

FIG. 1

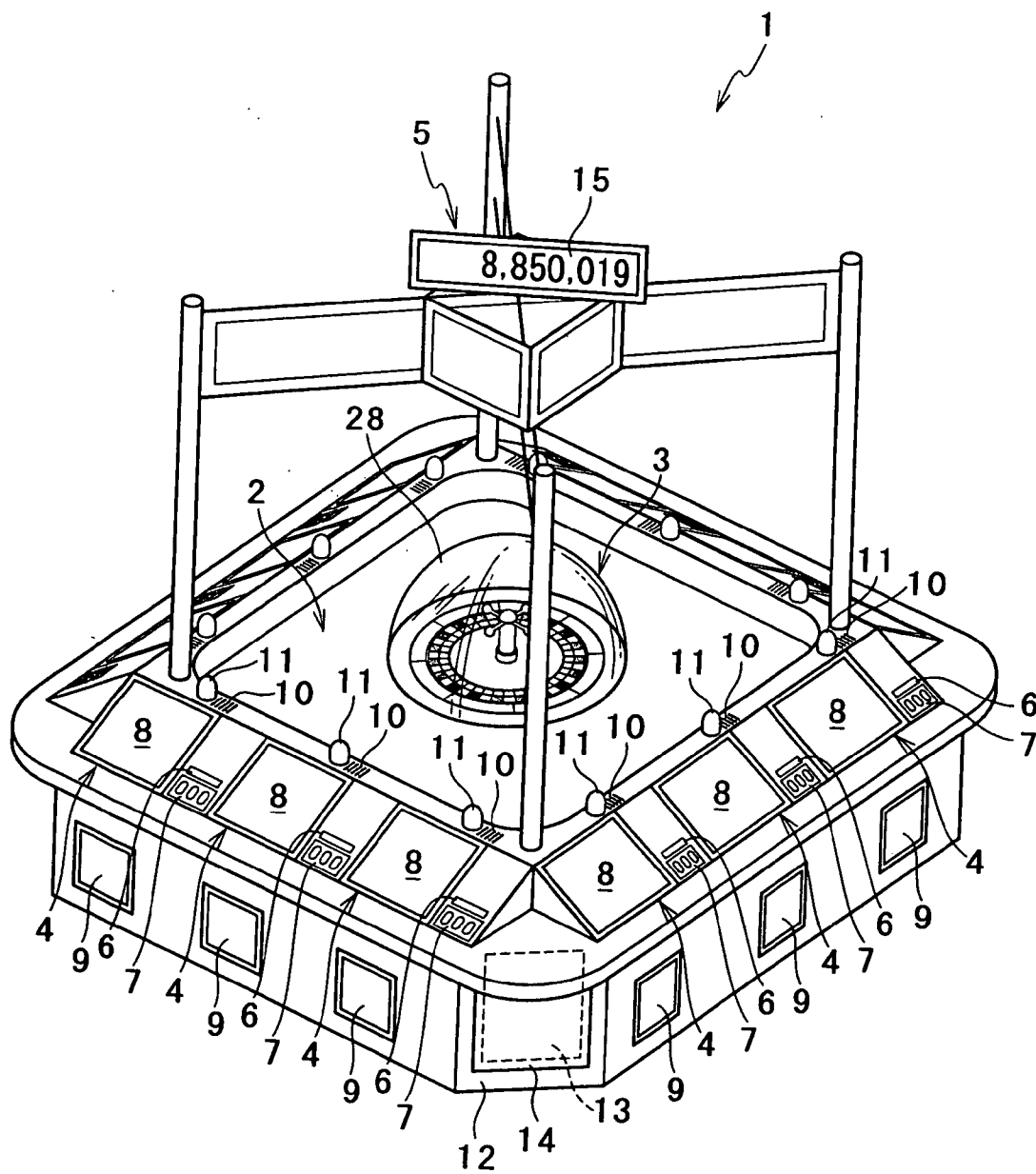


FIG. 2

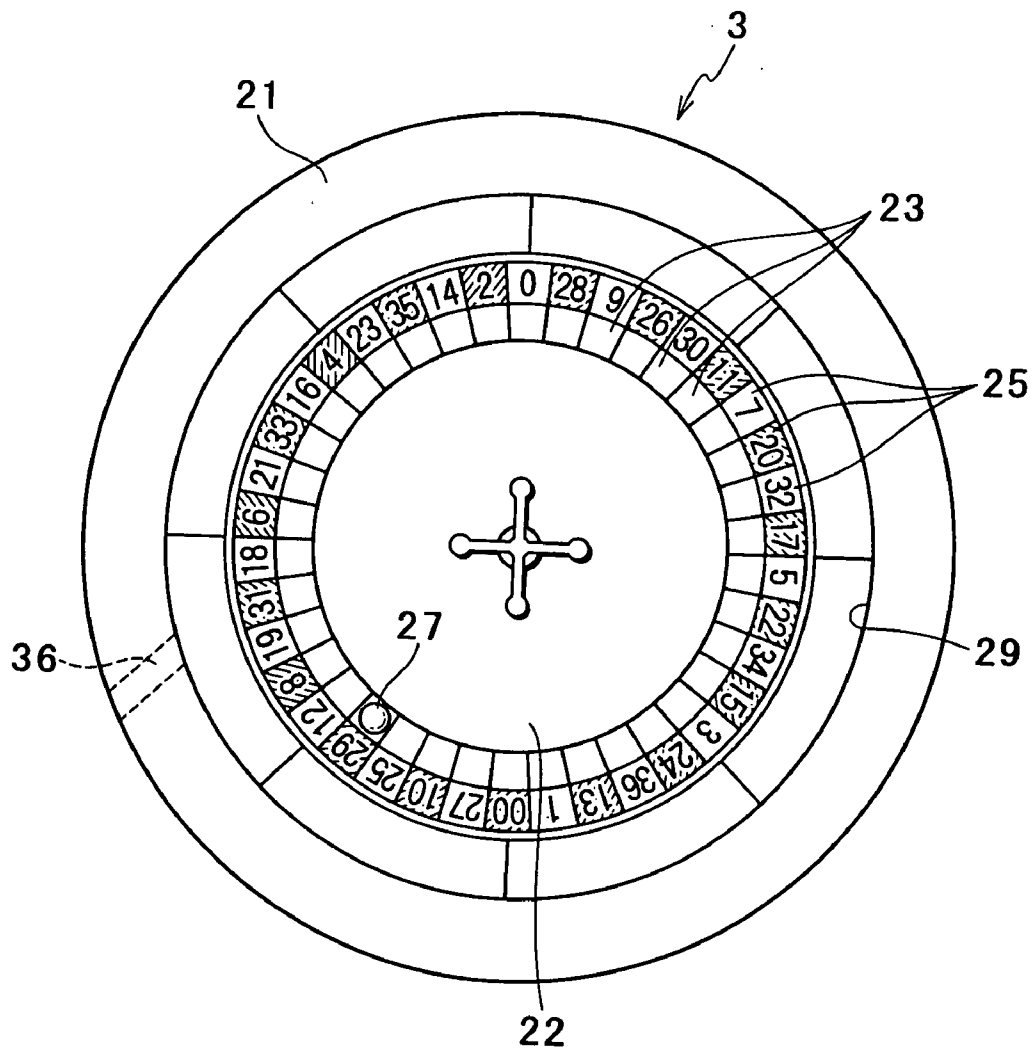
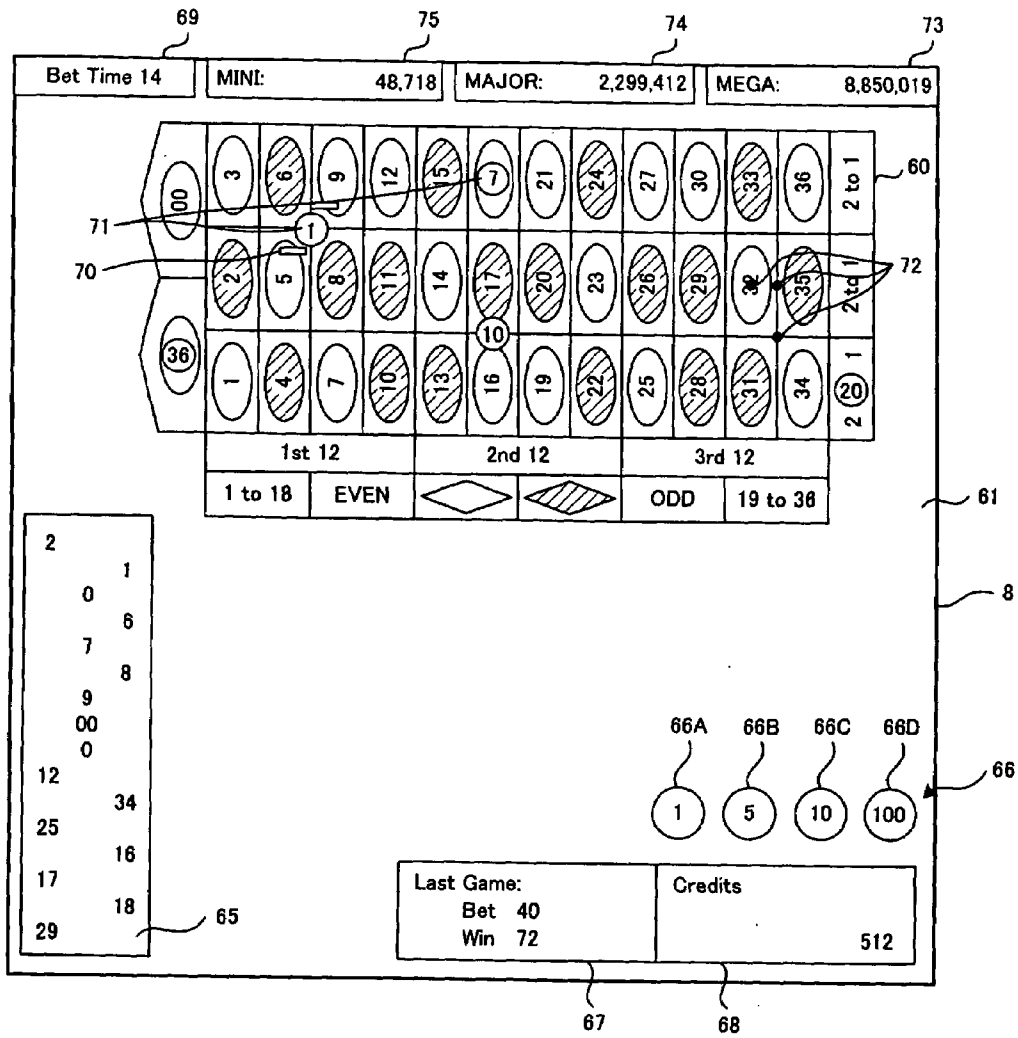


