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(54) **GAME APPARATUS**

**Publication Classification**

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(57) **ABSTRACT**

It is an object to appropriately obtain an effect aimed at by changing the amount of payout objects to be paid out through specific control according to the bet amount of a game play that has produced a predetermined progress result regarding a start condition for specific control.

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A specific control start condition count value is counted according to a progress result of a game controlled by a game progress control unit, an accumulated amount of bet objects bet in a game when the count value was counted is stored, specific control is started based on the count value satisfying a predetermined specific control start condition, and payout objects of an amount according to the stored accumulated amount of bet objects are paid out in accordance with the specific control.

(30) **Foreign Application Priority Data**

Feb. 19, 2009 (JP) ..... 2009-037106

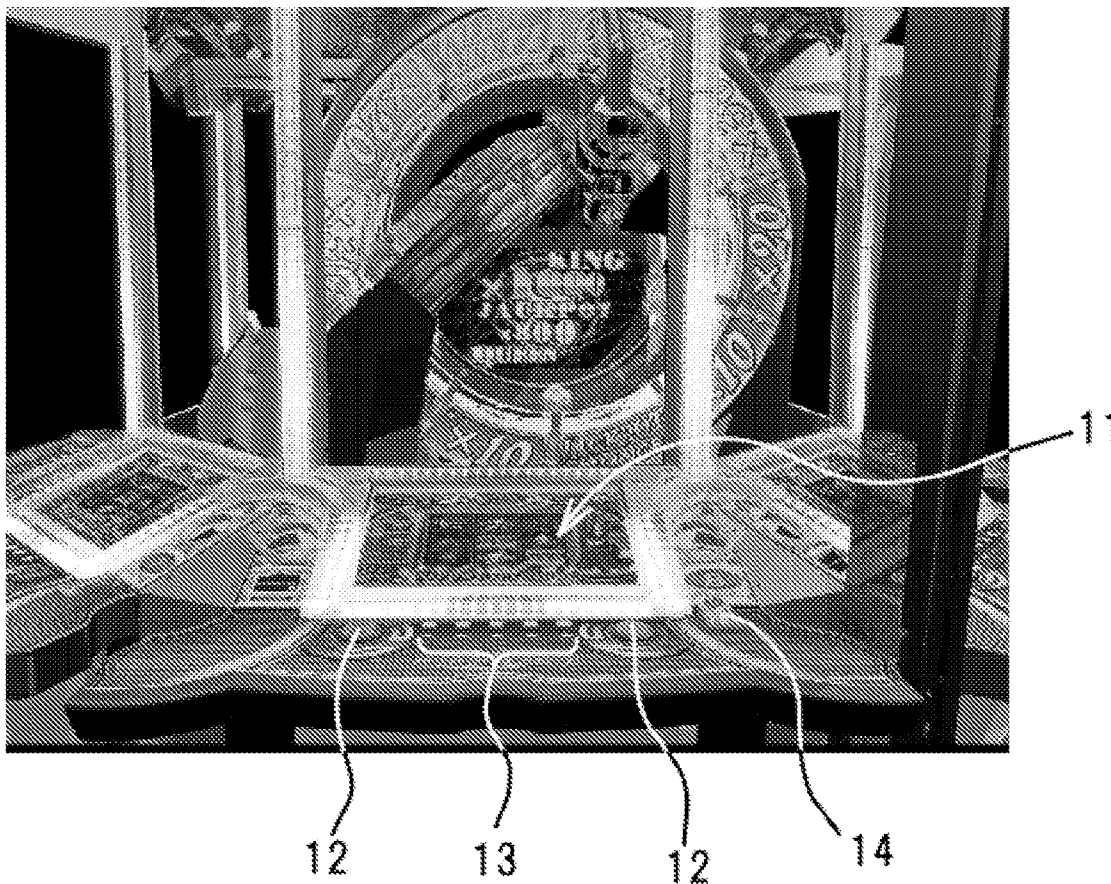


FIG. 1

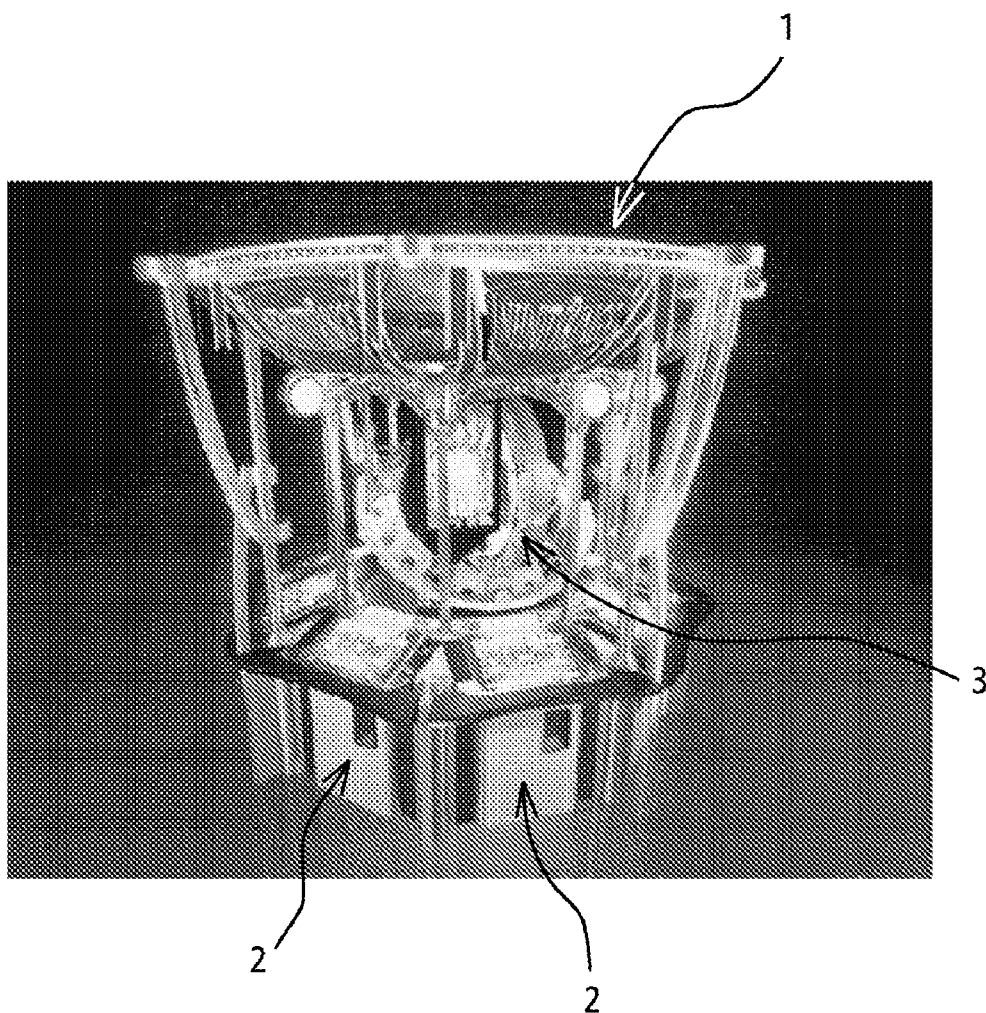


FIG. 2

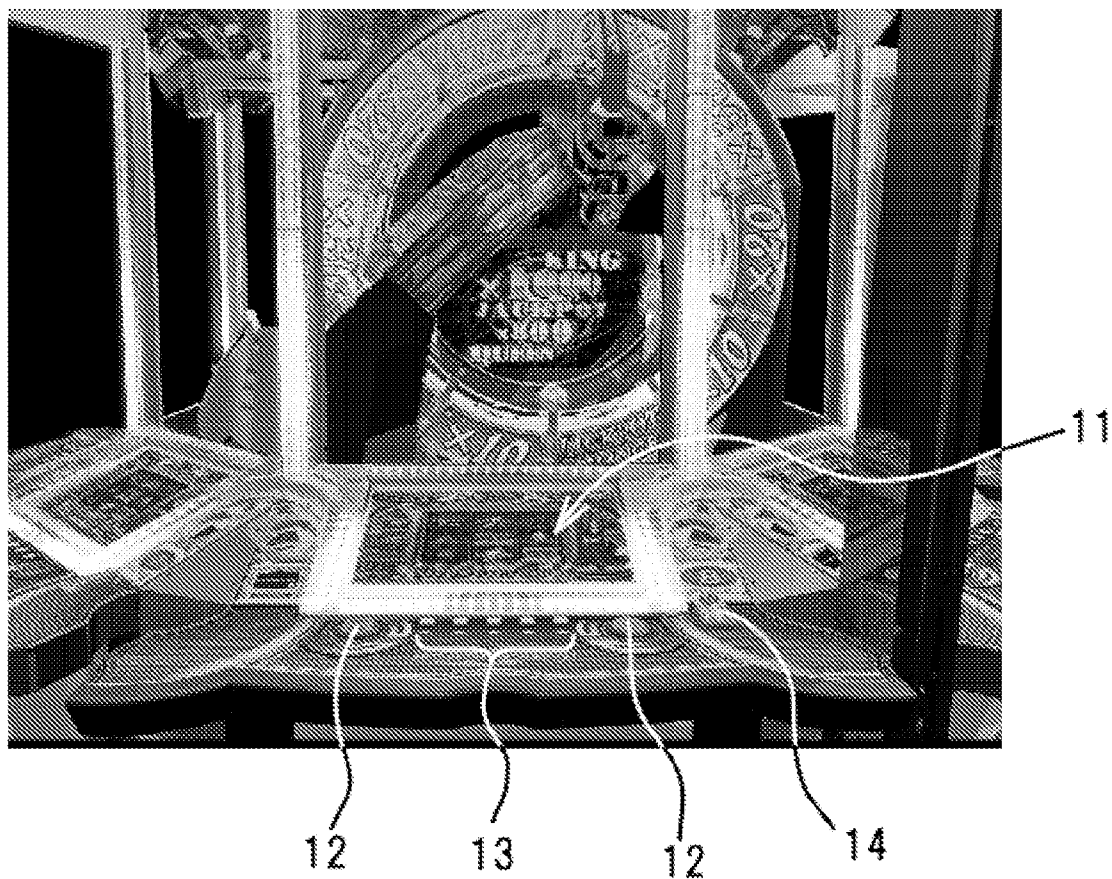


FIG. 3

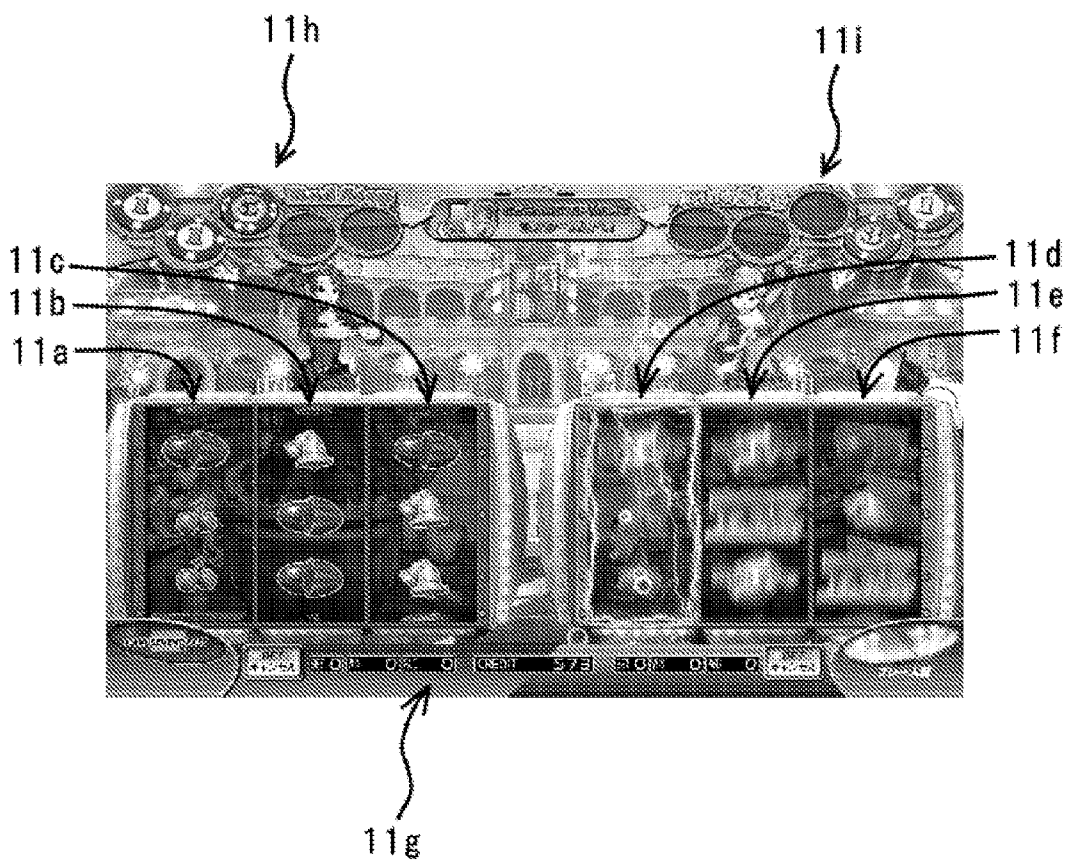


FIG. 4

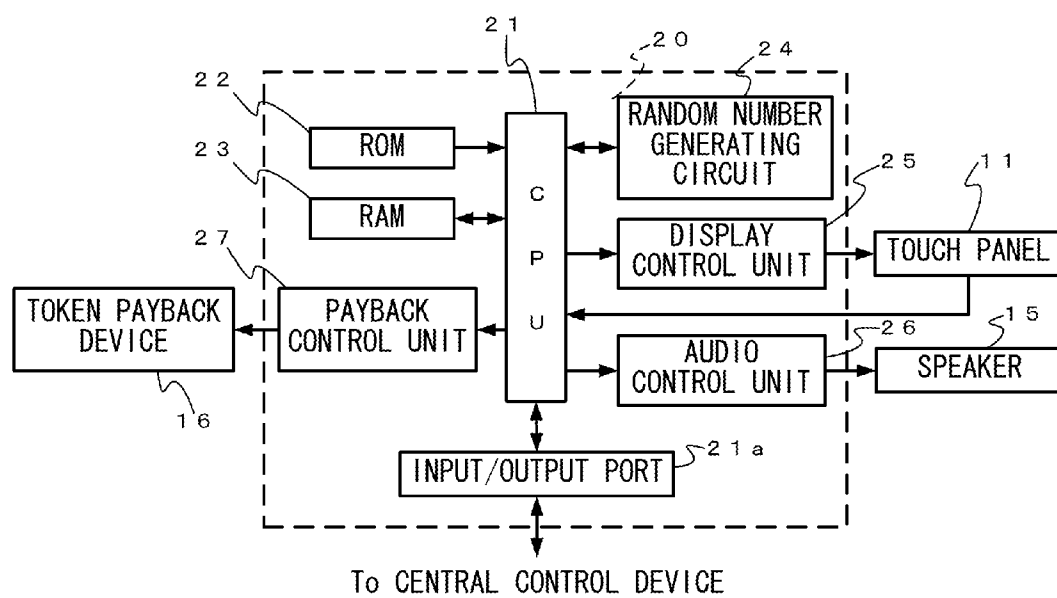


FIG. 5

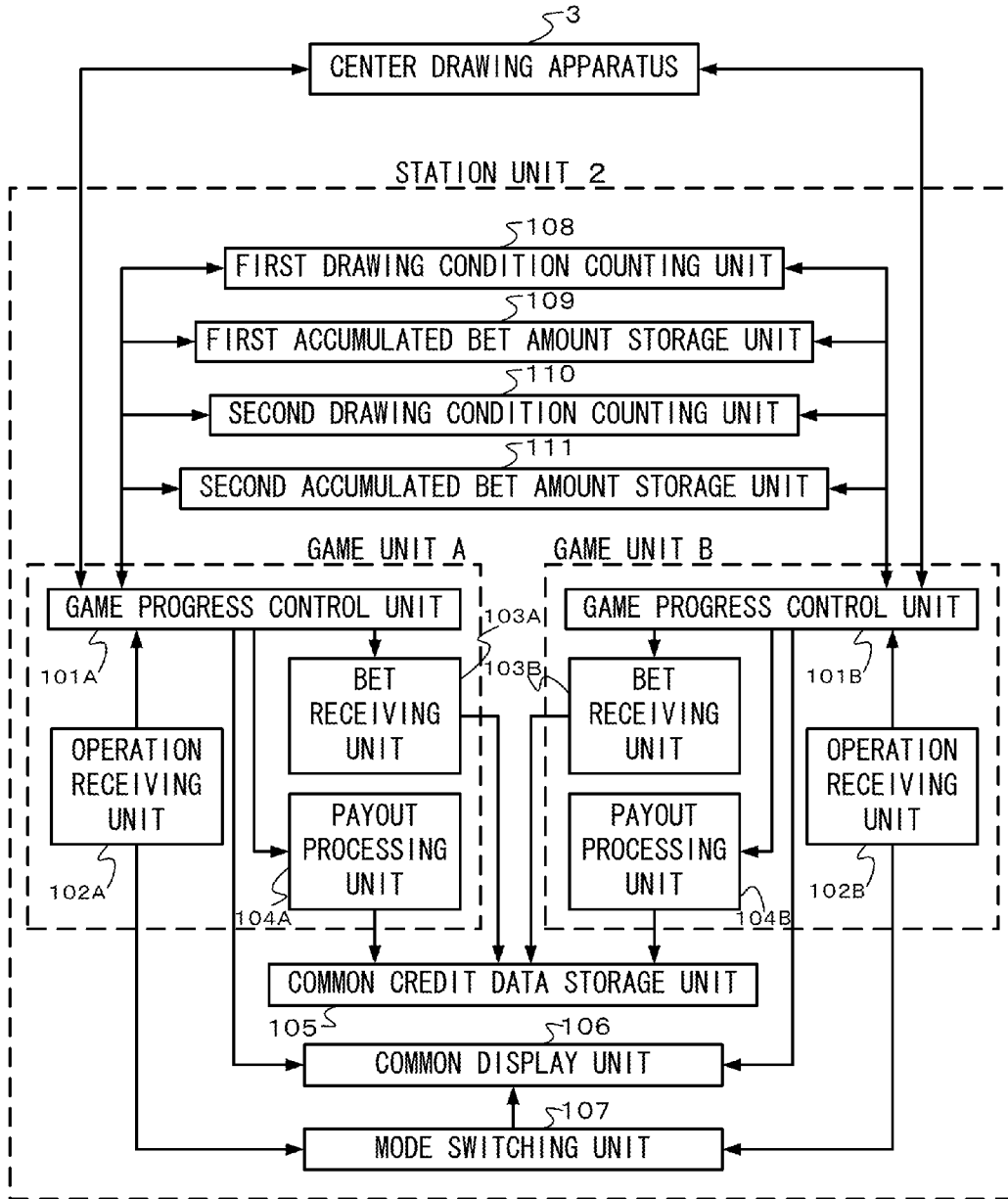


FIG. 6



FIG. 7

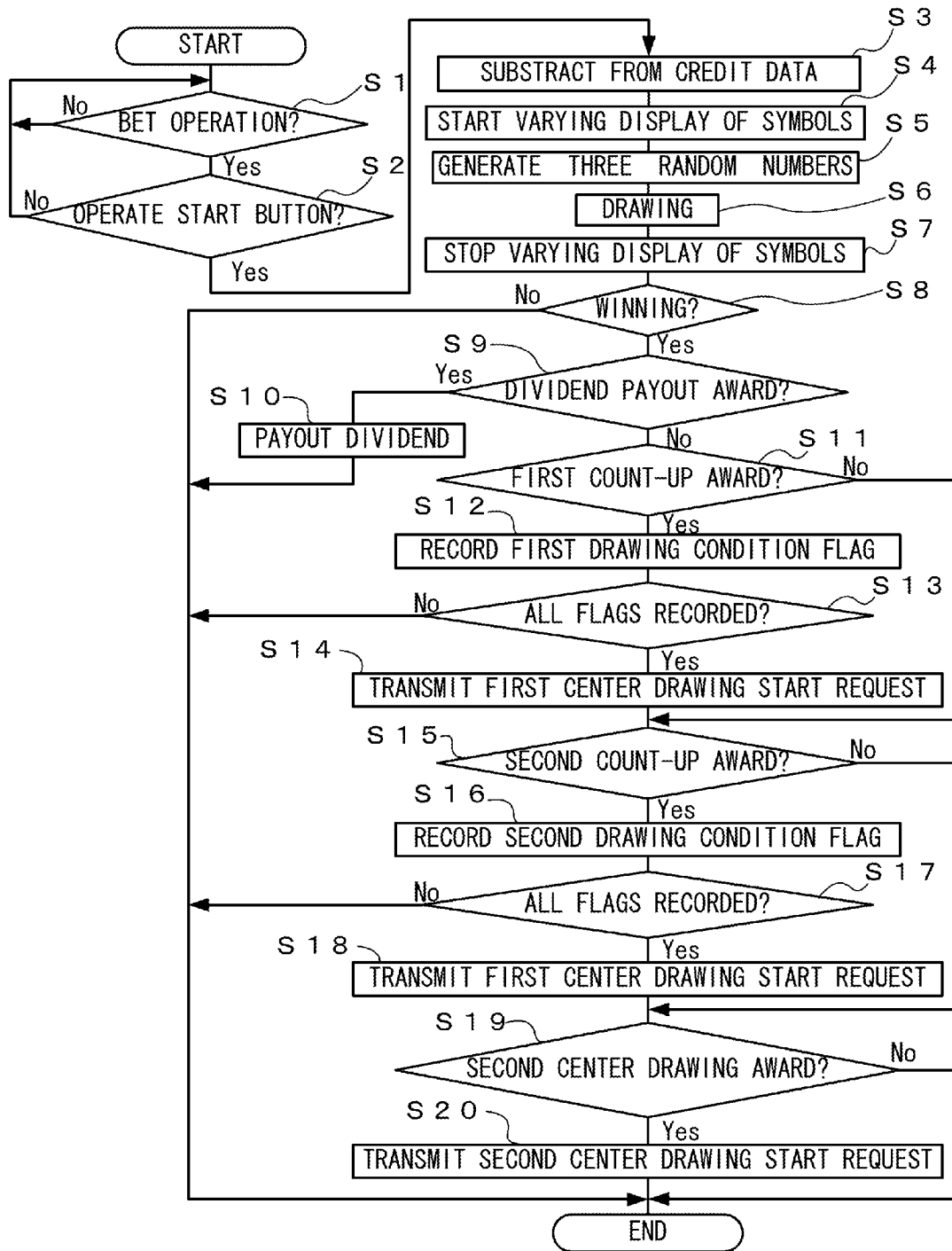




FIG. 8

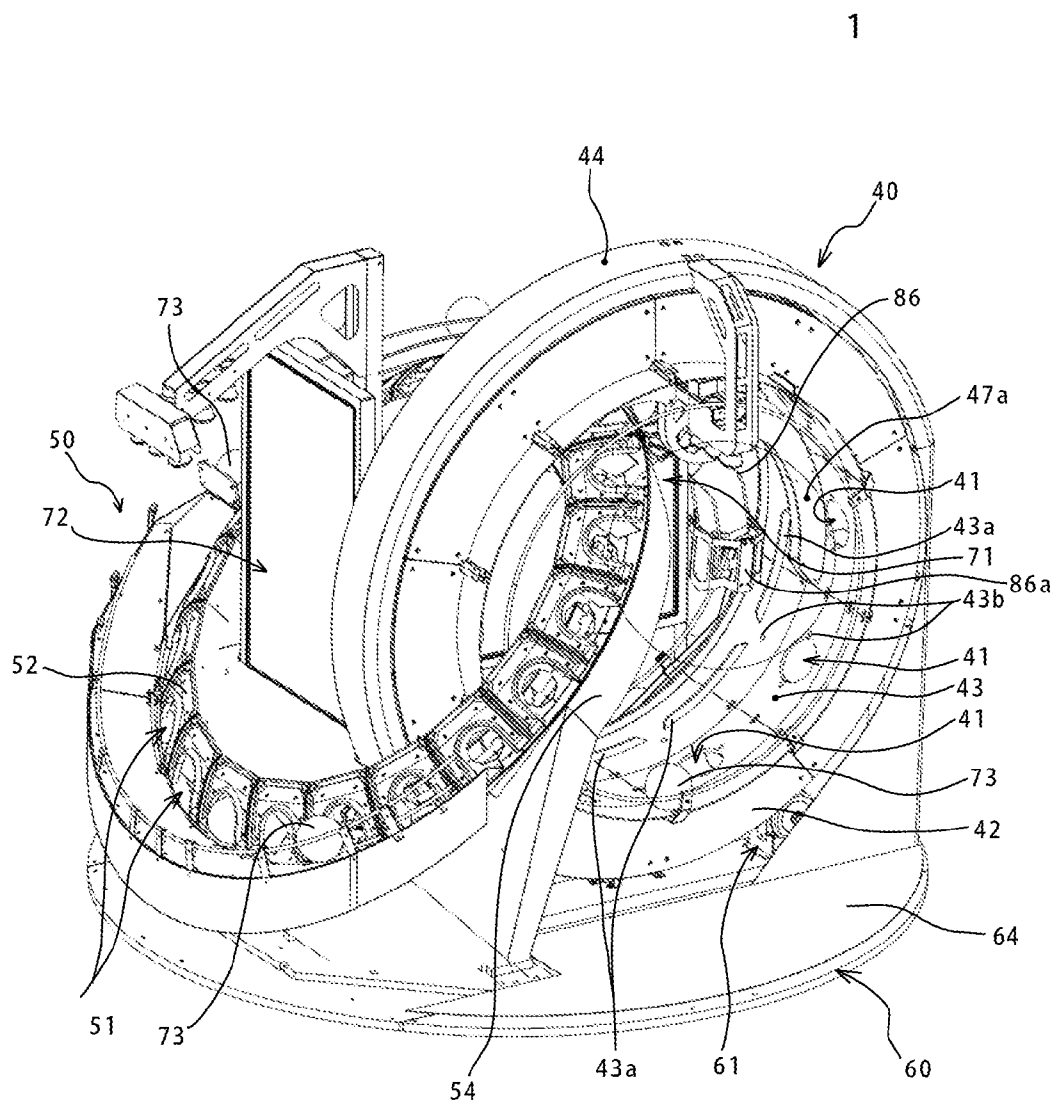
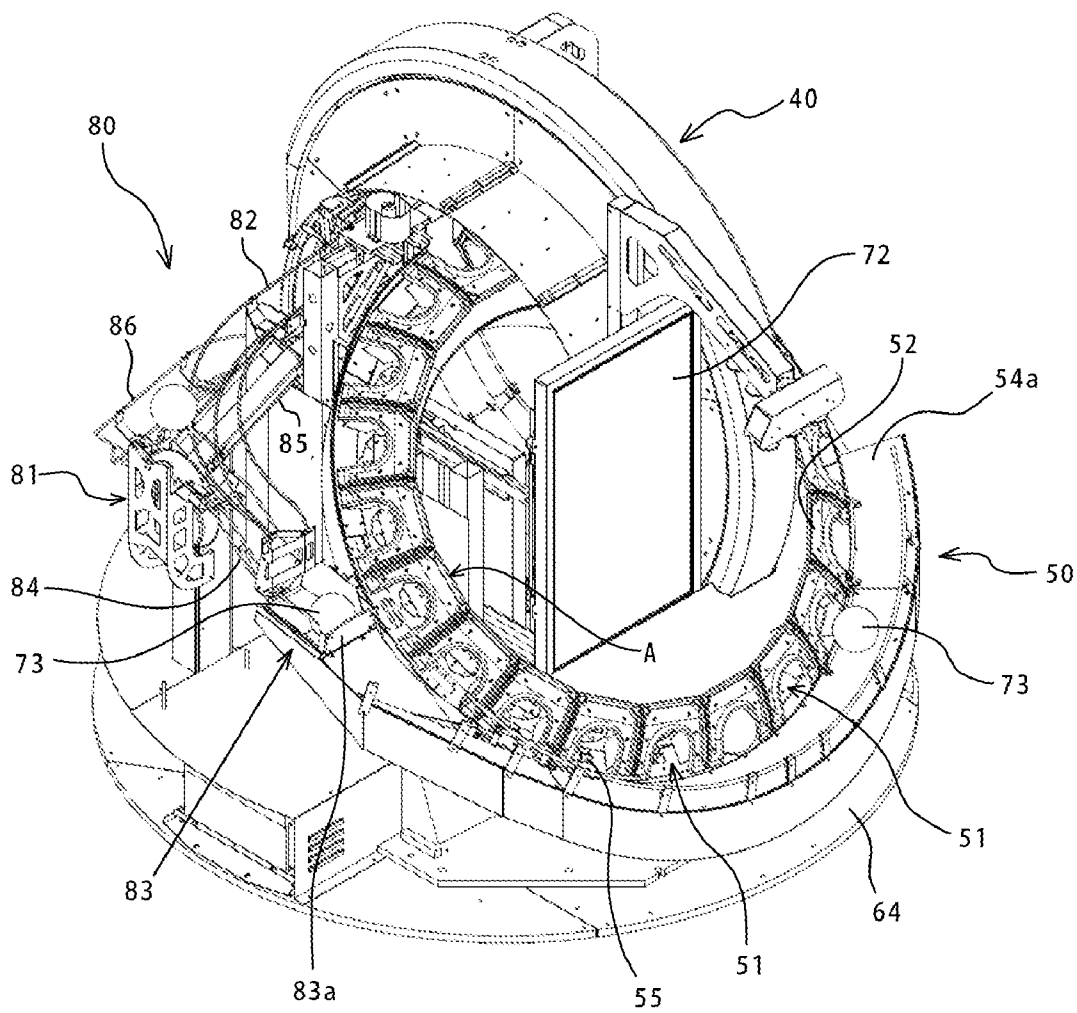


