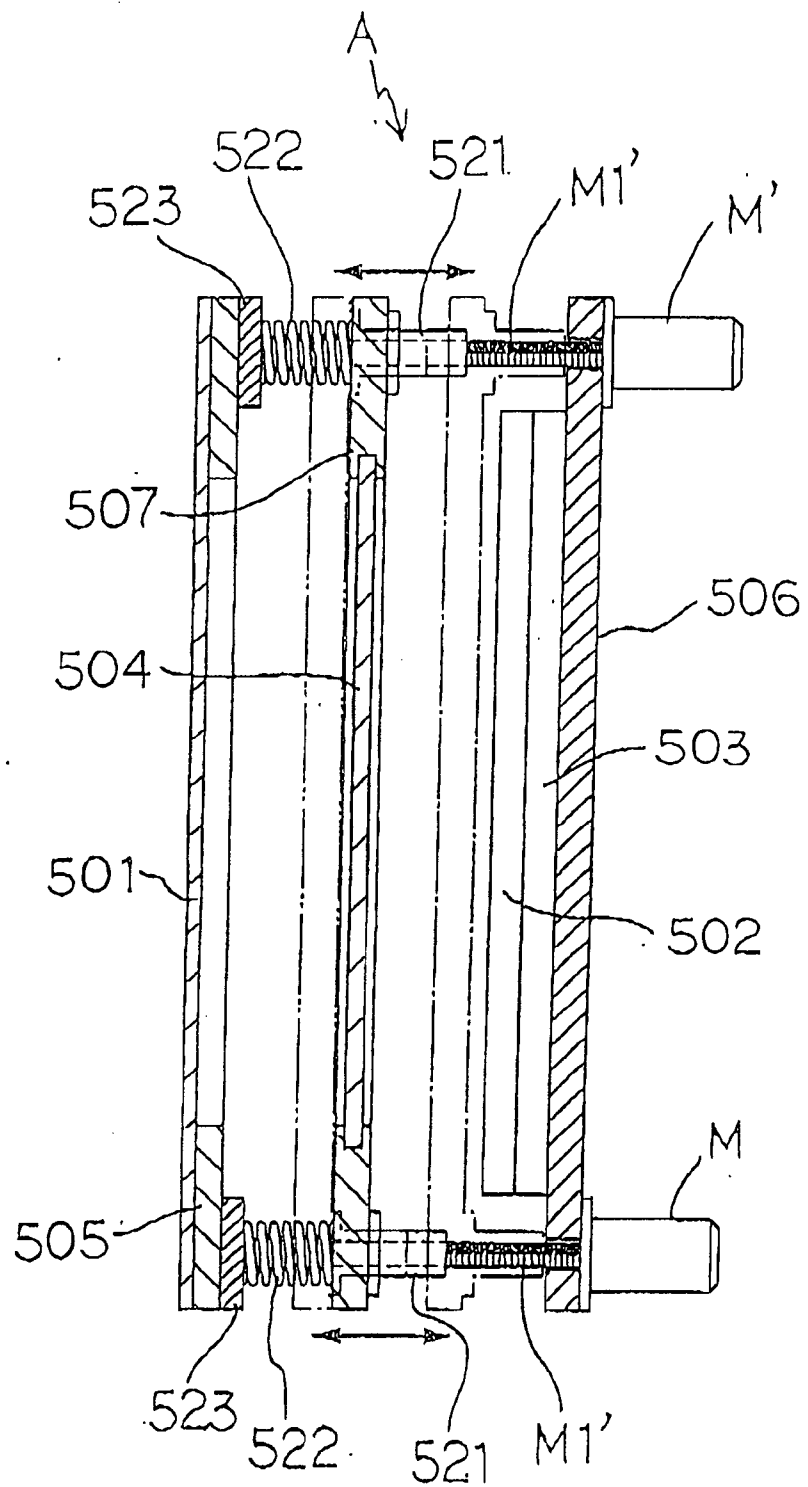


Fig. 40