FIG. 3



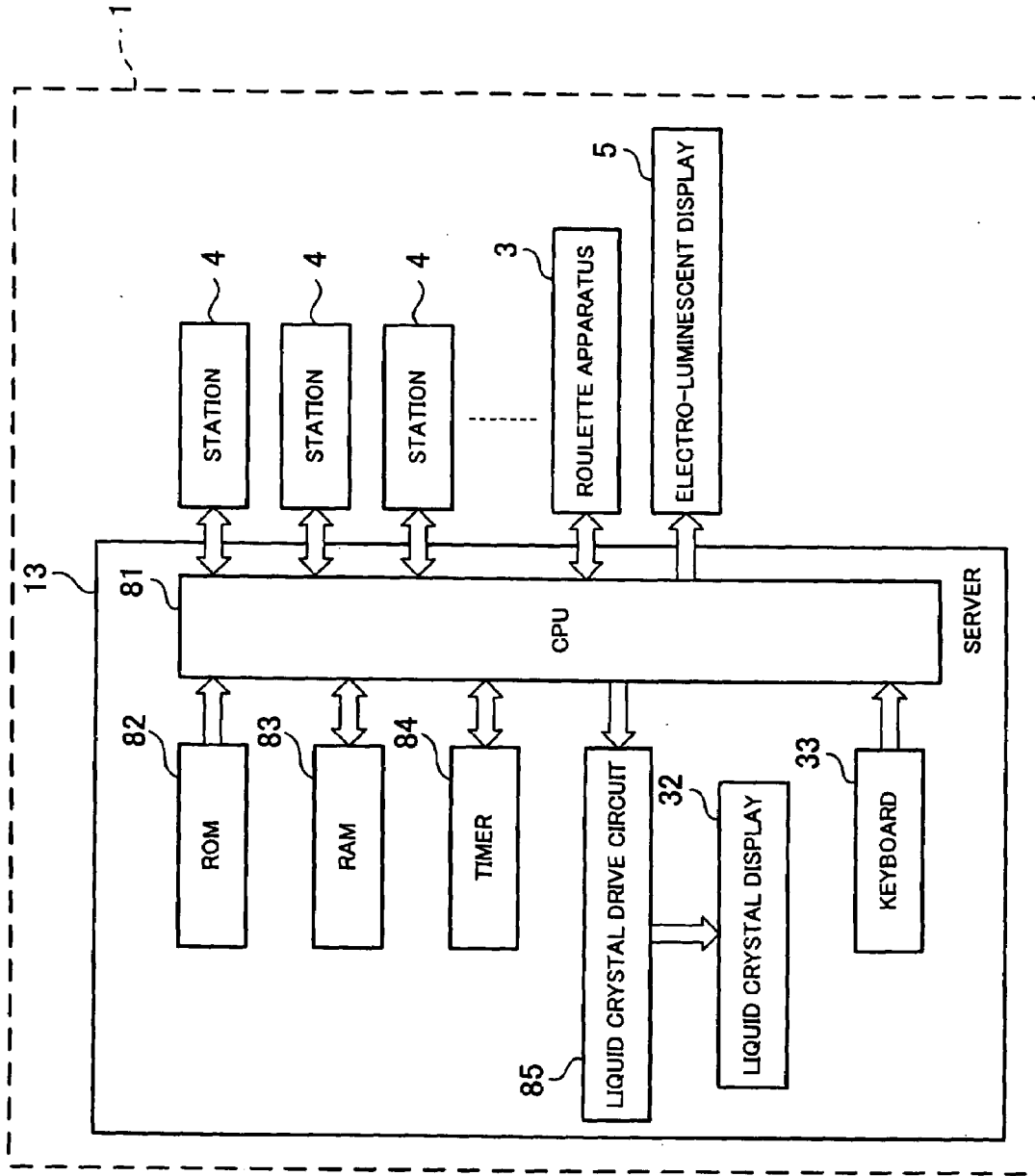


FIG. 4

FIG. 5

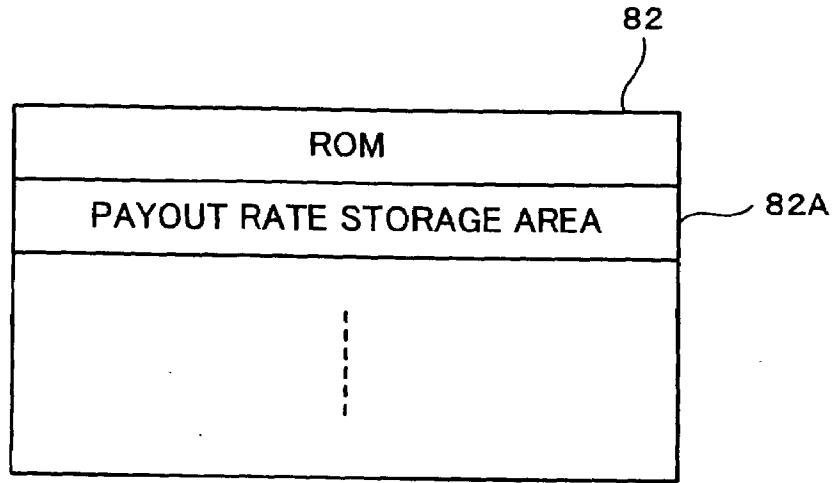


FIG. 6

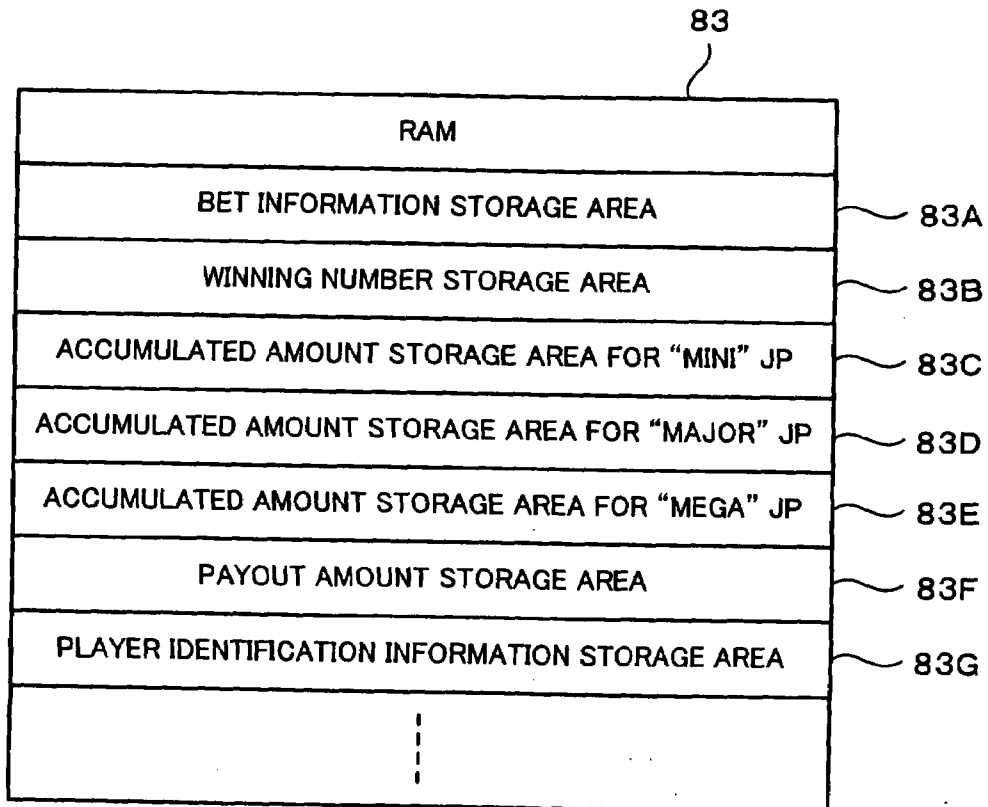


FIG. 7

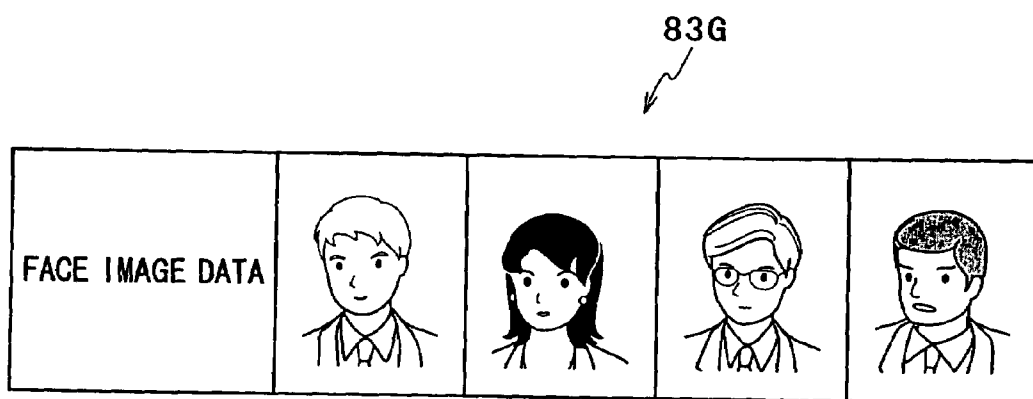


FIG. 8

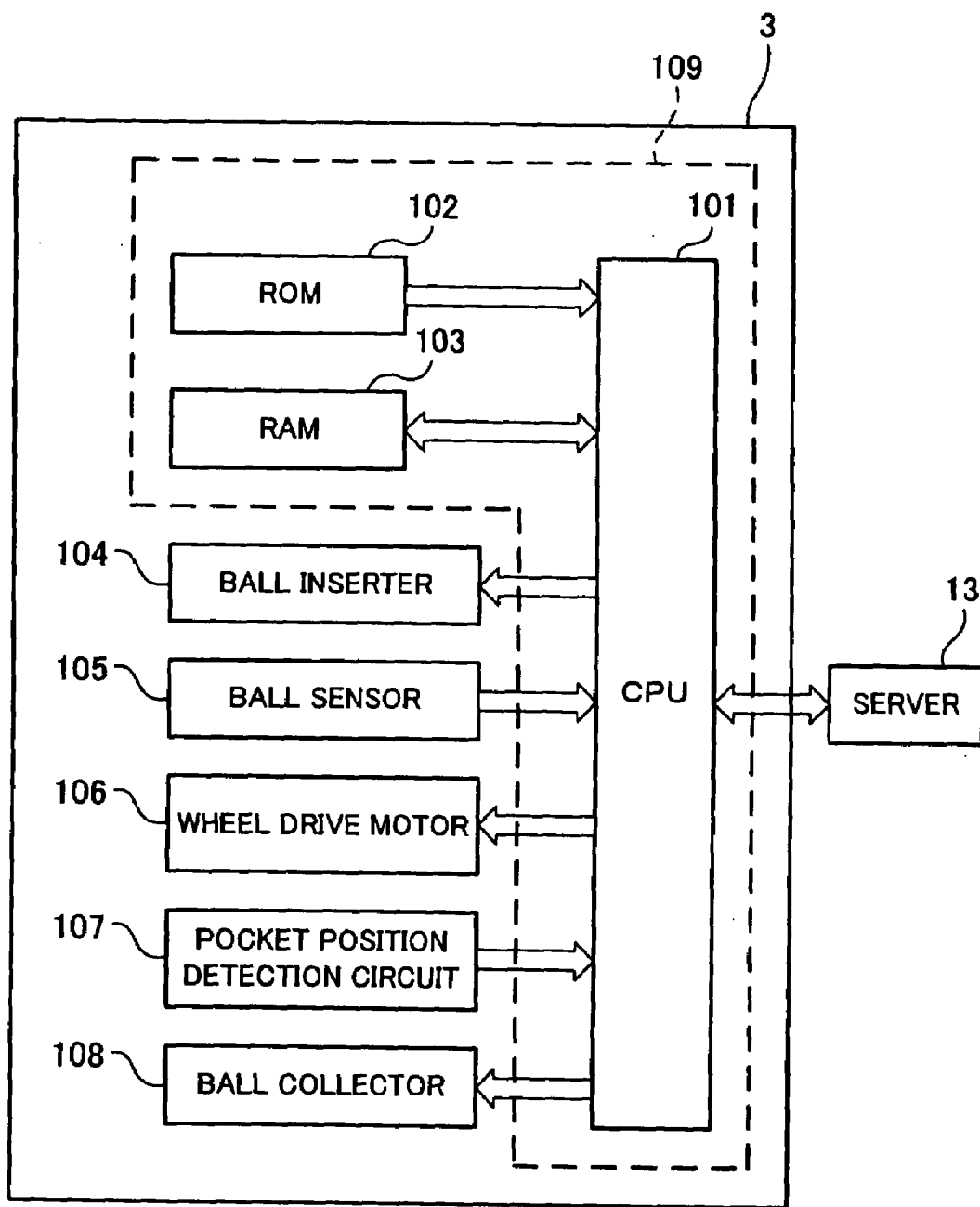


FIG. 9

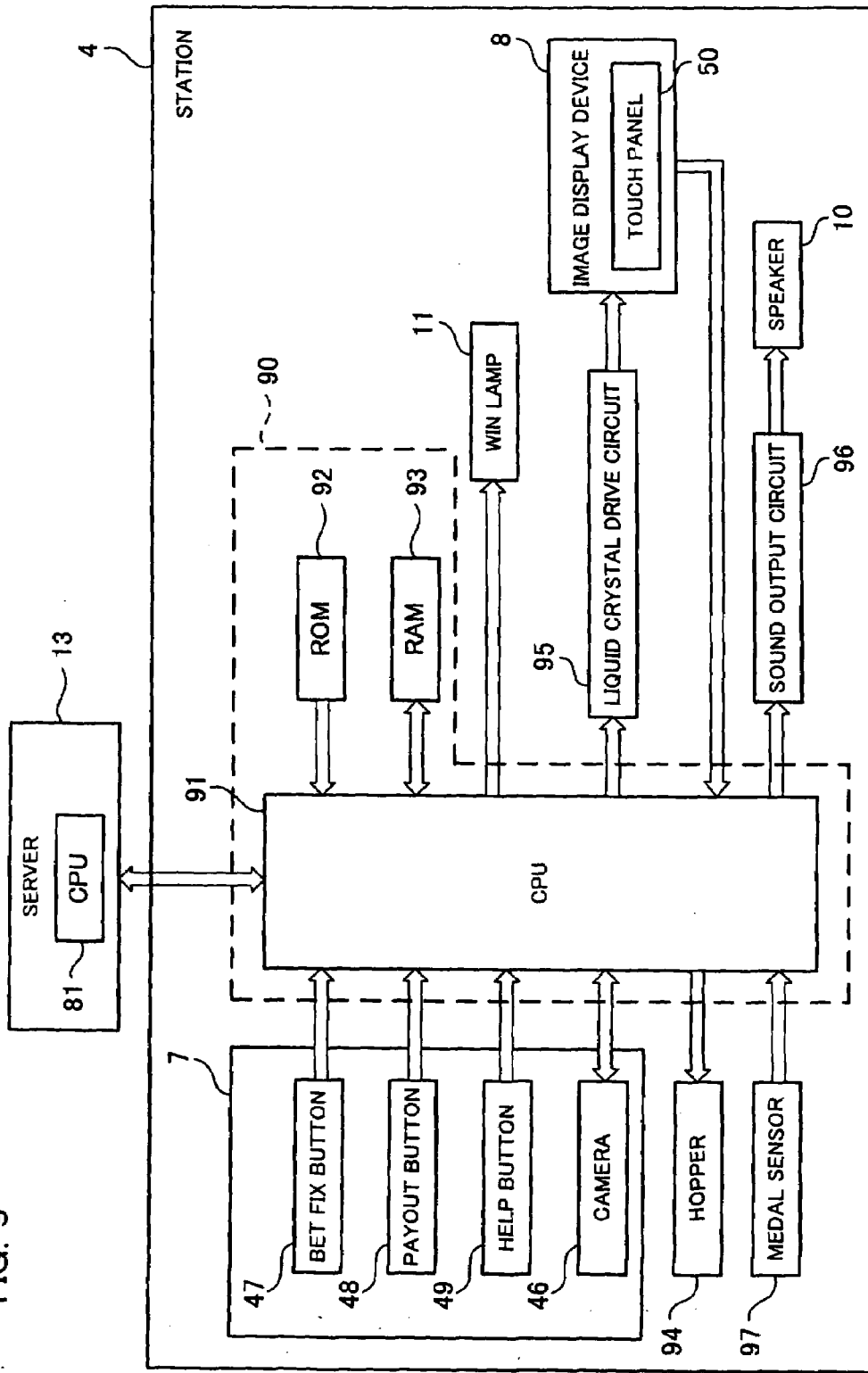


FIG. 10

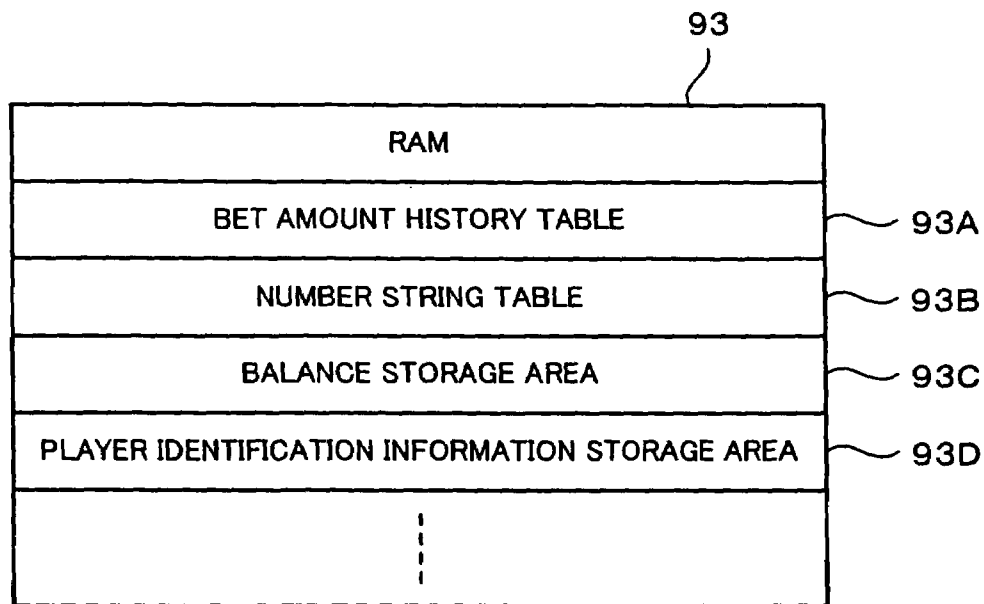


FIG. 11

93A

BET AMOUNT HISTORY TABLE

GAME NO.	1	2	3	4	5	6	7	8	9	10	11
BET AMOUNT	1	2	4	8	1	2	4	8	16	32	64

FIG. 12

93B

NUMBER STRING TABLE (MARTINGALE)