FIG.9



# FIG. 10

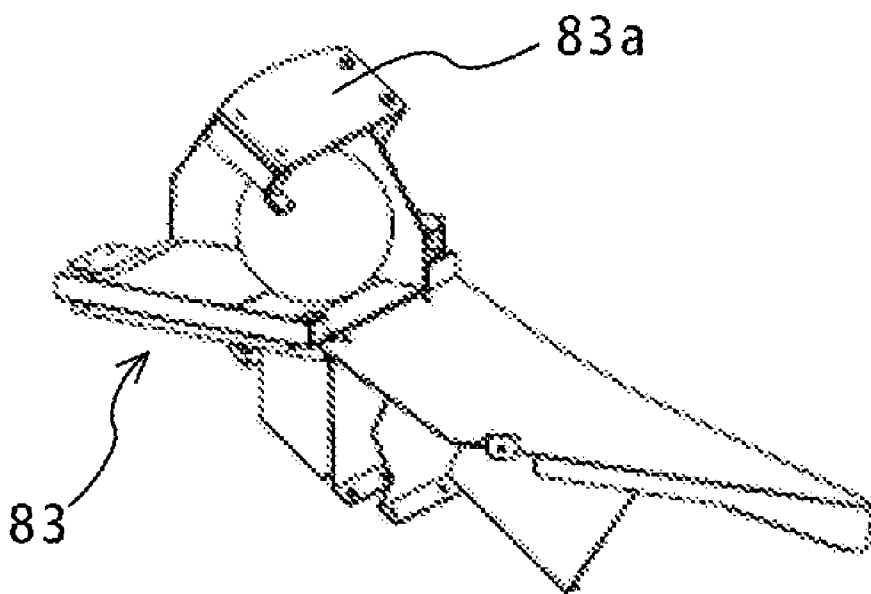


FIG. 11

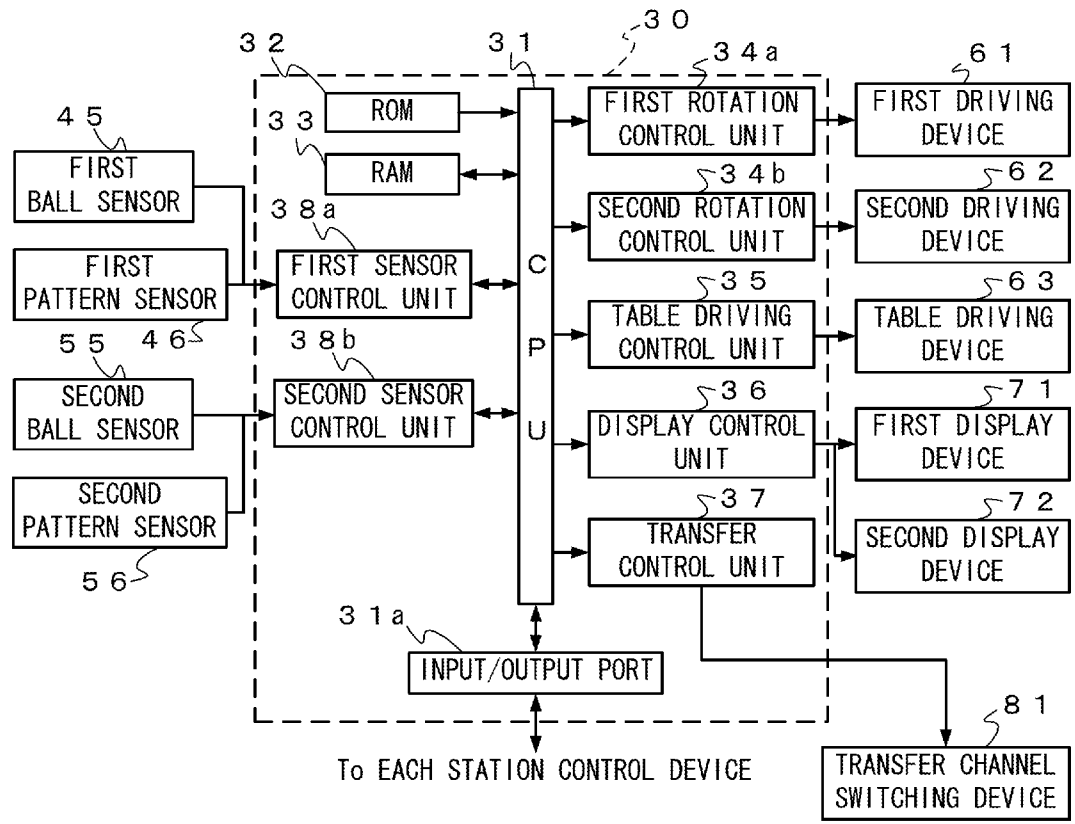


FIG. 12

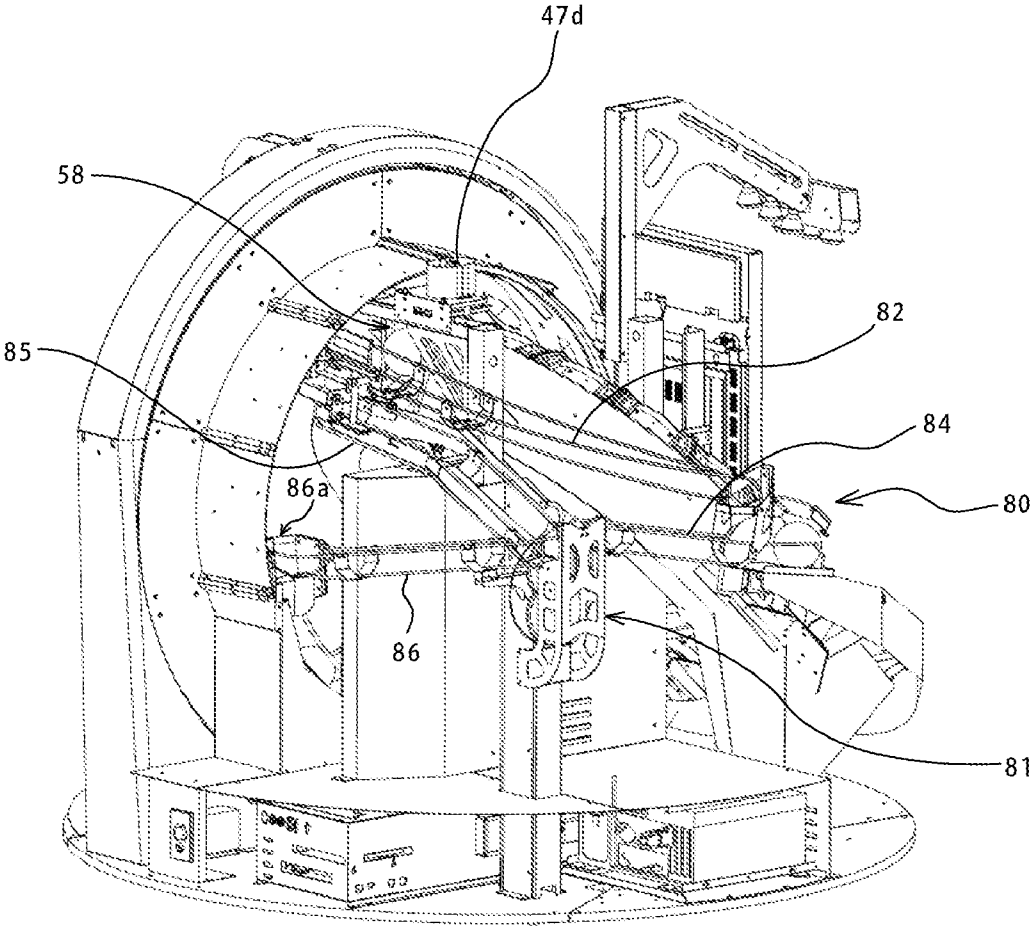


FIG.13