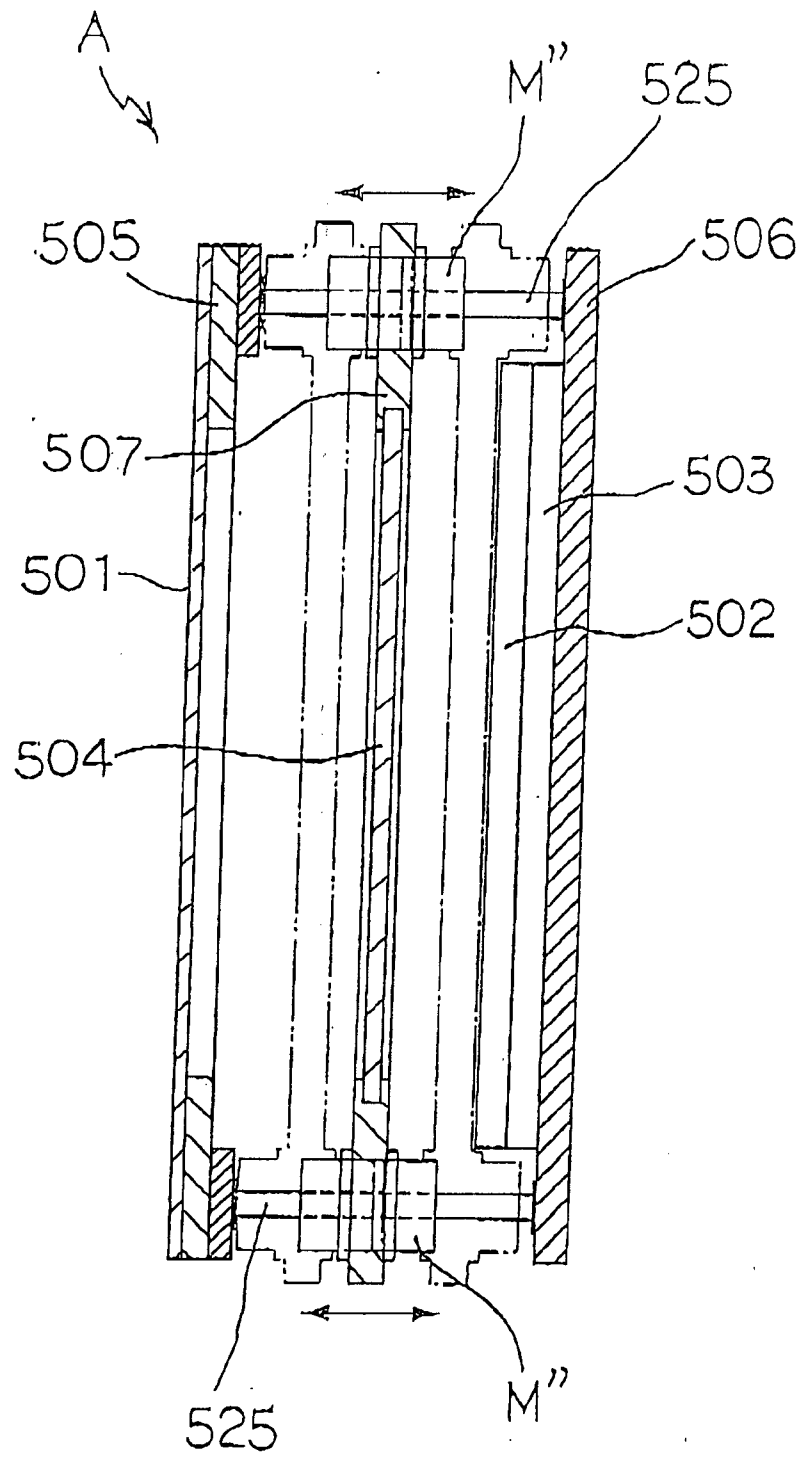


Fig. 41