1	2	4	8	16	32
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FIG. 13

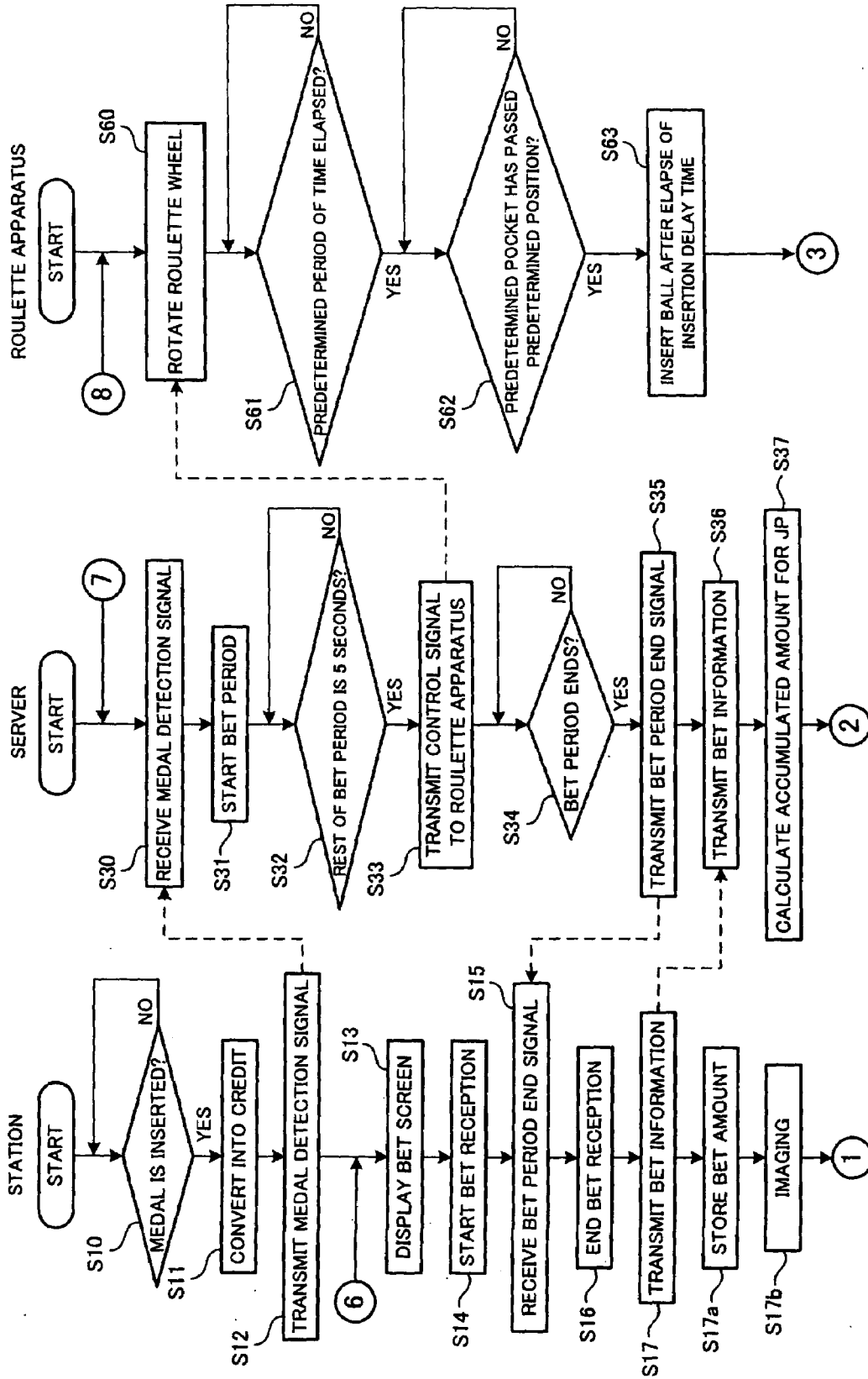


FIG. 14

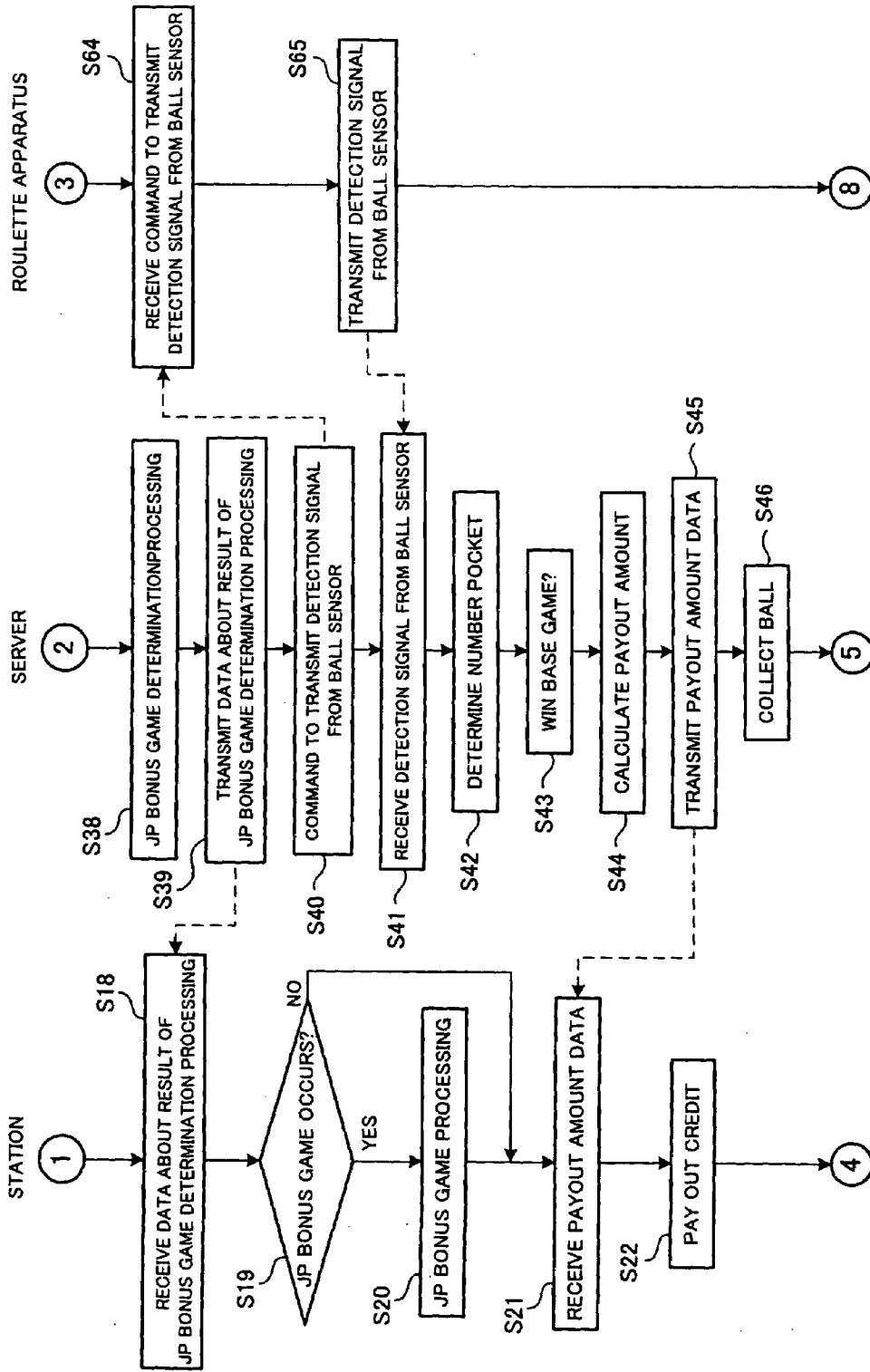


FIG. 15

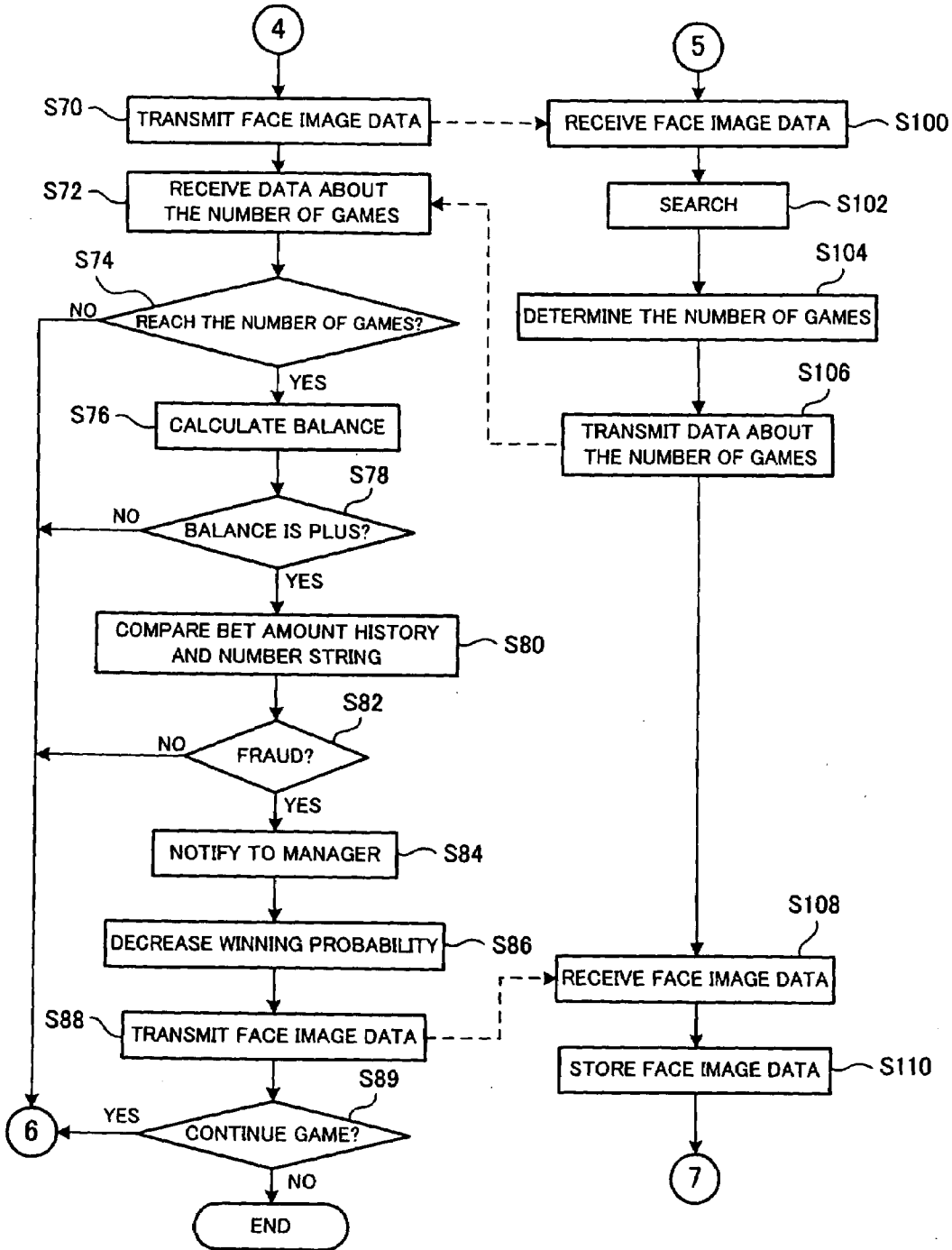


FIG. 16

MARTINGALE

BET	\$1	\$2	\$4
WIN/LOSE	LOSE	LOSE	WIN
PAYOUT	\$0	\$0	\$8
LOSS	\$1	\$3	\$1

BET	\$1	\$2	\$4	\$8	\$16	\$32	\$64	\$128
WIN/LOSE	LOSE	LOSE	LOSE	LOSE	LOSE	LOSE	LOSE	WIN
PAYOUT	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$256
LOSS	\$1	\$3	\$7	\$15	\$31	\$63	\$127	\$1

FIG. 17

COCOMO

BET	\$1	\$1	\$2
WIN/LOSE	LOSE	LOSE	WIN
PAYOUT	\$0	\$0	\$6
LOSS	\$1	\$2	\$2

BET	\$1	\$1	\$2	\$3	\$5	\$8	\$13	\$21
WIN/LOSE	LOSE	LOSE	LOSE	LOSE	LOSE	LOSE	LOSE	WIN
PAYOUT	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$63
LOSS	\$1	\$2	\$4	\$7	\$12	\$20	\$33	\$9

FIG. 18

MONTECARLO

NUMBERS	123	1234	12345	123456	34	345	3456
BET	\$4	\$5	\$6	\$7	\$7	\$8	\$9
WIN/LOSE	LOSE	LOSE	LOSE	WIN	LOSE	LOSE	WIN
PAYOUT	\$0	\$0	\$0	\$21	\$0	\$0	\$27
LOSS	\$4	\$9	\$15	\$1	\$8	\$16	\$2

GAMING DEVICE AND METHOD OF CONTROLLING THE SAME

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application is based upon and claims the benefit of priority from the prior Japanese Patent Application No. 2006-322154, filed on Nov. 29, 2006, the entire contents of which are incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to a gaming device, and a method of controlling the gaming device.

[0004] 2. Description of Related Art

[0005] A pamphlet of International Publication WO04/094013 discloses a gaming device using a ball.

SUMMARY OF THE INVENTION

[0006] The gaming device disclosed in the above-mentioned document does not take any countermeasure against unfair play based on a regular bet method such as a martingale, a cocomo, and a montecarlo.

[0007] A martingale will be described with reference to FIG. 16. According to the martingale, when a player loses a game, a next bet amount is double a last bet amount, while when a player wins a game, a next bet amount is the same as a last bet amount.

[0008] A cocomo will be described with reference to FIG. 17. According to the cocomo, when a player firstly loses a game, a next bet amount is the same as a last bet amount. Then, when the player further loses a game, a next bet amount is a sum of a last bet amount and a bet amount before the last bet amount. When a player wins a game, a next bet amount is the same as a last bet amount.

[0009] A montecarlo will be described with reference to FIG. 18. The montecarlo is a little complicated as compared with the martingale and the cocomo. First, a paper and writing instruments are prepared, and numbers "1, 2, 3" are written on the paper. A first bet amount is a sum of the first number and the last number of the number string "1, 2, 3" which is written on the paper at this point of time. That is, the first bet amount is 4. When a player loses a first game, a number obtained by adding 1 to the last number of the number string is newly entered at a tail of the number string. A second bet amount is a sum of the first number and the last number of the number string "1, 2, 3, 4" which is written on the paper at this point of time. That is, the second bet amount is 5. When a player wins a first game, a second bet amount is the same as the first bet amount. Every time a player loses a third or subsequent games, a number obtained by adding 1 to a last number of a number string which is written on the paper at that point of time, for example a number string "1, 2, 3, 4", is newly entered at a tail of the number string, and a next bet amount is an amount corresponding to a sum of a first number and a last number of a number string which is written on the paper at that point of time, for example the number string "1, 2, 3, 4, 5". That is, the next bet amount is an amount corresponding to 6. On the other hand, when a player wins a third or subsequent games, two leading numbers and two trailing numbers are deleted from a number string which is written on the paper at that point of time, for example a number string "1, 2, 3, 4, 5".

[0010] An object of the present invention is to provide a gaming device and a method of controlling the gaming device, which can detect unfair play based on a regular bet method such as a martingale, a cocomo, and a montecarlo.

[0011] According to a first aspect of the present invention, there is provided a gaming device comprising a gaming unit, an operation unit, a memory, and a processor. The gaming unit operates in a game and presents a game result to a player. The operation unit is operated by the player when determining a bet amount of game media to be bet on the game. The memory stores therein a string of numbers that gradually increase by a predetermined increment, and a history of the bet amount in every game. The processor operates to: control an operation of the gaming unit in such a manner that a game starts when the player operates the operation unit; determine win or loss of the game based on a predetermined probability; give a game medium to the player when it is determined that the game is won; store into the memory the bet amount determined through the operation unit in every game; and compare the string of numbers and the history of the bet amount stored in the memory with each other, at every predetermined number of games.

[0012] According to a second aspect of the present invention, there is provided a gaming device comprising a gaming unit, an operation unit, a memory, and a processor. The gaming unit operates in a game and presents a game result to a player. The operation unit is operated by the player when determining a bet amount of game media to be bet on the game. The memory stores therein a string of numbers that gradually increase by a predetermined increment, and a history of the bet amount in every game. The processor operates to: control an operation of the gaming unit in such a manner that a game starts when the player operates the operation unit; determine win or loss of the game based on a predetermined probability; give a game medium to the player when it is determined that the game is won; store into the memory the bet amount determined through the operation unit in every game; calculate a balance of the game media at every predetermined number of games; compare the string of numbers and the history of the bet amount stored in the memory with each other, only when the balance is a plus; and control the gaming unit so as to make a notification to a manager of the gaming device, when based on a comparison it is determined that the string of numbers is included in the history of the bet amount.

[0013] According to a third aspect of the present invention, there is provided a gaming device comprising a gaming unit, an operation unit, a memory, and a processor. The gaming unit operates in a game and presents a game result to a player. The operation unit is operated by the player when determining a bet amount of game media to be bet on the game. The memory stores therein a string of numbers that gradually increase by a predetermined increment, and a history of the bet amount in every game. The processor operates to: control an operation of the gaming unit in such a manner that a game starts when the player operates the operation unit; determine win or loss of the game based on a predetermined probability; give a game medium to the player when it is determined that the game is won; store into the memory the bet amount determined through the operation unit in every game; calculate a balance of the game media at every predetermined number of games; compare the string of numbers and the history of the bet amount stored in the memory with each other, only when the balance is a plus; and control the gaming unit so as to