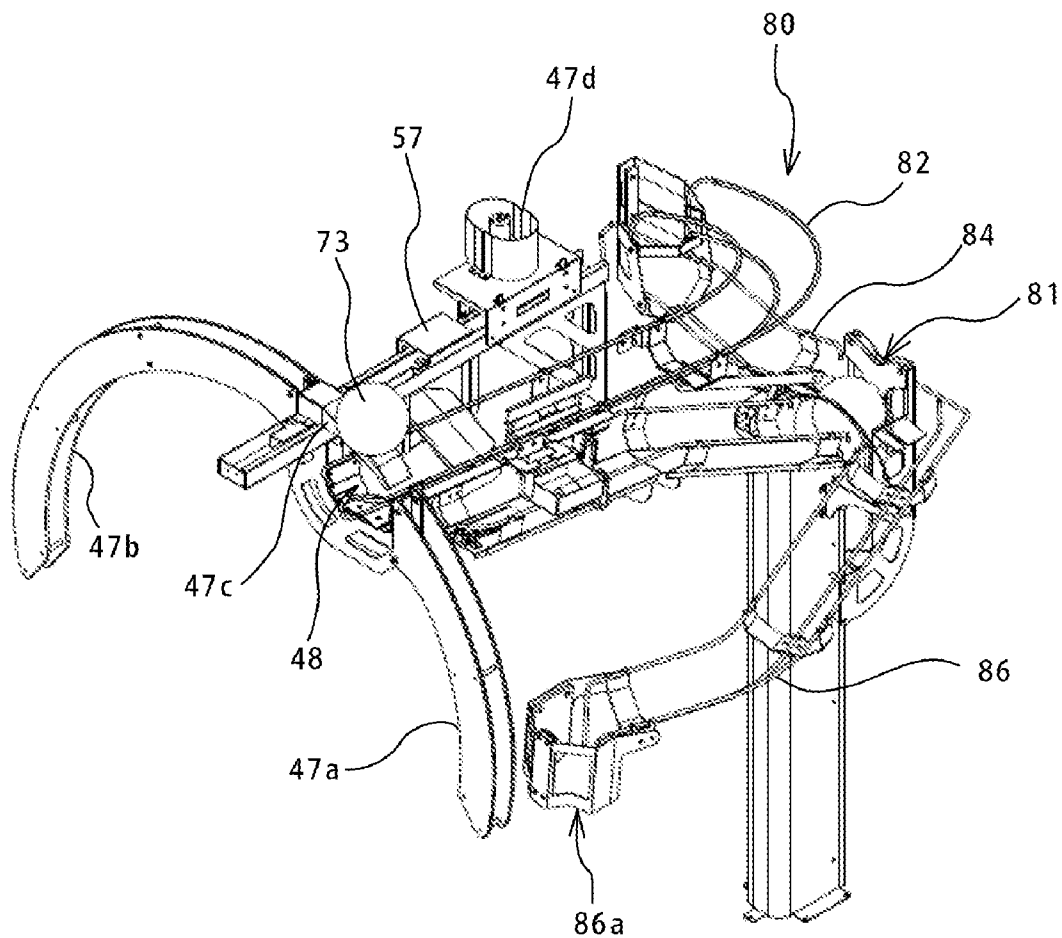


FIG.14

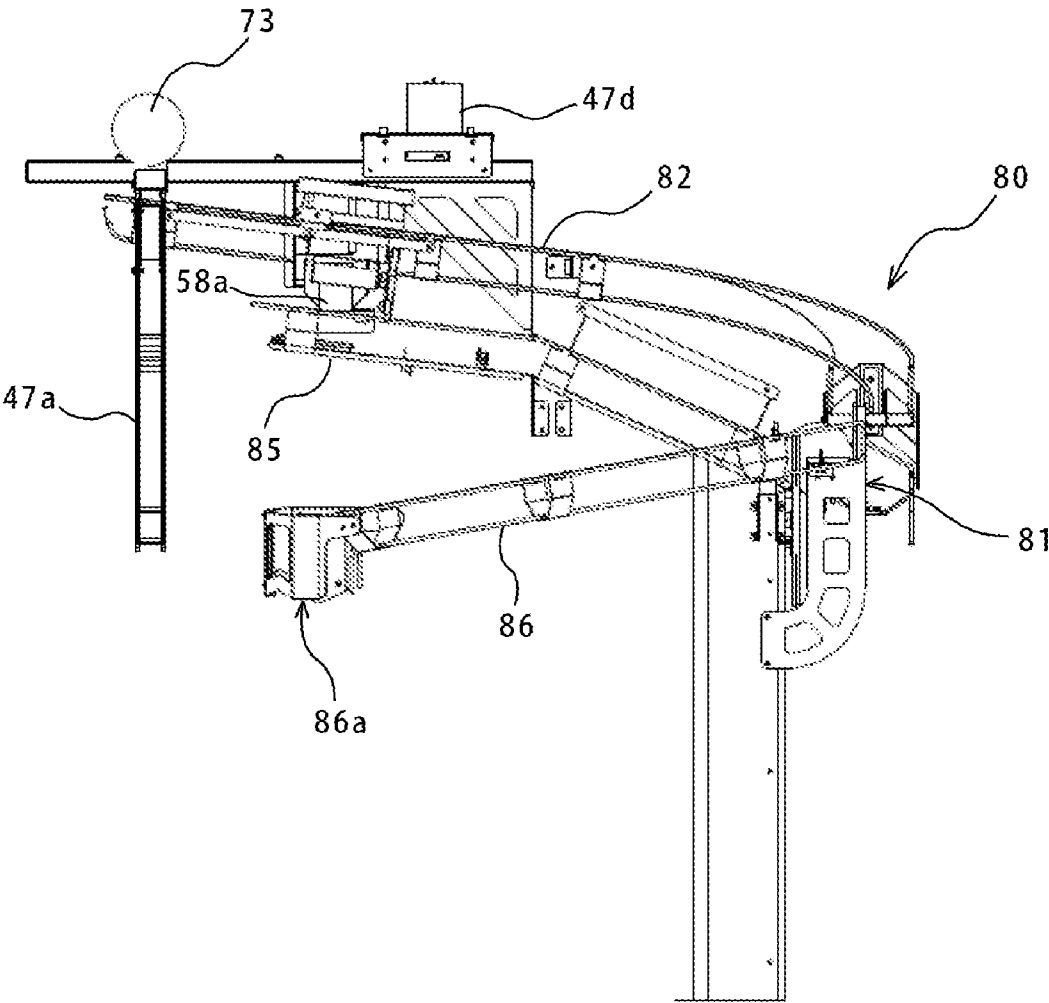


FIG. 15

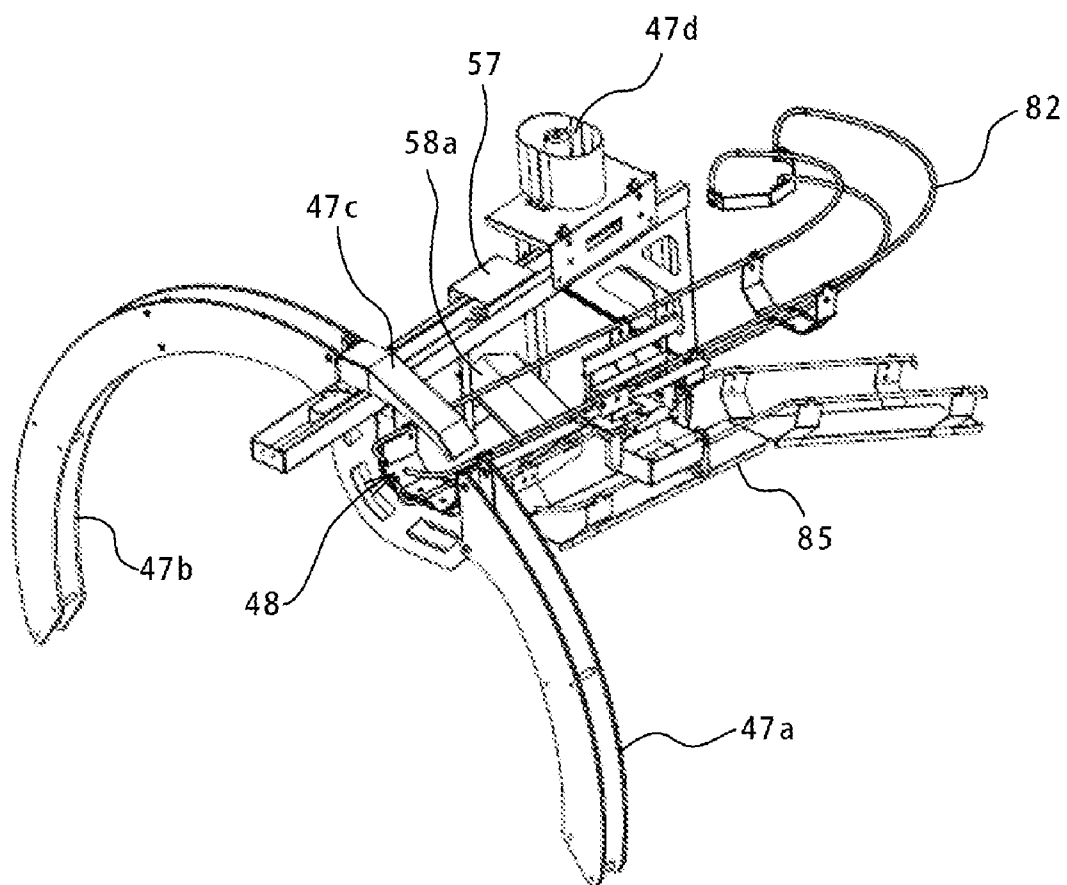
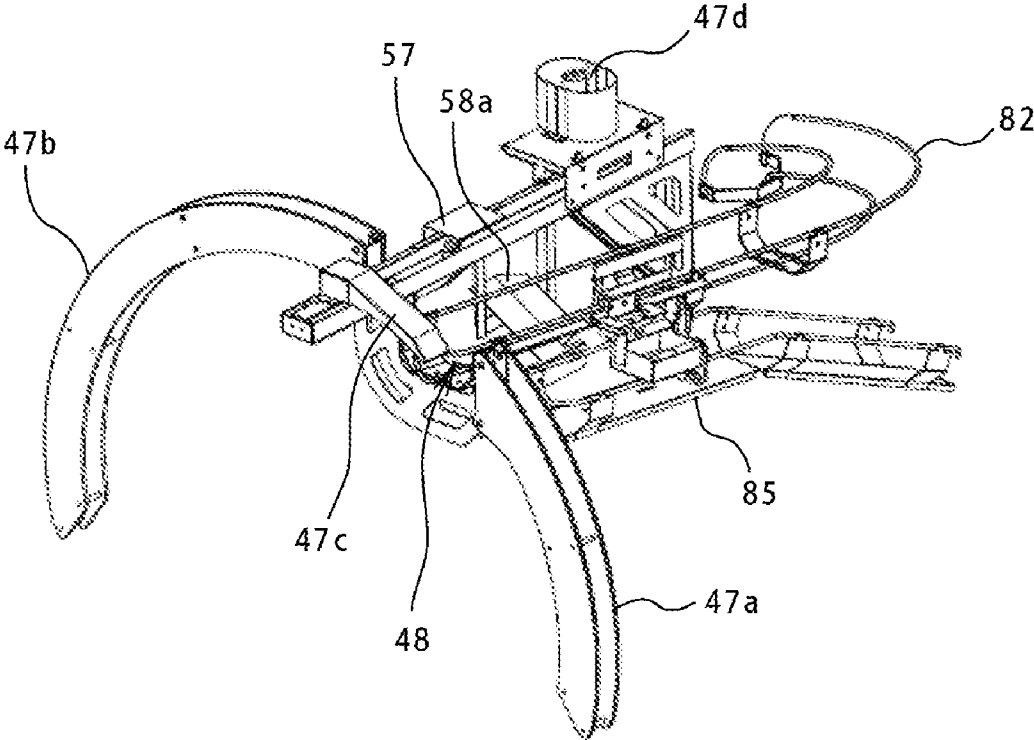