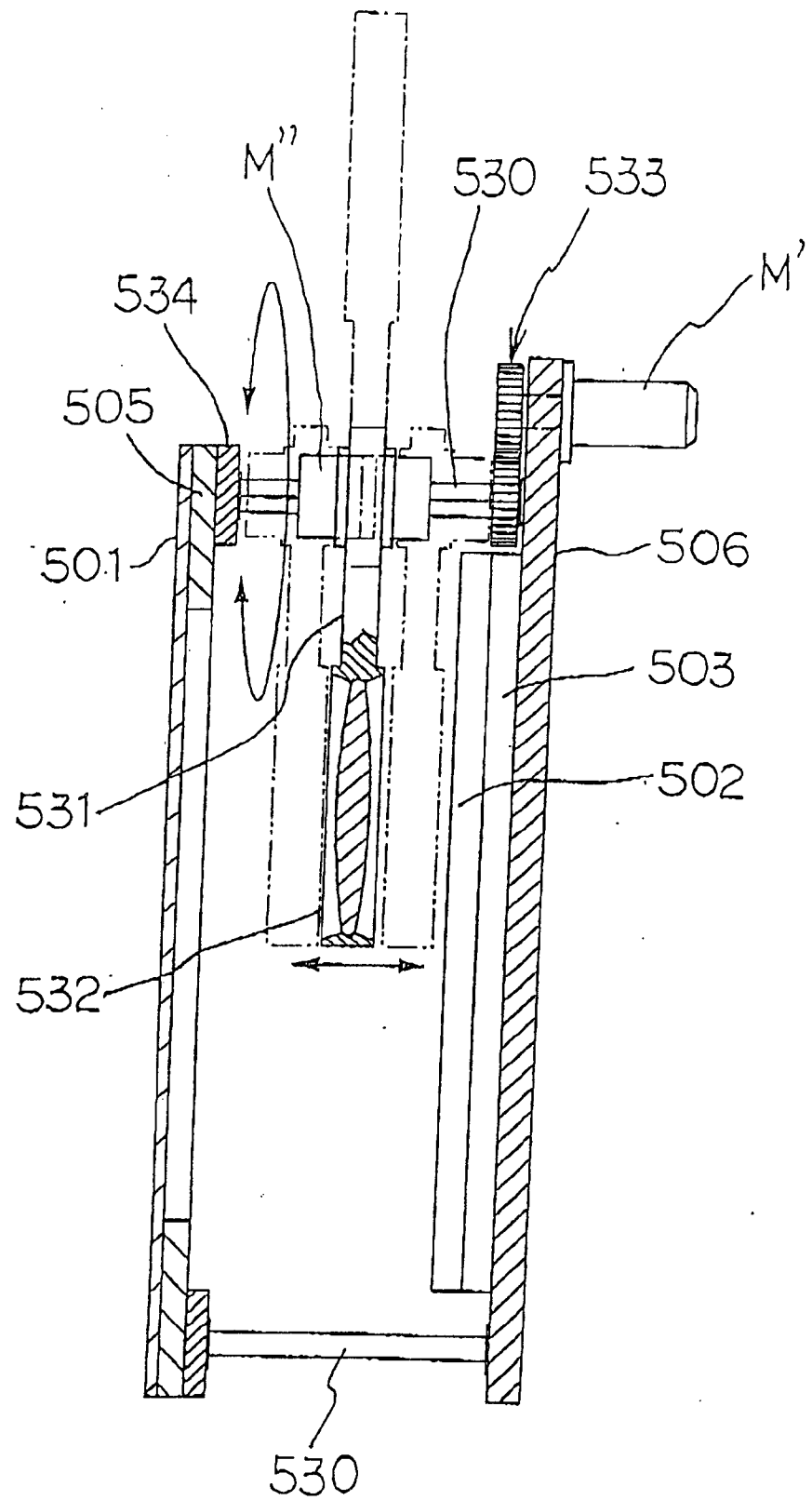


Fig. 42