decrease the probability, when based on a comparison it is determined that the string of numbers is included in the history of the bet amount.

[0014] According to a fourth aspect of the present invention, there is provided a gaming device comprising a gaming unit, an operation unit, a memory, and a processor. The gaming unit operates in a game and presents a game result to a player. The operation unit is operated by the player when determining a bet amount of game media to be bet on the game. The memory stores therein a string of numbers that gradually increase by a predetermined increment, and a history of the bet amount in every game. The processor operates to: control an operation of the gaming unit in such a manner that a game starts when the player operates the operation unit; determine win or loss of the game based on a predetermined probability; give a game medium to the player when it is determined that the game is won; store into the memory the bet amount determined through the operation unit in every game; compare the string of numbers and the history of the bet amount stored in the memory with each other, at every predetermined number of games; and control the gaming unit so as to make a notification to a manager of the gaming device and also so as to decrease the probability, when based on a comparison it is determined that the string of numbers is included in the history of the bet amount.

[0015] According to a fifth aspect of the present invention, there is provided a gaming device comprising a gaming unit, an operation unit, a memory, and a processor. The gaming unit operates in a game and presents a game result to a player. The operation unit is operated by the player when determining a bet amount of game media to be bet on the game. The memory stores therein a string of numbers that gradually increase by a predetermined increment, and a history of the bet amount in every game. The processor operates to: control an operation of the gaming unit in such a manner that a game starts when the player operates the operation unit; determine win or loss of the game based on a predetermined probability; give a game medium to the player when it is determined that the game is won; store into the memory the bet amount determined through the operation unit in every game; calculate a balance of the game media at every predetermined number of games; compare the string of numbers and the history of the bet amount stored in the memory with each other, only when the balance is a plus; and control the gaming unit so as to make a notification to a manager of the gaming device and also so as to decrease the probability, when based on a comparison it is determined that the string of numbers is included in the history of the bet amount.

[0016] According to a sixth aspect of the present invention, there is provided a method of controlling a gaming device. The method comprises the steps of: controlling an operation of a gaming unit that presents a game result to a player, so as to start a game, when the player operates an operation unit in determining a bet amount of game media to be bet on a game; determining win or loss of the game based on a predetermined probability; giving a game medium to the player when it is determined that the game is won; storing into a memory the bet amount determined through the operation unit in every game; and comparing a string of numbers that gradually increase by a predetermined increment and a history of the bet amount, which are stored in the memory, with each other at every predetermined number of games.

[0017] According to a seventh aspect of the present invention, there is provided a method of controlling a gaming

device. The method comprises the steps of: controlling an operation of a gaming unit that presents a game result to a player, so as to start a game, when the player operates an operation unit in determining a bet amount of game media to be bet on a game; determining win or loss of the game based on a predetermined probability; giving a game medium to the player when it is determined that the game is won; storing into a memory the bet amount determined through the operation unit in every game; calculating a balance of the game media at every predetermined number of games; comparing a string of numbers that gradually increase by a predetermined increment and a history of the bet amount, which are stored in the memory, with each other, when the balance calculated in the step of calculating is a plus; and controlling the gaming unit so as to make a notification to a manager of the gaming device, when it is determined, in the step of comparing, that the string of numbers is included in the history of the bet amount.

[0018] According to an eighth aspect of the present invention, there is provided a method of controlling a gaming device. The method comprises the steps of: controlling an operation of a gaming unit that presents a game result to a player, so as to start a game, when the player operates an operation unit in determining a bet amount of game media to be bet on a game; determining win or loss of the game based on a predetermined probability; giving a game medium to the player when it is determined that the game is won; storing into a memory the bet amount determined through the operation unit in every game; calculating a balance of the game media at every predetermined number of games; comparing a string of numbers that gradually increase by a predetermined increment and a history of the bet amount, which are stored in the memory, with each other, when the balance calculated in the step of calculating is a plus; and controlling the gaming unit so as to decrease the probability, when it is determined, in the step of comparing, that the string of numbers is included in the history of the bet amount.

[0019] According to a ninth aspect of the present invention, there is provided a method of controlling a gaming device. The method comprises the steps of: controlling an operation of a gaming unit that presents a game result to a player, so as to start a game, when the player operates an operation unit in determining a bet amount of game media to be bet on a game; determining win or loss of the game based on a predetermined probability; giving a game medium to the player when it is determined that the game is won; storing into a memory the bet amount determined through the operation unit in every game; comparing a string of numbers that gradually increase by a predetermined increment and a history of the bet amount, which are stored in the memory, with each other at every predetermined number of games; and controlling the gaming unit so as to make a notification to a manager of the gaming device, when it is determined, in the step of comparing, that the string of numbers is included in the history of the bet amount.