FIG. 16



# FIG. 17

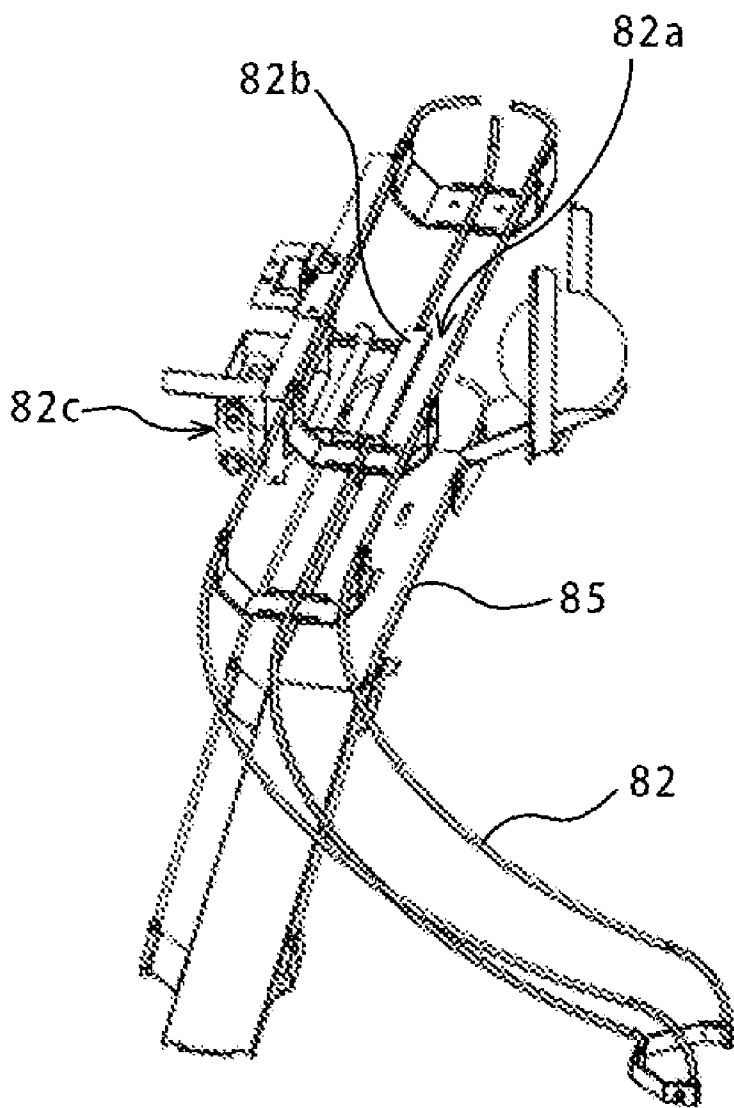


FIG. 18

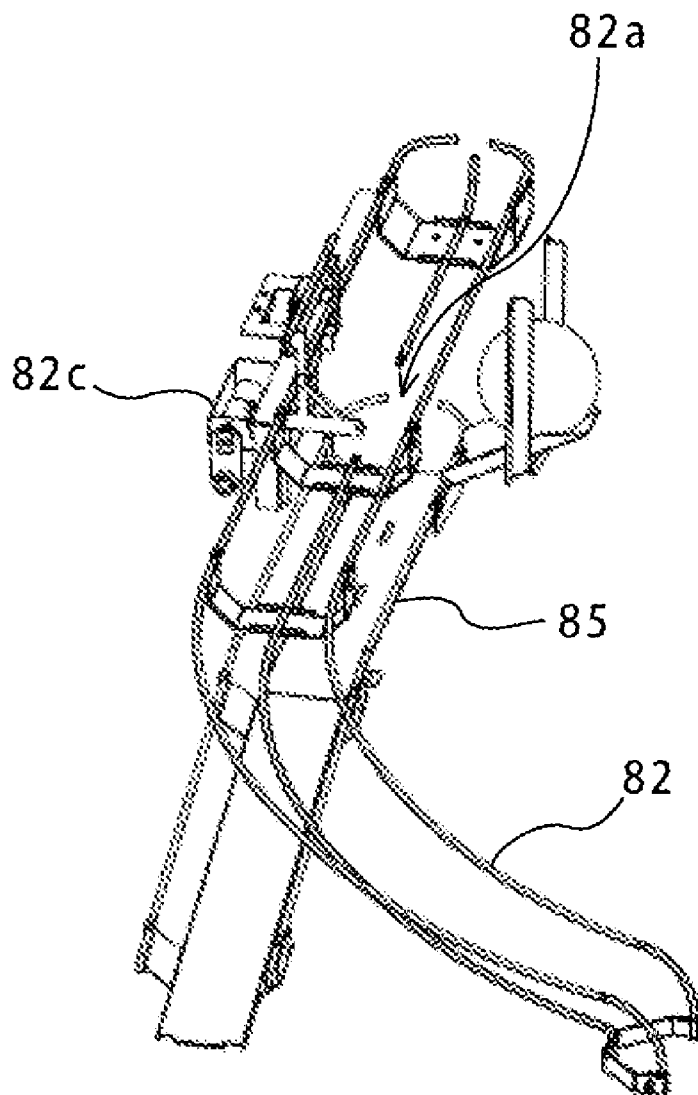


FIG. 19

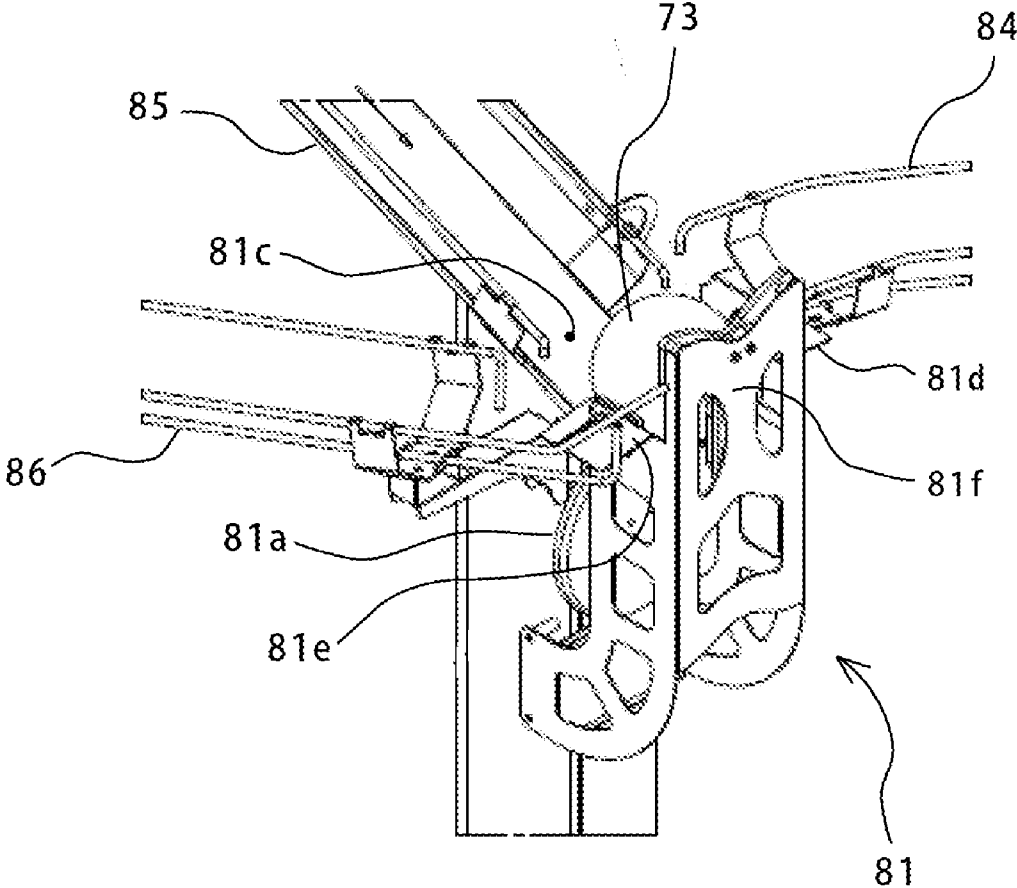


FIG. 20

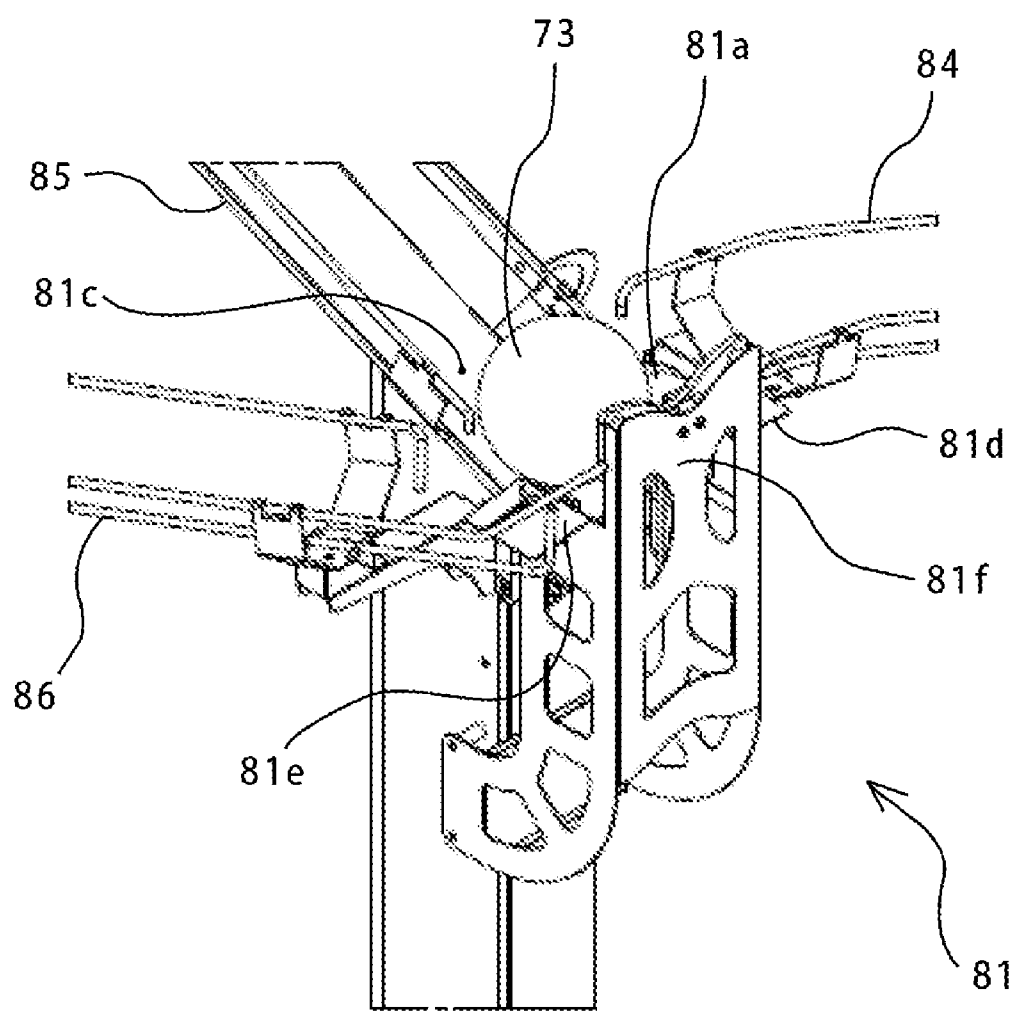


FIG.21

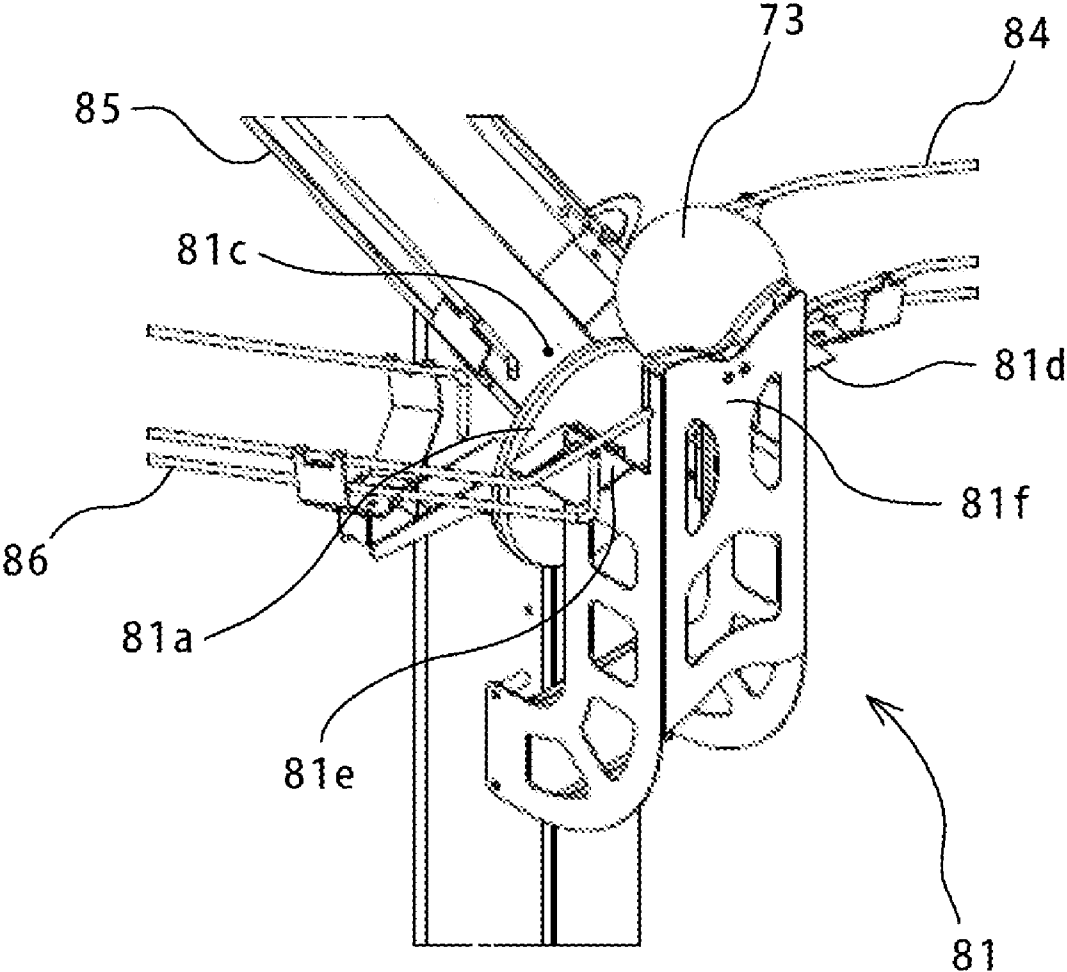


FIG. 22

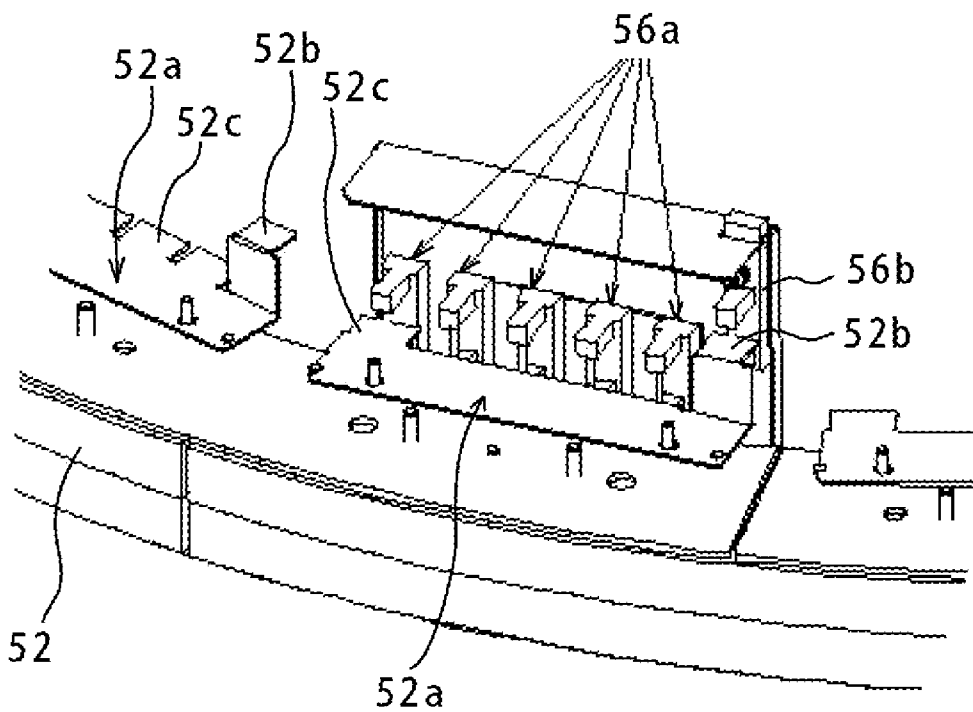


FIG. 23

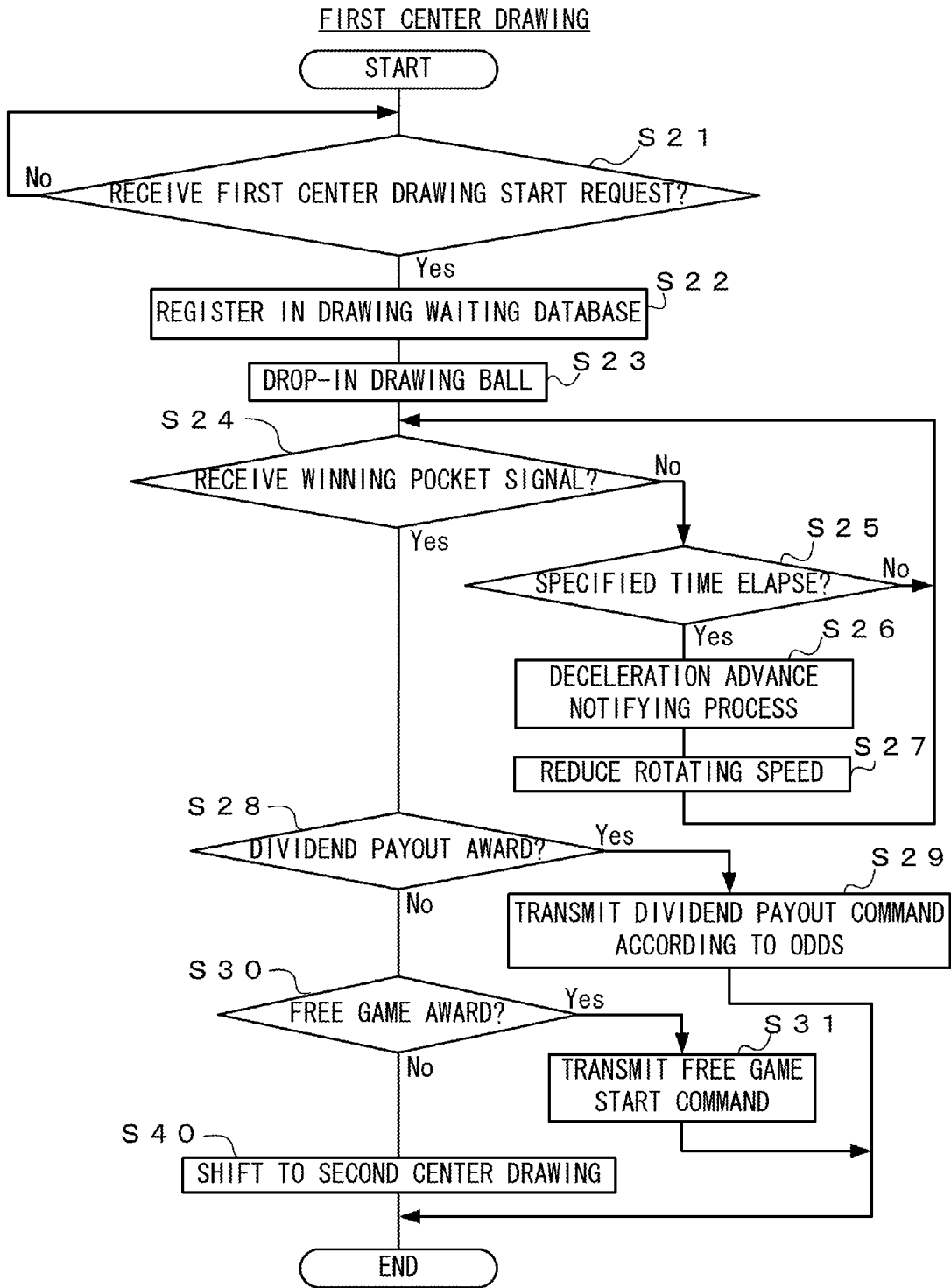




FIG. 24

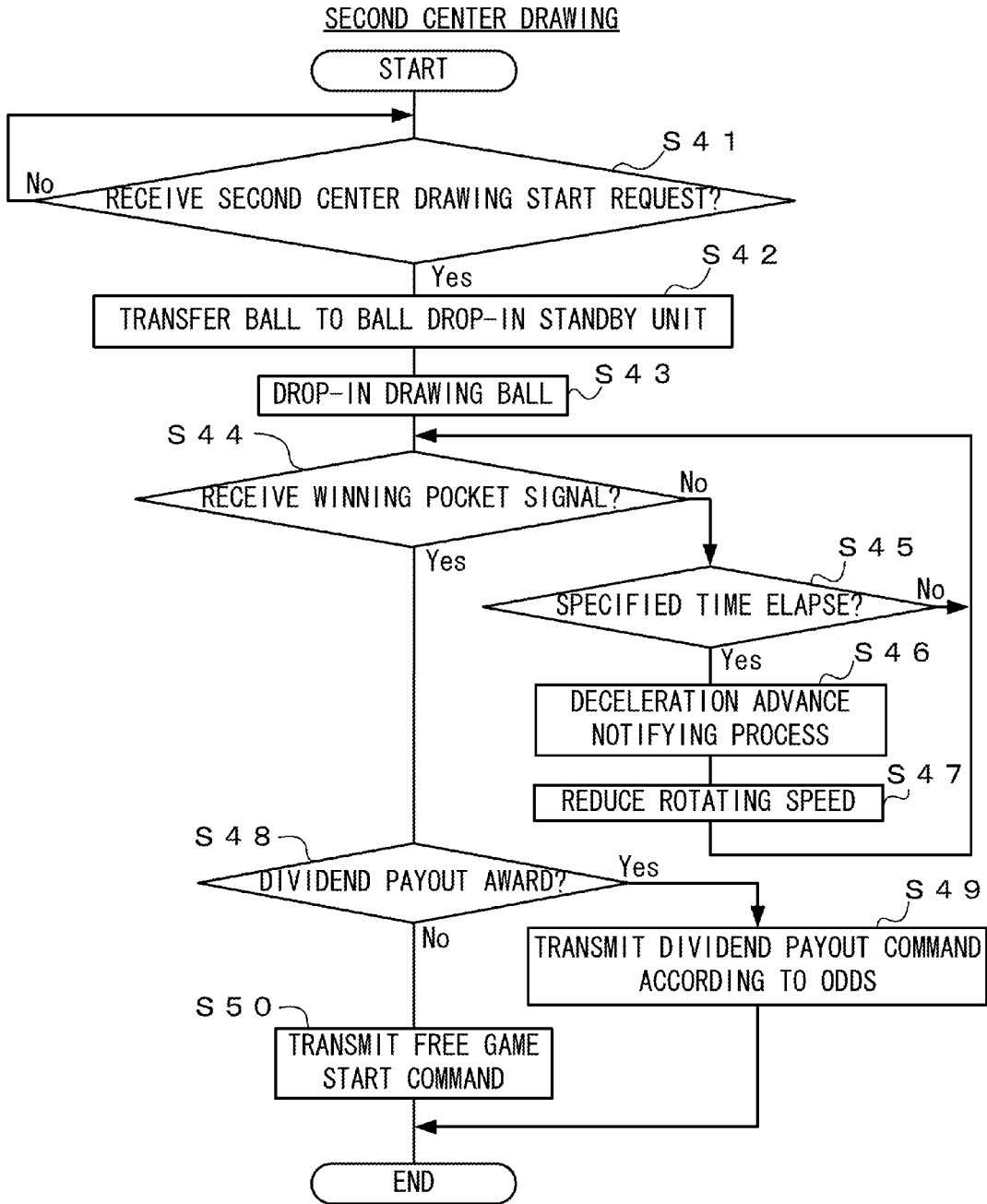


FIG.25



## GAME APPARATUS

### TECHNICAL FIELD

**[0001]** The present invention relates to a so-called betting game apparatus to be installed in a gaming facility such as a game center and a casino.

### BACKGROUND ART

**[0002]** Patent Document 1 describes a slot machine that causes symbols related to a predetermined payout-symbol combination to become all the same on a winning line by stopping rotation of a plurality of reels (symbol display units) each having a plurality of types of symbols. In this slot machine, the count value of a counter is added one by one every time stock symbols (specific symbols) related to a stock award become all the same on a winning line in a repeatedly performed slot game, and a process for lighting lamps of the number according to that count value is performed. This slot machine, if all lamps are lit when the above-described count value reaches the same number as the number of lamps, shifts to a special game mode where the game is made to progress so that the player can win more tokens than in a normal game mode. Accordingly, the player plays the game in anticipation of all lamps being lit for shifting to a special game mode more advantageous than the normal game mode. Moreover, in such a constitution, even a player who is going to finish the play, if in such a situation that lighting of another one or two lamps allows shifting to the special game mode, speculates that playing in the special game mode will be enabled by playing a little longer, and there is an effect of preventing the player from finishing the play.

**[0003]** Moreover, like slot machines, some of the betting game apparatuses that use money or tokens such as medals, coins, or pachinko balls as bet objects and payout objects can change the amount of bet objects for every single game play. When this constitution is adopted, usually, game design is performed so that the amount of payout objects is increased as the amount of bet objects is increased. According to such a constitution (hereinafter, referred to as "a variable bet constitution"), a single game apparatus can meet demands of both of a player who looks for a high risk, high return and a player who looks for a low risk, low return.

### Citation List

**[0004]** Patent Literature

**[0005]** Patent Document 1: Japanese Published Unexamined Patent Application No. 2005-472

### SUMMARY OF INVENTION

#### Technical Problem

**[0006]** Like the slot machine described in Patent Document 1, in a betting game apparatus that uses a predetermined progress result (in the case of the slot machine described in Patent Document 1, a result that stock symbols (specific symbols) are all the same on a winning line) in a plurality of game plays as a start condition for specific control (in the case of the slot machine described in Patent Document 1, control in the special game mode), a constitution is desired for, according to the bet amount of a game play that has produced the predetermined progress result regarding said start condition for specific control, changing the amount of payout objects to be paid out through the specific control. This is because this

constitution allows, as described in terms of the variable bet constitution in the above, obtaining an effect that a single game apparatus can meet demands of both of a player who looks for a high risk, high return through specific control and a player who looks for a low risk, low return through specific control.

**[0007]** In the case of realizing such a constitution, under usual circumstances, game design is performed, for example, with reference to the bet amount of a game play when said start condition for specific control was satisfied, so that the amount of payout objects through specific control is increased as that amount of bet objects is increased. However, in the above-described constitution, although it is necessary to produce a predetermined progress result by a plurality of game plays in order to satisfy said start condition for specific control, if the bet amount of a game play when said start condition for specific control was satisfied, that is, the bet amount of the last game play out of the game plays that have produced the predetermined progress result is used as a reference, the bet amounts for game plays before the last game play out of the game plays to satisfy said start condition for specific control have no effect on the amount of payout objects to be paid out through the specific control. Accordingly, for a player, it is the most efficient method for obtaining payout objects to play at the minimum bet amount until before said last game play and play at the maximum bet amount in said last game play. Given this, because every player adopts such a play system, the amount of payout objects to be paid out through specific control always corresponds to the maximum bet amount. Therefore, it results in a situation where an effect aimed at by adopting the constitution of changing the amount of payout objects to be paid out through specific control according to the bet amount cannot be substantially obtained.