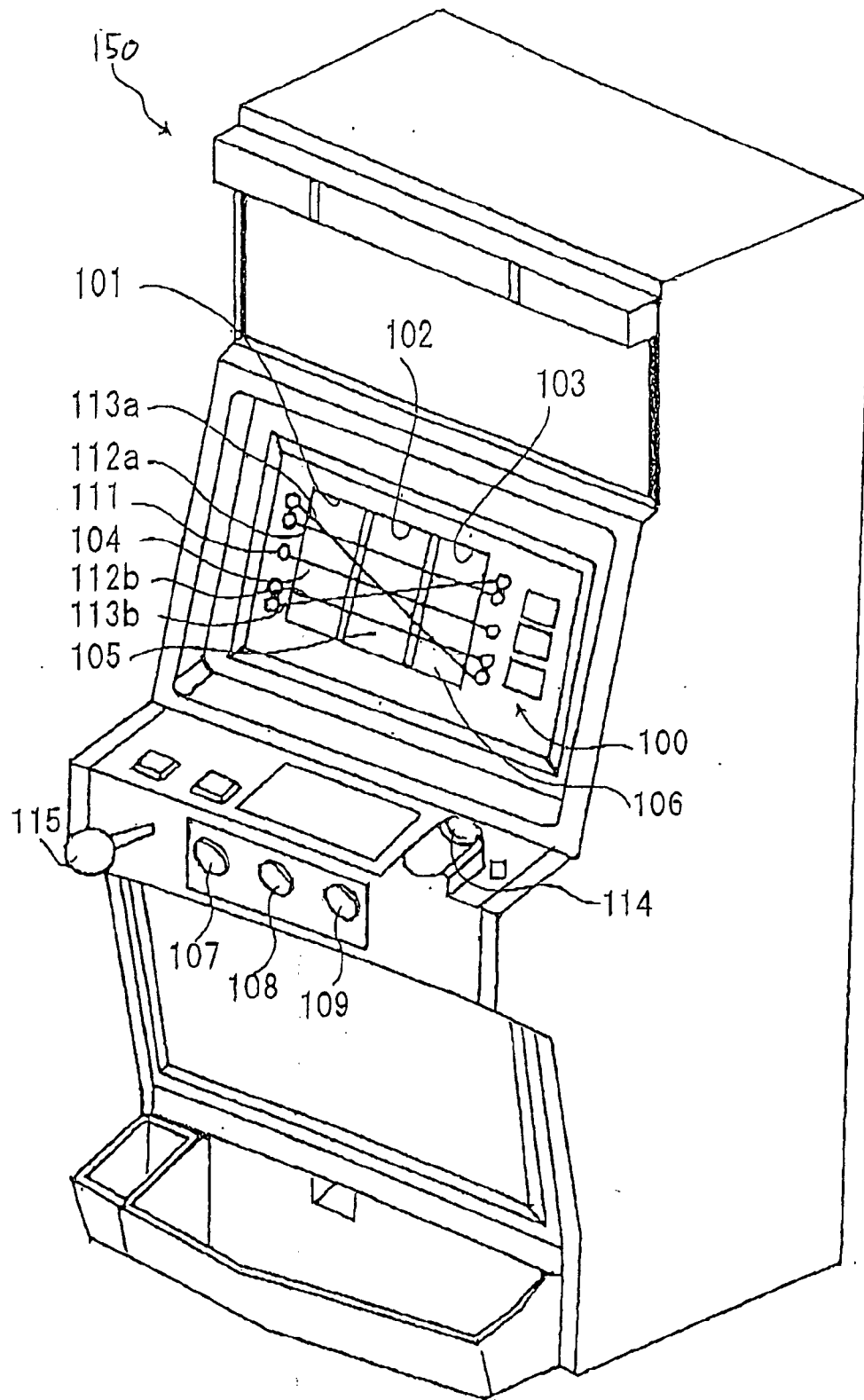


Fig. 43