[0020] According to a tenth aspect of the present invention, there is provided a method of controlling a gaming device. The method comprises the steps of: controlling an operation of a gaming unit that presents a game result to a player, so as to start a game, when the player operates an operation unit in determining a bet amount of game media to be bet on a game; determining win or loss of the game based on a predetermined probability; giving a game medium to the player when it is determined that the game is won; storing into a memory the bet amount determined through the operation unit in every

game; calculating a balance of the game media at every predetermined number of games; comparing a string of numbers that gradually increase by a predetermined increment and a history of the bet amount, which are stored in the memory, with each other, when the balance calculated in the step of calculating is a plus; and controlling the gaming unit so as to make a notification to a manager of the gaming device and also so as to decrease the probability, when it is determined, in the step of comparing, that the string of numbers is included in the history of the bet amount.

[0021] In the first to tenth aspect, the string of numbers and the history of the bet amount are compared with each other at every predetermined number of games. Thereby, unfair play based on a regular bet method can be detected.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] Other and further objects, features and advantages of the invention will appear more fully from the following description taken in connection with the accompanying drawings in which:

[0023] FIG. 1 is a perspective view showing an appearance of a roulette gaming device according to an embodiment of the present invention;

[0024] FIG. 2 is a plan view of a roulette apparatus included in the roulette gaming device;

[0025] FIG. 3 is an explanatory view showing an example of an image displayed on an image display device of a station;

[0026] FIG. 4 is a block diagram showing an electrical construction of the roulette gaming device;

[0027] FIG. 5 schematically shows a storage region of a ROM of a server;

[0028] FIG. 6 schematically shows a storage region of a RAM of the server;

[0029] FIG. 7 schematically shows a configuration of a player identification information storage area shown in FIG. 6;

[0030] FIG. 8 is a block diagram showing an electrical construction of the roulette apparatus;

[0031] FIG. 9 is a block diagram showing an electrical construction of the station;

[0032] FIG. 10 schematically shows a storage region of a RAM of the station;

[0033] FIG. 11 schematically shows a bet amount history table shown in FIG. 10;

[0034] FIG. 12 schematically shows a number string table shown in FIG. 10;

[0035] FIGS. 13, 14, and 15 are flowcharts showing a game processing executed by the roulette gaming device;

[0036] FIG. 16 is an explanatory view for explaining a martingale;

[0037] FIG. 17 is an explanatory view for explaining a cocomo; and

[0038] FIG. 18 is an explanatory view for explaining a montecarlo.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0039] In the following, a certain preferred embodiment of the present invention will be described with reference to the accompanying drawings.

[0040] As shown in FIG. 1, a roulette gaming device 1 according to an embodiment of the present invention includes a cabinet 2, a roulette unit 3, a total of twelve stations 4, an

electro-luminescent display 5, and a server 13. The roulette unit 3 is provided on an upper face of the cabinet 2, substantially at a center thereof. On the twelve stations 4, players play games. The electro-luminescent display 5 is provided above the cabinet 2. Three of the stations 4 are arranged at each of four sides of the cabinet 2, so as to surround the roulette apparatus 3.

[0041] The roulette apparatus 3 will be described with reference to FIG. 2. The roulette apparatus 3 has an annular frame 21 that is fixed to the cabinet 2 (see FIG. 1), and a roulette wheel 22 that is received and held inside the frame 21 in a rotatable manner. A total of thirty-eight number pockets 23 are annularly provided on an upper face of the roulette wheel 22. Each number pocket 23 has a recessed shape. On the upper face of the roulette wheel 22, number plates 25 are annularly provided outside the number pockets 23 so as to correspond to the number pockets 23. The number plates 25 indicate numbers "0", "00", and "1" to "36", respectively.

[0042] A ball insertion slot 36 is formed within the frame 21. A ball inserter 104 (see FIG. 8) is connected to the ball insertion slot 36. Along with driving of the ball inserter 104, a ball 27 is inserted through the ball insertion slot 36 onto the roulette wheel 22. The roulette apparatus 3 is entirely covered from an upper side thereof by a transparent acrylic cover 28 having a hemispheric shape (see FIG. 1).

[0043] A wheel drive motor 106 (see FIG. 8) is provided below the roulette wheel 22. Along with driving of the motor 106, the roulette wheel 22 is rotated.

[0044] A metal plate (not shown) is mounted at a predetermined position below the roulette wheel 22. As a sensor included in a pocket position detection circuit 107 (see FIG. 8) detects the metal plate, a position of the number pocket 23 is detected.

[0045] The frame 21 gently slopes inward, and a guide wall 29 is formed at a middle portion of the frame 21. A ball 27 inserted through the ball insertion slot 36 rolls against centrifugal force while being guided by the guide wall 29. As a rotational speed decreases to reduce centrifugal force, the ball 27 rolls on a slope of the frame 21 inside the guide wall 29, then passes through the number plate 25 of the rotating roulette wheel 22, and then is received into any number pocket 23. Consequently, a ball sensor 105 (see FIG. 8) determines which number pocket 23 has received the ball 27.

[0046] Rotation of the roulette wheel 22 and insertion of the ball 27 are controlled based on a control signal that includes data about a driving period of the motor 106, an initial ball speed, and an insertion delay time.

[0047] The roulette wheel 22 rotates at a predetermined speed for the driving period of the motor 106. When driving of the motor 106 is stopped, the rotation speed of the roulette wheel 22 gradually decreases and finally the roulette wheel 22 stops. The initial ball speed is an initial speed at a time when the ball 27 is inserted by driving of the ball inserter 104. The insertion delay time is a period of time during rotation of the roulette wheel 22 from when a predetermined number pocket 23 passes through a predetermined position to when the ball 27 is inserted.

[0048] Next, the station 4 will be described with reference to FIG. 1. Each station 4 includes a medal insertion slot 6 through which the medal is inserted, a control panel 7 having buttons, and an image display device 8 on which an image relating to a game is displayed. In playing a game, a player operates a touch panel 50 (see FIG. 9), the control panel 7 and

the like while watching an image displayed on the image display device 8. The touch panel 50 is formed on a front face of the image display device 8.

[0049] Each station 4 further includes a medal payout opening 9, a speaker 10, and a WIN lamp 11. The medal payout opening 9 is formed on a side face of the cabinet 2. The speaker 10, which outputs music, effect sounds and the like, is provided on an upper-right side of the image display device 8. The WIN lamp 11 is disposed adjacent to the speaker 10.

[0050] In this embodiment, a “game” includes a base game and a jackpot (hereinafter referred to as “JP”) bonus game. The base game is a so-called roulette game. Win or loss of a game is determined, and also a payout amount is determined when the game is won, based on, in the roulette apparatus 3, in which number pocket 23 the ball 27 inserted onto the roulette wheel 22 is received and also based on a betting object selected by a player. Regarding the JP bonus game, the server 13 determines whether a JP bonus game has occurred or not and, when a JP bonus game has occurred, the server 13 also determines a payout amount. In addition, a “game” means a series of operations that occur while a player makes a bet in the station 4, a ball 27 inserted onto the roulette wheel 22 is received into a number pocket 23, and a payout is performed. A bet includes selection of a betting object and determination of a bet amount on the betting object.

[0051] When a player at a certain station 4 wins a base game, a WIN lamp 11 of this station 4 is turned on. In a JP bonus game as well, a WIN lamp 11 of a winning station 4 is turned on. In order that every player playing on the roulette gaming device 1 can check win/lose of the other players, each WIN lamp 11 is positioned so as to be visible from players using the other stations 4.

[0052] A medal sensor 97 (see FIG. 9) is provided inside the medal insertion slot 6. The medal sensor 97 detects a medal inserted through the medal insertion slot 6. The medal is converted into a credit, and reserved in the station 4. In this embodiment, one medal is equivalent to one credit. A hopper 94 (see FIG. 9) that ejects a predetermined number of medals through the medal payout opening 9 is provided inside the medal payout opening 9.

[0053] The server 13 is accommodated within a corner 12 of the cabinet 2 so as not to be operated by a player. By opening a corner door 14 that is provided at the corner 12 using a keyswitch, a manager of the roulette gaming device 1 operates the sever 13 and makes various settings of the roulette gaming device 1.

[0054] The electro-luminescent display 5 includes a JP amount indicator 15. There are three kinds of JPs, “MEGA”, “MAJOR”, and “MINI”. For a “MEGA” JP, 0.15% of a bet amount in each station 4 is accumulated. For a “MAJOR” JP, 0.20% of a bet amount in each station 4 is accumulated. For a “MINI” JP, 0.30% of a bet amount in each station 4 is accumulated. In a JP bonus game, when a station 4 wins any JP, an accumulated amount for this JP is paid out. A current accumulated amount for, among the three kinds of JPs, the “MEGA” JP is indicated in the JP amount indicator 15. The JP amount indicator 15 is provided at a top of the electro-luminescent display 5 so that all players playing at the stations 4 see and recognize indication.

[0055] Next, an example of images displayed on the image display device 8 will be described with reference to FIG. 3. During a game, a BET screen 61 is displayed on the image display device 8. A player plays a game by touching the touch panel 50 provided on the front face of the image display

device 8 while watching the BET screen 61. The BET screen 61 has a table-type betting board 60, a winning number history indicator 65, a BET button 66, a last game result indicator 67, a credit indicator 68, a BET time indicator 69, and an accumulated amount indicators 73, 74, and 75. The winning number history indicator 65, the BET button 66, the last game result indicator 67, the credit indicator 68 are provided below the betting board 60. The BET time indicator 69, and the accumulated amount indicators 73, 74, and 75 are provided above the betting board 60. The accumulated amount indicators 73, 74, and 75 indicate current accumulated amounts for the “MEGA” JP, the “MAJOR” JP, and the “MINI” JP, respectively.

[0056] On the betting board 60, thirty eight BET areas are arranged in a matrix. Numbers “0”, “00”, and “1” to “36” are indicated in the thirty eight BET areas. BET areas for selecting an “odd number”, an “even number”, a “color of the number plate 25 (red or black)”, and “a predetermined range of numbers (“1” to “12” for example)”, respectively, are also arranged in a matrix.

[0057] Every time a game ends, a winning number is added to a top in the winning number history indicator 65. The winning number history indicator 65 indicates a list of winning numbers in previous sixteen games at the maximum.

[0058] The BET button 66 is pressed after a player selects a betting object. The BET button 66 includes a 1-BET button 66A, a 5-BET button 66B, a 10-BET button 66C, and a 100-BET button 66D.

[0059] When a player selects a betting object by touching the touch panel 50 with his/her finger or the like (see points 72 in the BET area or on a boundary line between the BET areas), the betting object is indicated by a cursor 70. When the player subsequently presses the 1-BET button 66A once, one credit is bet. Every time the 1-BET button 66A is pressed, a bet amount increases by one. When a player presses the 5-BET button 66B once, five credits are bet. Every time the 5-BET button 66B is pressed, a bet amount increases by five.

[0060] When a player presses the 10-BET button 66C once, ten credits are bet. Every time the 10-BET button 66C is pressed, a bet amount increases by ten. When a player presses the 100-BET button 66D once, one hundred credits are bet. Every time the 100-BET button 66D is pressed, a bet amount increases by 100.

[0061] The last game result indicator 67 indicates a bet amount and a payout amount in the last game. An amount obtained by subtracting the bet amount from the payout amount is a credit the player has acquired in the last game.

[0062] The credit indicator 68 indicates a credit amount currently held by a player, that is, a credit reserved in the station 4. When a bet is made, an amount indicated in the credit indicator 68 decreases by a bet amount. When a betting object wins and a payout is made, a credit increases by an amount corresponding to a payout amount. A game ends when a credit held by a player becomes zero.

[0063] The BET time indicator 69 indicates a rest of a predetermined bet period during which a bet can be received. At a start of the bet period, the BET time indicator 69 indicates “20”. The value decreases by one per second, and the bet period ends when “zero” is indicated. At a time when a rest time becomes five seconds, the ball inserter 104 is driven and a ball 27 is inserted onto the roulette wheel 22.

[0064] The accumulated amount indicators 73, 74, and 75 indicate accumulated amounts of 0.15%, 0.20%, and 0.30%, respectively, of a bet amount on every game in each station 4.

Values indicated in the accumulated amount indicators **73**, **74**, and **75** are common to all the stations **4**. When, in the JP bonus game, there is a player who wins any JP, a current accumulated amount for the JP is paid out to the player. After a payout is made, the corresponding indicator **73**, **74**, or **75** indicates an initial value for the corresponding JP. An initial value for the "MINI" JP is 200, an initial value for the "MAJOR" JP is 5000, and an initial value for the "MEGA" JP is 50000.

[0065] A cursor **70** and marks **71** are shown on the betting board **60**. The cursor **70** indicates a betting object selected by a player. The marks **71** show betting objects selected by now, and bet amounts on the betting objects. For example, a "7" mark **71**, which is shown in an "18" BET area (though the figure "18" is hidden under the mark **71** in FIG. 3), shows that seven credits are bet on the number "18". Betting on only one number like this is called a "straight bet".