**[0008]** The present invention realizes a game apparatus which allows obtaining an effect aimed at by changing the amount of payout objects to be paid out through specific control, in a betting game apparatus using a predetermined progress result in a plurality of game plays as a start condition for specific control, according to the bet amount of a game play that has produced the predetermined progress result regarding said start condition for specific control.

#### Solution to Problem

**[0009]** As an aspect of the present invention, it is listed that a game apparatus includes: an operation receiving unit which receives an operation by a player; a bet object receiving unit which performs a bet receiving process for receiving a variable amount of bet objects according to a bet amount operation which the operation receiving unit has received; a game progress control unit which, by executing a predetermined game progress program, controls progress of a game that is repeatedly performed on a game start condition that the bet object receiving unit performs the bet receiving process; a payout processing unit which, in accordance with a progress result of a game controlled by the game progress control unit, performs a payout process for paying out a predetermined amount of payout objects to a player; a counting unit which counts a specific control start condition count value according to a progress result of a game controlled by the game progress control unit; an accumulated bet amount storage unit which stores an accumulated amount of bet objects bet in a game when the counting unit counted the specific control start condition count value; and a specific control performing unit

which starts specific control based on the specific control start condition count value satisfying a predetermined specific control start condition, wherein the payout processing unit, in accordance with the specific control by the specific control performing unit, performs a payout process for paying out payout objects of an amount according to the accumulated amount of bet objects stored in the accumulated bet amount storage unit.

**[0010]** In this game apparatus, the specific control start condition count value regarding the specific control start condition is counted according to a progress result of a game controlled by the game progress control unit. Then, when the specific control is started as a result of satisfying the specific control start condition, payout objects of an amount according to the accumulated amount of bet objects bet in a game for which the specific control start condition count value to satisfy the specific control start condition was counted are paid out. Accordingly, by a player, for example, betting more bet objects while playing the game, the amount of payout objects to be paid out through specific control is increased, and a high risk, high return through specific control can be realized. Alternatively, by a player, for example, betting less bet objects while playing the game, the amount of payout objects to be paid out through specific control is reduced, and a low risk, low return through specific control can be realized. Thus, according to the present game apparatus, a single game apparatus can meet demands of both of a player who looks for a high risk, high return through specific control and a player who looks for a low risk, low return through specific control.

**[0011]** Further, a player can be made to think strategically about the bet amount by combination of a low risk, low return and a high risk, high return in every game play to play games.

**[0012]** Also, in the game apparatus, the specific control to be performed by the specific control performing unit may be control to perform a drawing for deciding whether a predetermined award is won or not, and the payout processing unit, when a result that the predetermined award has been won comes out in a drawing by the specific control performing unit, may perform a payout process for paying out payout objects of an amount according to the accumulated amount of bet objects stored in the accumulated bet amount storage unit.

**[0013]** Since the present game apparatus is a so-called betting game apparatus, where a payout amount of payout objects when a predetermined award is won in a drawing started as a result of satisfying the specific control start condition is decided according to the accumulated amount of bet objects bet in a game for which the specific control start condition count value to satisfy the specific control start condition was counted, it is desired to make an expected value of a payout ratio of payout objects almost constant even if an accumulated amount is different. This is because, if there is a great difference in expected value of a payout ratio depending on an accumulated amount of bet objects, bet objects are bet only by an amount with the highest expected value of the payout ratio. The present game apparatus allows preventing large variation in the expected value of the payout ratio of payout objects to be paid out when a predetermined award is won in a drawing through specific control even if the accumulated amount of bet objects is different.

**[0014]** Also, in the game apparatus, the drawing may be a mechanical drawing using a drawing object.

**[0015]** In this game apparatus, since the drawing through specific control can be performed by the mechanical drawing credibility of which for players can be more easily gained

than by a computer drawing, the credibility of the drawing through specific control can be improved.