[0066] In FIG. 3, a "1" mark **71**, which locates at a point of intersection of the "5" BET area, the "6" BET area, the "8" BET area, and the "9" BET area, shows that one credit is bet on each of the four numbers "5", "6", "8", and "9". Betting on four numbers like this is called a "corner bet".

[0067] As other bet methods, betting on two numbers by disposing the cursor **70** on a boundary line between two BET areas is called a "split bet", betting on three numbers by disposing the cursor **70** at an end of a row of three numbers (for example, "13", "14", and "15") is called a "street bet", and betting on five numbers "0", "00", "1", "2", and "3" by disposing the cursor **70** on a boundary line between "00" and "3" is called a "five bet".

[0068] As other bet methods, in addition, betting on a total of six numbers arranged in two rows (for example, "13", "14", "15", "16", "17", and "18") is called a "line bet", betting on a corresponding column of twelve numbers by disposing the cursor **70** in a "2 to 1" BET area is called a "column bet", and betting on corresponding twelve numbers by disposing the cursor **70** in a "1st 12" BET area, a "2nd 12" BET area, or a "3rd 12" BET area is called a "dozen bet".

[0069] Further, there is such a bet method that six BET areas provided at a bottom of the betting board **60** are used to bet on eighteen numbers depending on a color of the number plate **25** (red or black), odd or even of the number, and whether the number is not more than 18 or not less than 19. The above-described several bet methods differ in payout rate.

[0070] Like this, several bet methods with different payout rates are offered to a player. Moreover, for example, a winning probability for each of the "odd number", the "even number", the "color of the number plate **25** (red or black)" is 50%, whereas a winning probability for each of the thirty-eight numbers arranged in a matrix is smaller than 50%. Like this, many betting objects with different winning probabilities are provided on the betting board **60**. Selection of a bet method from the several bet methods and a betting object from the several betting objects is left to the player.

[0071] Next, an electrical construction of the roulette gaming device **1** will be described with reference to FIGS. 4 to 12.

[0072] First, an electrical construction of the server **13** will be described. As shown in FIG. 4, the server **13** is connected to each of the twelve stations **4**, the roulette apparatus **3**, and the electro-luminescent display **5**. The server **13** has a CPU **81**, a ROM **82**, a RAM **83**, a timer **84**, a liquid crystal drive circuit **85**, and a keyboard **33**. The ROM **82**, the RAM **83**, the timer **84**, the liquid crystal drive circuit **85**, and the keyboard

33 are respectively connected to the CPU **81**. The CPU **81** controls a whole of the server **13**. The liquid crystal drive circuit **85** is connected to the liquid crystal display **32**.

[0073] The CPU **81** executes various processings based on input signals from the station **4** or the roulette apparatus **3**, data and programs stored in the ROM **82** or the RAM **83**, and the like. Based on the result of the processings, the CPU **81** transmits a control signal to the stations **4**, the roulette apparatus **3**, and the electro-luminescent display **5**, to thereby leadingly control the stations **4**, the roulette apparatus **3**, and the electro-luminescent display **5**. For example, the CPU **81** transmits a control signal to the roulette apparatus **3**, to control insertion of a ball **27** and rotation of the roulette wheel **22**.

[0074] The ROM **82** is made of a semiconductor memory for example. The ROM **82** stores therein a program for implementing basic functions of the roulette gaming device **1**, a program for notifying a maintenance timing of the gaming device **1**, a program for setting a condition of the notification, a program for performing a maintenance, a program for calculating a payout rate, a program for leadingly controlling the respective stations **4**.

[0075] The RAM **83** temporarily stores therein bet information received from the respective stations **4**, winning number data received from the roulette apparatus **3**, data about current accumulated amounts for the respective JP, data about results of processings executed by the CPU **81**, and the like.

[0076] The timer **84** measures time, and transmits time data to the CPU **81**. Based on the time data, the CPU **81** controls rotation of the roulette wheel **22** and insertion of the ball **27**.

[0077] The CPU **81** presents an illumination effect by controlling light emission from an LED or the like of the electro-luminescent display **5**. Also, the CPU **81** controls the electro-luminescent display **5** so as to display a predetermined character and the like. The CPU **81** controls the JP amount indicator **15** of the electro-luminescent display **5** so as to display a current accumulated amount for the "MEGA" JP.

[0078] As shown in FIG. 5, the ROM **82** has a payout rate storage area **82A**. The payout rate storage area **82A** stores therein payout rates for the respective bet methods. As described above, the payout rate differs depending on bet methods such as the "straight bet", the "corner bet", and the "split bet". The payout rate is predetermined, such as to be "2", "36", and the like.

[0079] As shown in FIG. 6, the RAM **83** has a bet information storage area **83A**, a winning number storage area **83B**, and accumulated amount storage areas **83C**, **83D**, and **83E**. The bet information storage area **83A** stores therein bet information transmitted from the respective stations **4**.

[0080] The winning number storage area **83B** stores therein a winning number determined by the ball sensor **105**. The accumulated amount storage areas **83C**, **83D**, and **83E** store therein accumulated amounts for the "MINI" JP, the "MAJOR" JP, and the "MEGA" JP, respectively. Here, the bet information includes a betting object selected, a bet amount on the betting object, a kind of a bet method, and the like.

[0081] The RAM **83** also has a payout amount storage area **83F**. The payout amount storage area **83F** stores therein payout amounts in a predetermined number of past games. A payout amount to all players may be stored in the payout amount storage area **83F**, or alternatively a payout amount to every player may be stored in the payout amount storage area **83F**.

[0082] The RAM **83** further has a player identification information storage area **83G** that stores therein information

for identifying players. As information for identifying players, as shown in FIG. 7 for example, players' face image data are stored in the storage area 83G.

[0083] Next, an electrical construction of the roulette apparatus 3 will be described. As shown in FIG. 8, the roulette apparatus 3 has a controller 109, a pocket position detection circuit 107, a ball inserter 104, a ball sensor 105, a wheel drive motor 106, and a ball collector 108. The pocket position detection circuit 107, the ball inserter 104, the ball sensor 105, the wheel drive motor 106, and the ball collector 108 are respectively connected to the controller 109.

[0084] The controller 109 includes a CPU 101, a ROM 102, and a RAM 103. The CPU 101 controls insertion of the ball 27 and rotation of the roulette wheel 22 based on a control signal supplied from the server 13, data and programs stored in the ROM 102 or the RAM 103, and the like.

[0085] The pocket position detection circuit 107 includes a sensor. The pocket position detection circuit 107 detects a position of the number pocket 23 by using the sensor to detect a metal plate mounted on the roulette wheel.

[0086] The ball inserter 104 inserts the ball 27 through the ball insertion slot 36 (see FIG. 2) onto the roulette wheel 22, at an initial speed that is included in a control signal supplied from the CPU 101 and at a timing that is based on an insertion delay time included in the control signal. To be more specific, the ball 27 is inserted after the insertion delay time has elapsed since the pocket position detection circuit 107 detects that a predetermined number pocket 23, for example "00", passed before the ball insertion slot 36 for example.

[0087] The ball sensor 105 determines which number pocket 23 has received the ball 27, and outputs a detection signal indicating a result of this determination. The wheel drive motor 106 rotates the roulette wheel 22, and stops driving after a driving period included in the control signal has elapsed since the driving started. The ball collector 108 collects the ball 27 existing on the roulette wheel 22 after a game.

[0088] Next, an electrical construction of the station 4 will be described. The twelve stations 4 included in the roulette gaming device 1 basically have the same constructions. In the following, therefore, one station 4 will be described.

[0089] As shown in FIG. 9, the station 4 has a controller 90 including a CPU 91, a ROM 92, and a RAM 93. The ROM 92 is made of a semiconductor memory for example. The ROM 92 stores therein a program for implementing basic functions of the station 4, other various programs necessary for controlling the station 4, a data table, and the like. The RAM 93 temporarily stores therein data about results of processings executed by the CPU 91, a credit value currently held by a player, a state of betting by a player, and the like.

[0090] As shown in FIG. 10, the RAM 93 stores therein a bet amount history table 93A (see FIG. 11) and a number string table 93B (see FIG. 12). In the bet amount history table 93A, a bet amount is stored in association with a game number. In the number string table 93B, a predetermined string of gradually increasing numbers is stored. A number string shown in FIG. 12 is a part of a number string for a bet method called a martingale. The RAM 93 further has a balance storage area 93C and a player identification information storage area 93D. The balance storage area 93C stores therein a credit balance that is calculated at every predetermined number of games, for example every five games. Like the above-described storage area 83G, the player identification information storage area 93D stores therein players' face image data.

[0091] A BET fix button 47, a payout button 48, a help button 49, and a camera 46, which are provided on the control panel 7 (see FIG. 1), are connected to the CPU 91.

[0092] After a player makes a bet using the image display device 8, the BET fix button 47 is pressed in order to fix the bet. The payout button 48 is pressed when a game ends for example. When the payout button 48 is pressed, medals equivalent to a credit currently held by a player are ejected from the medal payout opening 9.

[0093] The help button 49 is pressed when a game rule and how to operate the station 4 are unclear. When the help button 49 is pressed, a help screen is displayed on the image display device 8.

[0094] The camera 46 images a face of a player playing a game on the station 4, and transmits generated face image data to the CPU 91.

[0095] Based on a signal outputted from the buttons 47 to 49 in accordance with pressing by a player, and data and programs stored in the ROM 92 or the RAM 93, the CPU 91 executes various processings, and transmits data about a result of the processings to the CPU 81 of the server 13.

[0096] In addition, the CPU 91 receives a control signal from the CPU 81 of the server 13, and controls respective parts of the station 4 based on the control signal.

[0097] A hopper 94 is connected to the CPU 91. The hopper 94 ejects a predetermined number of medals from the medal payout opening 9 (see FIG. 1), based on a control signal from the CPU 91.

[0098] The image display device 8 is also connected to the CPU 91 through the liquid crystal drive circuit 95. The liquid crystal drive circuit 95 has a program ROM, an image ROM, an image control CPU, a work RAM, a VDP (Video Display Processor), and a video RAM.

[0099] The program ROM stores therein an image control program relating to display on the image display device 8, various selection tables, and the like. The image ROM stores therein, for example, dot data used for forming an image to be displayed on the image display 8. Based on a parameter set by the CPU 91 and in accordance with an image control program prestored in the program ROM, the image control CPU determines, among the dot data prestored in the image ROM, an image to be displayed on the image display device 8.

[0100] The work RAM is a temporary storage used when the image control CPU executes the image control program. The VDP forms an image corresponding to display contents determined by the image control CPU, and outputs the image to the image display device 8. The video RAM is a temporary storage used when the VDP forms an image.

[0101] When a player selects a betting object, determines a bet amount, and the like, the touch panel 50 transmits a signal indicating a touched position to the CPU 91. The CPU 91 stores bet information included in the signal into the RAM 93. In addition, the CPU 91 stores, among the bet information, data relating to the bet amount into the bet amount history table 93A of the RAM 93 (see FIG. 10) in such a manner that the data are associated with a game number. Further, the bet information is transmitted to the CPU 81 of the server 13, and stored into the bet information storage area 83A of the RAM 83 of the server 13 (see FIG. 6).

[0102] The speaker 10 is also connected to the CPU 91 through the sound output circuit 96. The speaker 10, which generates an effect sound based on the sound output circuit 96, presents various effects.

[0103] The medal sensor **97** is also connected to the CPU **91**. The medal sensor **97** detects a medal inserted through the medal insertion slot **6** (see FIG. **1**), and transmits a detection signal to the CPU **91**. The CPU **91** counts the number of medals based on the detection signal, increases a credit held by a player by an amount equivalent to the number of medals, and stores the credit thus increased into the RAM **93**.

[0104] A WIN lamp **11** is also connected to the CPU **91**. When a game (including a JP) is won, or when a fraud is detected, the CPU **91** controls the WIN lamp **11** so as to emit light of a predetermined color.

[0105] Next, with reference to FIGS. **13** to **15**, a description will be given to game processings executed by the station **4**, the server **13**, and the roulette apparatus **3**, respectively.

[0106] First, a game processing executed by the station **4** will be described.

[0107] As shown in FIG. **13**, first, the CPU **91** of the station **4** determines based on a detection signal from the medal sensor **97** whether a medal has been inserted by a player or not (S10). When the CPU **91** determines that a medal has not been inserted (S10: NO), the same processing is repeated until the CPU **91** determines that a medal has been inserted.

[0108] When the CPU **91** determines that a medal has been inserted (S10: YES), the CPU **91** converts the medal into a credit (S11). In this embodiment, one medal is converted into one credit, and a credit value corresponding to the number of medals is stored in the RAM **93**. Then, the CPU **91** transmits a medal detection signal indicating medal insertion to the server **13** (S12).

[0109] Then, the CPU **91** displays the BET screen **61** (see FIG. **3**) on the image display device **8** (S13). Then, the CPU **91** starts to receive a bet (S14). A player is permitted to make a bet by operating the touch panel **50** within a predetermined bet period. In a case where a game is played in continuation with the last game, a bet reception is started immediately after the last game ends.

[0110] Then, the CPU **91** receives a bet period end signal indicating that the bet period ends from the CPU **81** of the server **13** (S15). The CPU **91** displays an image indicating that the bet period ends on the image display device **8**, and ends the bet reception (S16).

[0111] Then, the CPU **91** transmits bet information to the CPU **81** of the server **13** (S17).

[0112] Further, the CPU **91** stores, among the bet information, data relating to a bet amount into the bet amount history table **93A** of the RAM **93** (see FIG. **10**) (S17a).

[0113] Then, the CPU **91** controls the camera **46** so as to image a face of the player (S17b). Then, the CPU **91** stores face image data received from the camera **46**, into the player identification information storage area **93D**.

[0114] Then, as shown in FIG. **14**, the CPU **91** receives from the server **13** data about a result of a JP bonus game determination processing **S38** that is executed by the server **13** as will be described later (S18). The data about the result include data about whether a JP bonus game occurs or not, data about determination of whether each of the twelve stations **4** wins or loses in a case where the JP bonus game occurs, and data about which of the "MEGA" JP, the "MAJOR" JP, and the "MINI" JP is won in a case where a JP is won.

[0115] Then, based on the data of the result received in S18, the CPU **91** determines whether a JP bonus game occurs or not (S19). When the CPU **91** determines that a JP bonus game does not occur (S19: NO), the processing goes to S21.

[0116] When the CPU **91** determines that a JP bonus game occurs (S19: YES), the CPU **91** executes a JP bonus game processing (S20). Here, based on the data of the result received in S18, the CPU **91** displays a game result, that is, win or lose, on the image display device **8**. Then, the CPU **91** receives payout amount data transmitted from the server **13** (S21). The payout amount data include payout amount data in a base game and payout amount data in a JP bonus game.

[0117] Then, based on the payout amount data received in S21, the CPU **91** pays out a credit (S22). At this time, a payout amount in a base game and a payout amount in a JP bonus game are added to a credit, and stored into the RAM **93**. Further, when the payout button **48** is pressed, medals equivalent to the credit currently stored in the RAM **93** are ejected from the medal payout opening **9**.

[0118] Then, as shown in FIG. **15**, the CPU **91** transmits to the server **13** the player's face image data stored in the player identification information storage area **93D** of the RAM **93** (S70).

[0119] Then, the CPU **91** receives from the server **13** data about the number of games that is determined in a later-described manner (S72).

[0120] Then, the CPU **91** determines whether the number of games played by the player has reached the number corresponding to the data received in S72 or not (S74). When the CPU **91** determines that the number of games played by the player has not reached the number corresponding to the data received in S72 (S74: NO), the CPU **91** starts a next game. That is, the CPU **91** returns the processing to S13 in FIG. **13**, and starts to receive a bet for the next game in S14. When the CPU **91** determines that the number of games played by the player has reached the number corresponding to the data received in S72 (S74: YES), the CPU **91** initialize the game number, that is, resets the game number to 1. Then, the CPU **91** calculates a credit balance, and stores a calculation result into the balance storage area **93C** of the RAM **93** (S76).

[0121] Then, the CPU **91** determines whether the balance calculated in S76 is a plus or not (S78). When the CPU **91** determines that the balance is not a plus (S78: NO), the CPU **91** starts a next game. That is, the CPU **91** returns the processing to S13 in FIG. **13**, and starts to receive a bet for the next game in S14. When the CPU **91** determines that the balance is a plus (S78: YES), the CPU **91** compares a bet amount history stored in the bet amount history table **93A**, with a number string stored in the number string table **93B** (S80).

[0122] Subsequently, the CPU **91** determines whether there is a fraud or not, based on whether the number string stored in the number string table **93B** is included in the bet amount history stored in the bet amount history table **93A** or not (S82). More specifically, the CPU **91** determines that there is a fraud, in a case where the number string is included in the bet amount history. When the CPU **91** determines that there is not a fraud (S82: NO), the CPU **91** starts a next game. That is, the CPU **91** returns the processing to S13 in FIG. **13**, and starts to receive a bet for the next game in S14. When the CPU **91** determines that there is a fraud (S82: YES), the CPU **91** controls, for example, the electro-luminescent display **5**, the WIN lamp **11**, the speaker **10** and the like, so as to inform the manager of the roulette gaming device **1** that there is a fraud (S84).

[0123] Then, the CPU **91** decreases a winning probability in a base game (S86). A procedure therefor will be described. As described above, many betting objects with different win-

ning probabilities are provided on the betting board **60** (see FIG. 3). For example, a winning probability for each of the “odd number”, the “even number”, the “color of the number plate **25** (red or black)” is 50%, whereas a winning probability for each of the thirty-eight numbers arranged in a matrix is smaller than 50%. In **S86**, the CPU **91** decreases a winning probability by controlling to make betting objects with relatively higher winning probabilities, such as the “odd number”, the “even number”, and the “color of the number plate **25** (red or black)”, unselectable.

[0124] Then, the CPU **91** transmits again to the server **13** face image data stored in the player identification information storage area **93D** of the RAM **93** (**S88**).

[0125] Then, when a game continues in any station **4** (**S89**: YES), the CPU **91** starts a next game. That is, the CPU **91** returns the processing to **S13** in FIG. 13, and starts to receive a bet for the next game in **S14**. When a game ends without continuing in any station **4** (**S89**: NO), a game processing ends.

[0126] Next, a game processing executed by the server **13** will be described.

[0127] As shown in FIG. 13, first, the CPU **81** of the server **13** receives a medal detection signal transmitted from the CPU **91** of any station **4** (**S30**).

[0128] The CPU **81** starts a bet period at a time when a first player to enter a game inserts a medal, that is, at a time when a medal detection signal is received from the CPU **91** of any station **4** for the first time, and the CPU **81** drives the timer **84** (see FIG. 4) to start measuring a time (**S31**).

[0129] Then, based on a time measurement by the timer **84**, the CPU **81** determines whether a rest of the bet period has become five seconds or not (**S32**). When the CPU **81** determines that a rest of the bet period has not become five seconds (**S32**: NO), the same processing is repeated until the rest of the bet period becomes five seconds.

[0130] When the CPU **81** determines that a rest of the bet period has become five seconds (**S32**: YES), the CPU **81** transmits to the roulette apparatus **3** a control signal for starting operations of the roulette apparatus **3** (**S33**).

[0131] Then, based on the time measurement by the timer **84**, the CPU **81** determines whether the bet period has expired or not (**S34**). When the CPU **81** determines that the bet period has not expired (**S34**: NO), the same processing is repeated until the bet period expires.

[0132] When the CPU **81** determines that the bet period has expired (**S34**: YES), the CPU **81** transmits a bet period end signal to the station **4** (**S35**).

[0133] Then, the CPU **81** receives bet information from the respective stations **4** (**S36**). The bet information is stored in the bet information storage area **83A** of the RAM **83**.

[0134] Then, based on the bet information received in **S36**, the CPU **81** calculates an accumulated amount for a JP (**S37**). To be more specific, the CPU **81** totals bet amounts included in the bet information from the respective stations **4**, and adds 0.30%, 0.20%, and 0.15% of a total amount to accumulated amounts that are stored in the accumulated amount storage areas **83C**, **83D**, and **83E** for the “MINI” JP, the “MAJOR” JP, and the “MEGA” JP, respectively. Further, based on the accumulated amount for a JP thus calculated, the CPU **81** updates indication in the JP amount indicator **15** and the accumulated amount indicators **73** to **75**.

[0135] Then, as shown in FIG. 14, the CPU **81** executes a JP bonus game determination processing (**S38**). More specifically, based on a predetermined probability, the CPU **81**

determines whether a JP bonus game occurs or not, using a random number that is sampled by a sampling circuit or the like. Further, when the CPU **81** determines that a JP bonus game occurs, the CPU **81** determines win or lose for each of the twelve stations **4** based on a predetermined probability. In addition, when a JP is won, the CPU **81** determines which JP is won, “MEGA”, “MAJOR”, and “MINI”.

[0136] Then, the CPU **81** transmits data about a result of the processing of **S38** to the respective station **4** (**S39**). Then, the CPU **81** transmits to the roulette apparatus **3** a signal commanding transmission of a detection signal from the ball sensor **105** (**S40**). Then, the CPU **81** receives a detection signal from the roulette apparatus **3** (**S41**).

[0137] Then, based on the detection signal received in **S41**, the CPU **81** determines which number pocket **23** has received the ball **27** (**S42**). Then, based on the bet information of the respective stations **4** received in **S36** and the number pocket **23** determined in **S42**, the CPU **81** determines win or lose of a base game in each of the stations **4** (**S43**).

[0138] Then, the CPU **81** calculates a payout amount in each station **4** (**S44**). More specifically, the CPU **81** calculates a payout amount in the base game for every station **4**, based on the bet information received in **S36**, the number pocket **23** determined in **S42**, a payout rate stored in the payout rate storage area **82A** of the ROM **82**, and the like. Further, the CPU **81** calculates a payout amount in a JP bonus game for every station **4**, based on the result of the processing in **S38**, the accumulated amount calculated in **S37**, and the like. Then, a sum of the payout amount in the base game and a payout amount in the JP bonus game is set as a payout amount in each station **4**.

[0139] Next, the CPU **81** transmits data about the payout amount in each station **4**, which has been calculated in **S44**, to the corresponding station **4** (**S45**).

[0140] Then, the CPU **81** transmits a control signal commanding a collection of the ball **27**, to the roulette apparatus **3** (**S46**). The roulette apparatus **3**, which has received the control signal, drives the ball collector **108** and collects the ball **27** existing on the roulette wheel **22**. The ball **27** thus collected is used in a next and subsequent games, too.

[0141] Then, as shown in FIG. 15, the CPU **81** receives player's face image data from the respective stations **4** (**S100**). The CPU **81** searches the player identification information storage area **83G** of the RAM **83** for the face image data received (**S102**). Then, in accordance with a search result obtained in **S102**, the CPU **81** determines the number of games (**S104**). At every number of games thus determined, a bet amount history and a number string is compared with each other in order to detect a fraud. More specifically, when it is determined from the search result obtained in **S102**, that the face image data received in **S100** match any face image data stored in the player identification information storage area **83G**, that is, that the face image data received in **S100** match face image data of a player who made a fraud before, a value obtained by subtracting some from a predetermined initial value such as five is determined as the number of games (**S104**). On the other hand, when it is determined from the search result obtained in **S102**, that the face image data received in **S100** do not match any face image data stored in the player identification information storage area **83G**, a predetermined initial value such as five is determined as the number of games.

[0142] In **S106**, the CPU **81** transmits to the station **4** data about the number of games determined in **S104**.

[0143] Then, the CPU 81 receives again the player's face image data from the respective stations 4 (S108). The face image data are stored in the player identification information storage area 83G (S110).

[0144] Then, the CPU 81 shifts the processing to S30 in FIG. 13.

[0145] Next, a game processing executed by the roulette apparatus 3 will be described.

[0146] As shown in FIG. 13, first, based on a control signal received from the server 13, the CPU 101 of the roulette apparatus 3 drives the wheel drive motor 106 for a predetermined period of time to rotate the roulette wheel 22 (S60).

[0147] Then, the CPU 101 determines whether a predetermined period of time, for example twenty seconds, has elapsed since the roulette wheel 22 started to rotate, or not (S61). When the CPU 101 determines that the predetermined period of time has not elapsed (S61: NO), the same processing is repeated until it is determined that the predetermined period of time has elapsed.

[0148] When the CPU 101 determines that the predetermined period of time has elapsed (S61: YES), the CPU 101 drives the pocket position detection circuit 107. Then, the CPU 101 determines whether the pocket position detection circuit 107 has detected that a predetermined number pocket 23, for example "00", passed through a predetermined position such as before the ball insertion slot 36, or not (S62). When the CPU 101 determines that it has not been detected (S62: NO), the same processing is repeated until the CPU 101 determines that it has been detected.

[0149] When the CPU 101 determines that it has been detected (S62: YES), the CPU 101 controls the ball inserter 104 so as to insert the ball 27 after an insertion delay time has elapsed, based on a control signal received from the server 13 (S63). At this time, the ball inserter 104 inserts the ball 27 at an initial speed corresponding to initial speed data included in the control signal. Then, in S64, the CPU 101 receives a signal that is transmitted by the server 13 in S40, as shown in FIG. 14. In response to the signal, the CPU 101 transmits a detection signal by the ball sensor 105 to the server 13 (S65).

[0150] Then, the CPU 101 shifts the processing to S60 in FIG. 13.

[0151] According to this embodiment, as described above, a bet amount history and a number string is compared with each other at every predetermined number of games (see S74 to S80 in FIG. 15). Thereby, unfair play based on a regular bet method, that is, the martingale in this embodiment, can be detected.

[0152] The above-mentioned comparison is performed when a balance is a plus (see S76 and S80 in FIG. 15). As a result, a fraud can be detected more efficiently.