**[0016]** Also, in the game apparatus, the game progress control unit may control progress of a slot game to cause a varying display of a plurality of types of symbols on a predetermined display part, and if a predetermined symbol combination is stopped and displayed on a winning line when the varying display is then stopped, pay out payout objects of an amount according to the symbol combination to a player, so that the number of winning lines is increased as a larger amount of bet objects which the bet object receiving unit receives, and the counting unit may count the specific control start condition count value according to a progress result of the slot game that a special symbol combination is stopped and displayed on the winning line.

**[0017]** Usually, a player feels that winning an award becomes easier with a larger number of winning lines. Therefore, the present game apparatus can cause a player to feel that specific control is easily started when the amount of bet objects is increased, and payout of payout objects through the specific control is more easily received. Therefore, it can be expected to cause a player to bet more bet objects.

**[0018]** In addition, the game apparatus may further include a second counting unit which counts a second specific control start condition count value according to a progress result of a game controlled by the game progress control unit; and a second accumulated bet amount storage unit which stores an accumulated amount of bet objects bet in a game when the second counting unit counted the second specific control start condition count value, wherein the specific control performing unit may start the specific control based on either the specific control start condition count value or the second specific control start condition count value satisfying a predetermined specific control start condition, when the specific control start condition count value satisfies the predetermined specific control start condition, a process for resetting the specific control start condition count value while maintaining the second specific control start condition count value may be performed, and when the second specific control start condition count value satisfies the predetermined specific control start condition, a process for resetting the second specific control start condition count value while maintaining the specific control start condition count value may be performed.

**[0019]** When there is only one type of specific control start condition count value regarding a specific control start condition, if the specific control start condition is satisfied and the specific control start condition count value is reset, it becomes necessary to count that specific control start condition count value from the first until the specific control start condition is again satisfied. Therefore, a player speculates that it is necessary to repeat a game many times until the specific control start condition is again satisfied, and thus often finishes the game play at the timing where a specific control start condition is satisfied. On the other hand, in this game apparatus, even if the predetermined specific control start condition is satisfied for either one of the specific control start condition count value and the second specific control start condition count value, the other count value is maintained. Accordingly, it can be expected to prevent the player from finishing the game play at the timing where the specific control start condition is satisfied.

#### Advantageous Effects of Invention

**[0020]** According to the present invention, in the case of changing the amount of payout objects to be paid out through

specific control, in a betting game apparatus using a predetermined progress result in a plurality of game plays as a start condition for specific control, according to the bet amount of a game play that has produced the predetermined progress result regarding said start condition for specific control, the single game apparatus to meet demands of both of a player who looks for a high risk, high return through specific control and a player who looks for a low risk, low return through specific control can be obtained.

#### BRIEF DESCRIPTION OF DRAWINGS

[0021] FIG. 1 is a partial perspective view showing an overall configuration of a token-operated game machine according to the embodiment.

[0022] FIG. 2 is a perspective view showing an upper portion of the station unit in the token-operated game machine.

[0023] FIG. 3 is a view for explaining one example of a game screen displayed on the touch panel of the station unit in a dual play mode.

[0024] FIG. 4 is a block diagram showing a schematic configuration of a station control device that controls the station unit.

[0025] FIG. 5 is a functional block diagram showing functions of the station unit and a center drawing apparatus.

[0026] FIG. 6 is a view for explaining one example of a game screen displayed on the touch panel of the station unit in a single play mode.

[0027] FIG. 7 is a flowchart showing the flow of one slot game executed by the station unit.

[0028] FIG. 8 is a perspective view of a center drawing apparatus in the token-operated game machine.

[0029] FIG. 9 is a perspective view when the center drawing apparatus is viewed from a different angle from that of FIG. 8.

[0030] FIG. 10 is an explanatory view of a state when a shutter, which is provided in a ball drop-in standby unit 83 of a inclined ring drawing device in the center drawing apparatus, released a drawing ball.

[0031] FIG. 11 is a block diagram showing a schematic configuration of the main part of the central control device that controls the center drawing apparatus.

[0032] FIG. 12 is a perspective view showing an overall configuration of a ball transfer device in the center drawing apparatus.

[0033] FIG. 13 is a perspective view for explaining the ball transfer device and its peripheral configuration.

[0034] FIG. 14 is a side view for explaining the ball transfer device and its peripheral configuration.

[0035] FIG. 15 is an explanatory view of a state when a shutter, which is provided in a first ball discharge unit of a vertical ring drawing device, moved to a ball passing position.

[0036] FIG. 16 is an explanatory view of a state when the shutter moved to a ball discharging position.

[0037] FIG. 17 is an explanatory view of a state when a shutter, which is provided at fall opening in the middle of a first transfer rail, moved to a blocking position.

[0038] FIG. 18 is an explanatory view of a state when the shutter moved to an opening position.

[0039] FIG. 19 is an explanatory view of a transfer channel switching device in the ball transfer device when the transfer channel switching device is in a standby state.

[0040] FIG. 20 is an explanatory view of the transfer channel switching device when the drawing ball is transferred to a first exit.

[0041] FIG. 21 is an explanatory view of the transfer channel switching device when the drawing ball is transferred to a second exit.

[0042] FIG. 22 is a perspective view showing a configuration of a second pattern sensor provided in the inclined ring drawing device.

[0043] FIG. 23 is a flowchart showing the flow of one first center drawing.

[0044] FIG. 24 is a flowchart showing the flow of one second center drawing.

[0045] FIG. 25 is a view for explaining one example of a game screen in an example of other game which can be executed in the station unit.

#### DESCRIPTION OF EMBODIMENTS

[0046] Hereinafter, one embodiment in which the present invention is applied to a token-operated game machine that is a game machine for business use (arcade gaming machine) serving as a game apparatus will be described with reference to the drawings.

[0047] In addition, each of the drawings merely shows the shape, dimensions and positional relationship briefly to such an extent that is helpful in understanding the content of the present invention. The present invention shall not be therefore limited only to the shape, dimensions or positional relationship shown in each of the drawings. Further, in each of the drawings, in order to make a constitution clear, a part of the hatching on the cross section is omitted. Still further, a value to be exemplified later is only a preferable example of the present invention, and therefore the present invention shall not be limited to the exemplified value.

[0048] FIG. 1 is a partial perspective view showing an overall configuration of a token-operated game machine 1 according to the present embodiment.

[0049] The token-operated game machine 1 includes eight station units 2 so as to surround a center drawing apparatus 3, which is a mechanical drawing machine serving as a drawing unit functioning as drawing means. In the present embodiment, two independent games that are made to progress independently of each other can be carried out at one station unit 2, so that 16 players can simultaneously play at a maximum.

[0050] FIG. 2 is a perspective view showing an upper portion of the station unit 2 in the token-operated game machine 1.

[0051] The station unit 2 is provided, on an upper portion of a housing, with a touch panel 11 serving as a display unit and operation receiving unit functioning as display means and operation receiving means, two start buttons 12 and a bet mode selection button 13 serving as an operation receiving unit functioning as operation receiving means, a token drop-in opening 14, and so on. On the touch panel 11, as shown in FIG. 3, game screens regarding two independent games that are made to progress independently of each other are displayed side by side, and two players play the games by observing the displays on their respective game screens while operating the touch panel 11 and the various buttons 12, 13. In the present embodiment, description is given for an example of the case where the two independent games to be carried out in the station unit 2 are slot games (symbol matching play), but the type of independent games to be carried out in the station unit 2 is not limited to this. It is noted that the slot game is a game to cause a varying display of a plurality of types of symbols, and if a symbol that is stopped and displayed when the varying display is then stopped, or a pattern of a plurality

of stopped and displayed symbols corresponds to a predetermined award, award the player a predetermined benefit.

**[0052]** FIG. 3 is a view for explaining one example of two game screens displayed on the touch panel 11 of the station unit 2.

**[0053]** On each of the two game screens displayed on the touch panel 11, a plurality of symbols of two types or more arrayed in a predetermined order are displayed in each of the three symbol display regions 11a to 11c, 11d to 11f. Moreover, on the touch panel 11, in addition to the symbol display regions, a display unit 11g that displays various types of information necessary for the game, such as a credit display unit that displays the quantity of credit corresponding to the number of tokens dropped from the token drop-in opening 5a by the player, is also displayed in a lower portion of the game screens. In the present embodiment, as to be described later, two players playing at one station unit 2 play by using credit common to each other, and thus there is only one credit display unit to be displayed on the display unit 11g. However, because the slot games themselves to be played by the respective players are independent games that progress respectively independently, a bet amount display unit for displaying a bet (BET) amount, an obtaining credit quantity display unit for displaying a payout amount at winning, and the like are respectively provided for each game.

**[0054]** In the present embodiment, part or all of the operations other than the operation for the mechanical buttons 12, 13 are performed by various types of operating images displayed on the touch panel 11, but mechanical buttons may be provided in place of the operating images, or conversely, the operating image of the touch panel 11 may be used in place of the mechanical buttons 12, 13.

**[0055]** Moreover, inside of the station unit 2, although not shown, a station control device that is constituted with an electronic circuit formed of a CPU, a ROM, and other various electronic components, an inspection device for checking if the received tokens are unauthorized tokens, a token payback device capable of containing a large number of tokens and for discharging to the outside tokens of a number instructed by the station control device, a speaker serving as a sound outputting unit functioning as sound outputting means, and other components are also incorporated.

**[0056]** FIG. 4 is a block diagram showing a schematic configuration of a station control device 20 that controls the station unit 2.

**[0057]** The station control device 20 is constituted with a CPU 21, an input/output port 21a, a ROM 22, a RAM 23, a random number generating circuit 24, a display control unit 25, an audio control unit 26, a payback control unit 27, and so on. The input/output port 21a is used for performing data communications with a central control device 30 to be described later. The ROM 22 stores data such as various types of programs and various types of databases to be used by the CPU 21, and outputs these to the CPU 21. The RAM 23 temporarily stores variable data calculated by the CPU 21 and the like or stores various types of varying data such as credit data. The random number generating circuit 24 generates a random number at a predetermined timing and outputs its data to the CPU 21. The display control unit 25 constitutes a display unit with the touch panel 11, and under the control of the CPU 21, performs display control of the touch panel 11 that displays a game screen and the like. The audio control unit 26, under the control of the CPU 21, controls a voice announcement, a performance sound, or the like to be output

from the speaker 15. The payback control unit 27, under the control of the CPU 21, controls the token payback device 16 to pay back tokens. The CPU 21 is also connected to, for example, a token counter (not shown) that counts the number of tokens dropped in the token drop-in opening and an illumination control unit that controls illumination such as an LED.

**[0058]** FIG. 5 is a functional block diagram showing functions of the station unit 2 and the center drawing apparatus 3 concerning characteristic parts of the present invention.

**[0059]** In the present embodiment, a game unit A and a game unit B for respectively carrying out two independent games that are made to progress independently of each other exist in one station unit 2. These game units A, B include game progress control units 101A, 101B serving as game progress control units functioning as game progress control means for controlling the progress of their respective independent games. These two game progress control units 101A, 101B may be constituted with hardware such as game boards physically differentiated, or may be virtually constituted by two software programs that independently operate on the same hardware. Alternatively, the two game progress control units 101A, 101B may be virtually constituted by a single software program that operates on the same hardware. In addition, the respective game units A, B are the same in configuration.

**[0060]** The respective game units A, B include mainly game progress control units 101A, 101B serving as a game progress control unit functioning as game progress control means, operation receiving units 102A, 102B serving as an operation receiving unit functioning as operation receiving means, bet receiving units 103A, 103B serving as a bet object receiving unit functioning as bet object receiving means, and payout processing units 104A, 104B serving as a payout unit functioning as payout means, respectively. Further, a common credit data storage unit 105 serving as a common credit data storage unit functioning as common credit data storage means for storing credit data indicating the quantity of credit to be used as bet objects and payout objects in the respective game units A, B and a common display unit 106 serving as a display unit functioning as display means for displaying game screens are shared by the two game units A, B.

**[0061]** The game progress control units 101A, 101B are constituted with the CPU 21, the ROM 22, the RAM 23, the random number generating circuit 24, and so on, and as a result of the CPU 21 executing a game program in the ROM 22, in response to a game operation the respective operation receiving units 102A, 102B have received, perform game progress control respectively independently, so as to change the progress status of a game based on the game program under execution. Further, the game progress control units 101A, 101B also perform control to display game screens according to the progress statuses of their respective games on the touch panel 11 of the common display unit 106 and to output sound such as a performance sound from the speaker 15.

**[0062]** The independent games the progress of which is controlled by the game progress control units 101A, 101B of the present embodiment, respectively, are slot games. Concretely, when the operation receiving units 102A, 102B receive a bet operation, the bet receiving units 103A, 103B reduce the bet amount according to the bet operation from the credit quantity indicated by common credit data stored in the common credit data storage unit 105, whereby a slot game is

started. Then, progress control of the slot game including control to decide paying out credit according to the result of the slot game is performed. Moreover, the game progress control units **101A**, **101B** in the present embodiment control the game progress so as to count sequentially one by one a plurality of (five in the present embodiment) drawing condition flags that is the number equal to a specific control start condition count value, according to the game progress, in a first drawing condition counting unit **108** and a second drawing condition counting unit **110**.

**[0063]** Although, in the present embodiment, a configuration for counting the specific control start condition count value by recording five drawing condition flags is adopted, one piece of count value data may be simply counted up. However, adopting a configuration for recording five drawing condition flags as in the present embodiment allows including a pattern or combination of the flags in a start condition for a first center drawing to be described later. For example, it becomes possible, in a configuration where five drawing condition flags are randomly recorded according to the progress result of a game, to provide a condition that three adjacent flags are recorded as the start condition for a first center drawing.