[0153] When a fraud is detected, it is notified to a manager (see S82 and S84 in FIG. 15). As a result, the manager recognizes a player who has made a fraud and a station 4 on which fraud occurs. Therefore, it is possible to prevent subsequent frauds.

[0154] When a fraud is detected, a winning probability is decreased (S82 and S86 in FIG. 15). This can avoid unfair profits based on unfair play.

[0155] When a fraud is detected, face image data of a player who uses the station 4 on which the fraud is detected are stored in the player identification information storage area 83G of the RAM 83 of the server 13 (see S82 and S88, and S108 and S110 in FIG. 15). Therefore, it is possible to further effectively prevent subsequent frauds.

[0156] The server 13 searches the player identification information storage area 83G, for face image data of a player received from each station 4 (see S102 in FIG. 15). When it is determined from the search result obtained, that the received face image data match any face image data stored in the player identification information storage area 83G, that is, that the received face image data match face image data of a player who made a fraud before, a value obtained by subtracting some from a predetermined initial value such as five is determined as the number of games (see S104 in FIG. 15). As a consequence, a player who made a fraud before is frequently referred to for checking whether he/she is making a fraud or not. Therefore, a fraud made by the same player can be detected at an early stage.

[0157] With the above-described construction, the roulette gaming device 1 of this embodiment can improve entertainment properties.

[0158] The roulette gaming device 1 according to the above-described embodiment is standalone type one that is not connected to a network. However, the present invention is applicable to a gaming device that is connected to a network.

[0159] Applications of the present invention are not limited to a roulette gaming device. The present invention may be applied to various gaming devices such as a card-game device and the like. In addition, although the roulette gaming device 1 according to the above-described embodiment includes the roulette apparatus 3, the stations 4, and the server 13, the present invention may be applied to a single roulette apparatus for use of a singly player, for example. In such a case, the above-described fraud detection controlling may be performed in the single roulette apparatus.

[0160] In the roulette gaming device 1 according to the above-described embodiment, several stations 4 are provided so that several players simultaneously play a game and individually determine bet amounts. However, this is not limitative. The present invention is applicable to a gaming device for use of a single player.

[0161] In the above-described embodiment, a game medium is a medal and a credit stored in the station 4. However, this is not limitative. A medium may be money such as a coin.

[0162] In the above-described embodiment, the player identification information is face image data of a player. However, this is not limitative. The player identification information may be information based on a known PTS (Player Tracking System) for example.

[0163] In the above-described embodiment, a winning probability of a base game is decreased after a fraud is detected. However, this is not limitative. It may be possible to decrease a winning probability of a JP bonus game.

[0164] A number string stored in the number string table 93B may be not only for the martingale but also for other bet methods such as the cocomo, the montecarlo and the like, as long as the number string is for a bet method considered to be unfair.

[0165] The bet amount history table 93A and the number string table 93B may not necessarily be stored in a memory of the station 4, but may be stored in a memory of the server 13. The server 13 may perform determination of a fraud and notification to a manager.

[0166] While this invention has been described in conjunction with the specific embodiments outlined above, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art. Accordingly, the pre-

ferred embodiments of the invention as set forth above are intended to be illustrative, not limiting. Various changes may be made without departing from the spirit and scope of the invention as defined in the following claims.

What is claimed is:

1. A gaming device comprising:
 - a gaming unit that operates in a game and presents a game result to a player;
 - an operation unit that is operated by the player when determining a bet amount of game media to be bet on the game;
 - a memory that stores therein a string of numbers that gradually increase by a predetermined increment, and a history of the bet amount in every game; and
 - a processor that operates to:
 - control an operation of the gaming unit in such a manner that a game starts when the player operates the operation unit;
 - determine win or loss of the game based on a predetermined probability;
 - give a game medium to the player when it is determined that the game is won;
 - store into the memory the bet amount determined through the operation unit in every game; and
 - compare the string of numbers and the history of the bet amount stored in the memory with each other, at every predetermined number of games.
2. The gaming device according to claim 1, wherein the processor further operates to:
 - calculate a balance of the game media at the every predetermined number of games; and
 - compare the string of numbers and the history of the bet amount stored in the memory with each other, only when the balance is a plus.
3. The gaming device according to claim 1, wherein the processor further operates to control the gaming unit so as to make a notification to a manager of the gaming device, when based on a comparison it is determined that the string of numbers is included in the history of the bet amount.
4. The gaming device according to claim 1, wherein the processor further operates to control the gaming unit so as to decrease the probability, when based on a comparison it is determined that the string of numbers is included in the history of the bet amount.
5. A gaming device comprising:
 - a gaming unit that operates in a game and presents a game result to a player;
 - an operation unit that is operated by the player when determining a bet amount of game media to be bet on the game;
 - a memory that stores therein a string of numbers that gradually increase by a predetermined increment, and a history of the bet amount in every game; and
 - a processor that operates to:
 - control an operation of the gaming unit in such a manner that a game starts when the player operates the operation unit;
 - determine win or loss of the game based on a predetermined probability;
 - give a game medium to the player when it is determined that the game is won;
 - store into the memory the bet amount determined through the operation unit in every game;

- calculate a balance of the game media at every predetermined number of games;
 - compare the string of numbers and the history of the bet amount stored in the memory with each other, only when the balance is a plus; and
 - control the gaming unit so as to make a notification to a manager of the gaming device, when based on a comparison it is determined that the string of numbers is included in the history of the bet amount.
6. A gaming device comprising:
 - a gaming unit that operates in a game and presents a game result to a player;
 - an operation unit that is operated by the player when determining a bet amount of game media to be bet on the game;
 - a memory that stores therein a string of numbers that gradually increase by a predetermined increment, and a history of the bet amount in every game; and
 - a processor that operates to:
 - control an operation of the gaming unit in such a manner that a game starts when the player operates the operation unit;
 - determine win or loss of the game based on a predetermined probability;
 - give a game medium to the player when it is determined that the game is won;
 - store into the memory the bet amount determined through the operation unit in every game;
 - calculate a balance of the game media at every predetermined number of games;
 - compare the string of numbers and the history of the bet amount stored in the memory with each other, only when the balance is a plus; and
 - control the gaming unit so as to decrease the probability, when based on a comparison it is determined that the string of numbers is included in the history of the bet amount.
 7. A gaming device comprising:
 - a gaming unit that operates in a game and presents a game result to a player;
 - an operation unit that is operated by the player when determining a bet amount of game media to be bet on the game;
 - a memory that stores therein a string of numbers that gradually increase by a predetermined increment, and a history of the bet amount in every game; and
 - a processor that operates to:
 - control an operation of the gaming unit in such a manner that a game starts when the player operates the operation unit;
 - determine win or loss of the game based on a predetermined probability;
 - give a game medium to the player when it is determined that the game is won;
 - store into the memory the bet amount determined through the operation unit in every game;
 - compare the string of numbers and the history of the bet amount stored in the memory with each other, at every predetermined number of games; and
 - control the gaming unit so as to make a notification to a manager of the gaming device and also so as to decrease the probability, when based on a comparison it is determined that the string of numbers is included in the history of the bet amount.

8. A gaming device comprising:
 a gaming unit that operates in a game and presents a game result to a player;
 an operation unit that is operated by the player when determining a bet amount of game media to be bet on the game;
 a memory that stores therein a string of numbers that gradually increase by a predetermined increment, and a history of the bet amount in every game; and
 a processor that operates to:
 control an operation of the gaming unit in such a manner that a game starts when the player operates the operation unit;
 determine win or loss of the game based on a predetermined probability;
 give a game medium to the player when it is determined that the game is won;
 store into the memory the bet amount determined through the operation unit in every game;
 calculate a balance of the game media at every predetermined number of games;
 compare the string of numbers and the history of the bet amount stored in the memory with each other, only when the balance is a plus; and
 control the gaming unit so as to make a notification to a manager of the gaming device and also so as to decrease the probability, when based on a comparison it is determined that the string of numbers is included in the history of the bet amount.

9. The gaming device according to claim **1**, comprising a plurality of the operation units so that a plurality of players simultaneously play a game and individually determine bet amounts, wherein:
 the processor further operates to store into the memory identification information of a player who has operated a corresponding operation unit, when based on a comparison it is determined that the string of numbers is included in the history of the bet amount.

10. The gaming device according to claim **9**, wherein the processor further operates to:
 acquire identification information of a player who has operated any of the operation units, when any of the operation units is operated by any of the players; and
 reduce a predetermined number of games, when it is determined that the identification information thus acquired matches with any identification information stored in the memory.

11. A method of controlling a gaming device, the method comprising the steps of:
 controlling an operation of a gaming unit that presents a game result to a player, so as to start a game, when the player operates an operation unit in determining a bet amount of game media to be bet on a game;
 determining win or loss of the game based on a predetermined probability;
 giving a game medium to the player when it is determined that the game is won;
 storing into a memory the bet amount determined through the operation unit in every game; and
 comparing a string of numbers that gradually increase by a predetermined increment and a history of the bet amount, which are stored in the memory, with each other at every predetermined number of games.

12. The method according to claim **11**, further comprising a step of calculating a balance of the game media at every predetermined number of games,
 wherein the step of comparing is performed only when the balance calculated in the step of calculating is a plus.

13. The method according to claim **11**, further comprising a step of controlling the gaming unit so as to make a notification to a manager of the gaming device, when it is determined, in the step of comparing, that the string of numbers is included in the history of the bet amount.

14. The method according to claim **11**, further comprising a step of controlling the gaming unit so as to decrease the probability, when it is determined, in the step of comparing, that the string of numbers is included in the history of the bet amount.

15. A method of controlling a gaming device, the method comprising the steps of:
 controlling an operation of a gaming unit that presents a game result to a player, so as to start a game, when the player operates an operation unit in determining a bet amount of game media to be bet on a game;
 determining win or loss of the game based on a predetermined probability;
 giving a game medium to the player when it is determined that the game is won;
 storing into a memory the bet amount determined through the operation unit in every game;
 calculating a balance of the game media at every predetermined number of games;
 comparing a string of numbers that gradually increase by a predetermined increment and a history of the bet amount, which are stored in the memory, with each other, when the balance calculated in the step of calculating is a plus; and
 controlling the gaming unit so as to make a notification to a manager of the gaming device, when it is determined, in the step of comparing, that the string of numbers is included in the history of the bet amount.

16. A method of controlling a gaming device, the method comprising the steps of:
 controlling an operation of a gaming unit that presents a game result to a player, so as to start a game, when the player operates an operation unit in determining a bet amount of game media to be bet on a game;
 determining win or loss of the game based on a predetermined probability;
 giving a game medium to the player when it is determined that the game is won;
 storing into a memory the bet amount determined through the operation unit in every game;
 calculating a balance of the game media at every predetermined number of games;
 comparing a string of numbers that gradually increase by a predetermined increment and a history of the bet amount, which are stored in the memory, with each other, when the balance calculated in the step of calculating is a plus; and
 controlling the gaming unit so as to decrease the probability, when it is determined, in the step of comparing, that the string of numbers is included in the history of the bet amount.

17. A method of controlling a gaming device, the method comprising the steps of:

controlling an operation of a gaming unit that presents a game result to a player, so as to start a game, when the player operates an operation unit in determining a bet amount of game media to be bet on a game;
 determining win or loss of the game based on a predetermined probability;
 giving a game medium to the player when it is determined that the game is won;
 storing into a memory the bet amount determined through the operation unit in every game;
 comparing a string of numbers that gradually increase by a predetermined increment and a history of the bet amount, which are stored in the memory, with each other at every predetermined number of games; and
 controlling the gaming unit so as to make a notification to a manager of the gaming device, when it is determined, in the step of comparing, that the string of numbers is included in the history of the bet amount.

18. A method of controlling a gaming device, the method comprising the steps of:

controlling an operation of a gaming unit that presents a game result to a player, so as to start a game, when the player operates an operation unit in determining a bet amount of game media to be bet on a game;
 determining win or loss of the game based on a predetermined probability;
 giving a game medium to the player when it is determined that the game is won;
 storing into a memory the bet amount determined through the operation unit in every game;

calculating a balance of the game media at every predetermined number of games;
 comparing a string of numbers that gradually increase by a predetermined increment and a history of the bet amount, which are stored in the memory, with each other, when the balance calculated in the step of calculating is a plus; and
 controlling the gaming unit so as to make a notification to a manager of the gaming device and also so as to decrease the probability, when it is determined, in the step of comparing, that the string of numbers is included in the history of the bet amount.

19. The method according to claim **11**, wherein:
 the operation unit includes a plurality of operation units so that a plurality of players simultaneously play a game and individually determine bet amounts; and
 the method further comprises a step of storing into the memory identification information of a player who has operated a corresponding operation unit, when based on a comparison it is determined that the string of numbers is included in the history of the bet amount.

20. The method according to claim **19**, further comprising the steps of:

acquiring identification information of a player who has operated any of the operation units, when any of the operation units is operated by any of the players; and
 reducing a predetermined number of games, when it is determined that the identification information acquired in the step of acquiring matches with any identification information stored in the memory.

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