**[0064]** The operation receiving units **102A**, **102B** are constituted with the touch panel **11**, the two start buttons **12**, the bet mode selection button **13**, and so on, and when operations are performed by the respective players, operation signals thereof are sent to the CPU **21** of the station control device **20**.

**[0065]** The bet receiving units **103A**, **103B** are constituted with the CPU **21**, the ROM **22**, the RAM **23**, and so on, and perform a bet receiving process, when the corresponding operation receiving unit **102A**, **102B** receives a bet operation (bet amount operation), for reducing the bet amount according to the bet operation from the credit quantity indicated by common credit data stored in the common credit data storage unit **105**.

**[0066]** The payout processing units **104A**, **104B** are constituted with the CPU **21**, the ROM **22**, the RAM **23**, and so on, and perform a payout process, in accordance with the progress result of a game controlled by the corresponding game progress control unit **101A**, **101B**, for adding credit according to the quantity of credit received by the corresponding bet receiving unit **103A**, **103B** to the credit quantity indicated by common credit data stored in the common credit data storage unit **105**.

**[0067]** The common credit data storage unit **105** is constituted with the RAM **23** and so on, and stores, in a common credit storage area of the RAM **23**, credit data indicating the quantity of credit to be used in common by players playing at the respective game units A, B.

**[0068]** The common display unit **106** is constituted with the display control unit **25**, the touch panel **11**, and so on, and displays two game screens according to the progress of independent games that are respectively controlled by the game progress control units **101A**, **101B**. These two game screens are displayed in respective screen areas for which a screen area on the touch panel **11** is divided into two left and right parts. Moreover, when the mode is switched to a single play mode by a mode switching unit **107** to be described later, the common display unit **106** displays only one game screen according to the progress of an independent game controlled by either one of the game progress control units **101A**, **101B**, as shown in FIG. 6. In this case, this game screen is displayed in the entire screen area on the touch panel **11**.

**[0069]** Moreover, the station unit **2** of the present embodiment includes a mode switching unit **107** serving as a mode switching unit functioning as mode switching means, a first drawing condition counting unit **108** serving as a counting unit functioning as counting means, a first accumulated bet amount storage unit **109** serving as an accumulated bet amount storage unit functioning as accumulated bet amount storage means, a second drawing condition counting unit **110** serving as a second counting unit functioning as second counting means, and a second accumulated bet amount storage unit **111** serving as a second accumulated bet amount storage unit functioning as second accumulated bet amount storage means. These are shared by the two game units A, B.

**[0070]** The mode switching unit **107** is constituted with the CPU **21**, the ROM **22**, the RAM **23**, and so on, and, when the operation receiving unit **102A**, **102B** of either of the game units A, B receives a predetermined game screen switching operation, switches a dual play mode of making the common display unit **106** display two game screens and the respective game progress control units **101A**, **101B** controlling the progress of independent games, thereby allowing two players to play simultaneously and a single play mode of making the common display unit **106** display one game screen and only either one of the game units A, B controlling the progress of an independent game, thereby playing by only one player. As a concrete example, for example, in the case of performing progress control of independent games that are made to progress independently in the respective game units A, B by a single game progress program that operates on the same hardware, it is made so that said single game progress program is switched in operation mode when either of the operation receiving units **102A**, **102B** receives a predetermined game screen switching operation. Here, in the case of operation in the dual play mode as the operation mode of said single game progress program, performing progress control of two independent games to make the common display unit **106** display two game screens allows two players to play simultaneously. On the other hand, in the case of operation in the single play mode as the operation mode of said single game progress program, performing progress control of one independent game to make the common display unit **106** display one game screen allows only one player to play.

**[0071]** Although it is possible for one player to play even when the mode remains in the dual play mode, in this case, the other game screen that is not a game screen of the player remains unused and occupies the screen area of the touch panel **11**. Since the screen area of the touch panel **11** is limited, in the dual play mode using game screens for which the limited screen area is divided into two parts, there is a defect such that performance by an image display lacks dynamics because of game screens being too narrow. To cope therewith, by providing the single play mode as described above, a game screen that is not used in the case of playing by one player is eliminated from the screen area of the touch panel **11**, so that the limited screen area can be effectively used to display a game screen to be used by the player. Accordingly, more dynamic performance is enabled.

**[0072]** The first drawing condition counting unit **108** and the second drawing condition counting unit **110** are constituted with the CPU **21**, the ROM **22**, the RAM **23**, and so on, and record five first drawing condition flags serving as specific control start condition flags sequentially one by one according to the progress results of both independent games the progress of which is controlled by the game progress

control units **101A**, **101B**. That is, the first drawing condition counting unit **108**, even for either independent game, if a predetermined game progress result to count up the first drawing condition counting unit **108** comes out, records five first drawing condition flags sequentially one by one. The same applies to the second drawing condition counting unit **110**. Although, description is given in the present embodiment, for convenience of description, of an example where five drawing condition flags are recorded sequentially one by one, the method for counting a specific control start condition count value (method for recording five drawing condition flags) is not limited to this, and a plurality of drawing condition flags may be recorded at once based on one game progress result, and the drawing condition flags may be deleted depending on the game progress result.

**[0073]** In addition, the drawing condition flags are maintained without being reset even in the case of switching from the dual play mode to the single play mode or from the single play mode to the dual play mode by the mode switching unit **107** described above. Accordingly, an effect of encouraging a second player to participate while one player plays in the single play mode can be expected. Moreover, for example, even in the case of switching to the single play mode when either one of the players finishes the game play while two players play in the dual play mode, since there is no disadvantage for the remaining player, an effect of encouraging players to use the dual play mode can be expected.

**[0074]** The first accumulated bet amount storage unit **109** and the second accumulated bet amount storage unit **111** are constituted with the RAM **23** and so on, and respectively store the accumulated amounts of credit bet in independent games when the corresponding drawing condition counting units **108**, **110** recorded drawing condition flags. However, in the present embodiment, in a manner associated with the respective drawing condition flags, bet histories indicating credit quantities bet in independent games when the drawing condition flags were recorded are stored. Even by storing in such a format, since the accumulated amount of credit can be determined by accumulatively adding the bet histories associated with the respective drawing condition flags, it can be said that the first accumulated bet amount storage unit **109** and the second accumulated bet amount storage unit **111** store the accumulated amounts of credit bet in independent games when the corresponding drawing condition counting units **108**, **110** recorded drawing condition flags.

**[0075]** Next, the operation of the respective units will be described along the flow of slot games being independent games to be carried out in the respective game units A, B of the station unit **2**. Because the respective slot games to be carried out in the respective game units A, B are the same in content, description will be given of the slot game of the game unit A in the following description.

**[0076]** FIG. 7 is a flowchart showing the flow of one slot game play.

**[0077]** When tokens (not shown) are dropped in the token drop-in opening **5a** by either of the two players playing at the station unit **2**, the tokens etc., are counted by the token counter. Then, the token counter outputs dropped token data to the CPU **21** of the station control device **20**. The CPU **21** that has received the dropped token data performs a process for adding the credit quantity corresponding to the dropped token data to the common credit data of the common credit data storage unit **105**. When credit that has been deposited in advance in the gaming facility is withdrawn by performing a

credit withdrawing process and used, common credit data corresponding to the withdrawn credit is stored in the common credit data storage unit **105**.

**[0078]** The player, after deciding the desired number of winning lines and the betting (BET) credit quantity, touches his/her game screen of the two game screens displayed on the touch panel **11** to select winning lines, and selects a bet mode by pressing any of the mode selection buttons **13** to decide how much credit will be paid for each winning line (S1). This operation content is sent as a bet operation signal to the CPU **21** of the station control device **20**. The CPU **21** that has received the bet operation signal brings about a state where an operation signal from the start button **12** can be received. Accordingly, an operation of the start button **12** by the player is made effective.

**[0079]** When the player operates the start button **12** (S2), the bet receiving unit **103A** of the game unit A being played by the player performs a bet receiving process for subtracting from the common credit data of the common credit data storage unit **105** the credit quantity according to the bet operation signal, that is, the credit quantity equivalent obtained by multiplying the credit quantity corresponding to the selected bet mode by the number of selected winning lines (S3). Thereafter, the CPU **21** serving as a start signal generating unit being a constituent of the game progress control unit **101A** functions as start signal generating means to generate a start signal, and sends the start signal to the display control unit **25** of the common display unit **106**. The display control unit **25**, upon receiving the start signal, performs varying display control that sequentially switches symbols to be displayed in the respective symbol display regions **11a** to **11c** of the game screen of the game unit A displayed on the touch panel **11** (S4).

**[0080]** The CPU **21** constituting the game progress control unit **101A** also sends the generated start signal to the random number generating circuit **24**. The random number generating circuit **24** that has received the start signal generates three random numbers (S5), and sequentially sends these random numbers to the CPU **21**. The random numbers correspond to the symbol display regions **11a** to **11c** to be displayed on the touch panel **11**, respectively. The CPU **21** serving as a stop symbol deciding unit functions as stop symbol deciding means in cooperation with the random number generating circuit **24**, and upon receiving the three random numbers sent from the random number generating circuit **24**, compares the random numbers with stop position tables stored in the ROM **22**. These stop position tables are individually prepared for each of the symbol display regions **11a** to **11c**. Then, the stop positions of varying displays in the symbol display regions **11a** to **11c** are decided based on the random numbers and stop position tables. Therefore, the symbols to be stopped and displayed in the symbol display regions **11a** to **11c**, respectively, are decided based on the three random numbers sent from the random number generating circuit **24**.

**[0081]** The CPU **21** serving as a winning deciding unit being a constituent of the game progress control unit **101A** functions as winning deciding means in cooperation with the random number generating circuit **24**, and upon receiving the three random numbers sent from the random number generating circuit **24**, also performs a drawing process for comparing a combination of these random numbers with winning determination tables stored in the ROM **22** to determine whether a predetermined award has been won (S6). In the present embodiment, awards are roughly divided into a pay-



out award (dividend payout award) to pay out the quantity of credit corresponding to the award to the player, a first count-up award and a second count-up award for performing a first center drawing in the center drawing apparatus 3 to be described later, and a second center drawing award for performing a second center drawing in the center drawing apparatus 3 to be described later. Then, the CPU 21, based on the combination of random numbers and winning determination tables, determines an award to be won by this game, or determines loss in which any award is not won. In the ROM 22, at least two types of winning determination tables to be used during a normal game and to be used during a free game to be described later are stored. Further, with respect to the former winning determination table, individual winning determination tables are prepared for each number of winning lines that can be selected.

**[0082]** The CPU 21, having completed the above-described drawing process, controls the display control unit 25 so that varying displays in the symbol display regions 11a to 11c respectively stop at the decided stop positions (S7). Accordingly, in the symbol display regions 11a to 11c of the touch panel 11, varying displays stop at the decided stop positions, so that symbols corresponding to the above-described three random numbers are stopped and displayed in the symbol display regions 11a to 11c.

**[0083]** When winning of the dividend payout award has been determined in the above-described drawing process (Yes in S8, Yes in S9), the CPU 21 of the station control device 20, after the varying displays in the symbol display regions 11a to 11c are stopped and displayed, outputs predetermined performance signals to the illumination control unit and the audio control unit 26, respectively. Accordingly, the illumination control unit performs control to make the illumination such as an LED emit light in a pattern according to the performance signal. The audio control unit 26 performs control to make a sound effect according to the performance signal be output from the speaker 15. Further, the CPU 21 being a constituent of the payout processing unit 104A performs a payout process for adding the credit quantity equivalent according to the won award to the common credit data stored in the common credit data storage unit 105 (S10).

**[0084]** Further, when winning of the first count-up award has been determined in the above-described drawing process (Yes in S11), the CPU 21 of the station control device 20, after the varying displays in the symbol display regions 11a to 11c are stopped and displayed, outputs predetermined performance signals to the illumination control unit and the audio control unit 26, respectively, to carry out predetermined performances. Then, the CPU 21 being a constituent of the first drawing condition counting unit 108 records one of the five first drawing condition flags stored in the RAM 23 (S12). At this time, the CPU 21 also stores, as a bet history associated with the first drawing condition flag stored this time out of the five bet histories stored in the first accumulated bet amount storage unit 109, the credit quantity bet on a winning line where the first count-up award was won by this slot game. Thereafter, the CPU 21 sends the fact that it has recorded a first drawing condition flag and its bet history to the display control unit 25, and the display control unit 25, in response thereto, updates the display in a first tip image display unit 11h (refer to FIG. 3) corresponding to said first drawing condition flag. Concretely, when the first drawing condition flag recorded this time corresponds to a third tip image from the left of the first tip image display unit 11h shown in FIG. 3,

the tip image is displayed in a third tip image area that has been blank. At this time, in the displayed tip image, the credit quantity indicated by the corresponding bet history is displayed. That is, the credit quantity (bet history) bet on a winning line when the first count-up award was won corresponding to this tip image is displayed in the tip image. Therefore, it can be understood, for example, in terms of the third tip image from the left of the first tip image display unit 11h in FIG. 3, that the bet history is 5.

**[0085]** Further, the CPU 21 decides whether the five first drawing condition flags stored in the RAM 23 have all been recorded (S13). When it has been decided by this decision that all have been recorded, the CPU 21 outputs predetermined performance signals to the illumination control unit and the audio control unit 26, respectively, to carry out predetermined performances. Further, the CPU 21 being a constituent of the first drawing condition counting unit 108, after resetting some or all of the five first drawing condition flags stored in the RAM 23 (all first drawing condition flags are reset in the present embodiment), sends that fact to the display control unit 25, and the display control unit 25, in response thereto, updates the display so as to delete all five tip images corresponding to the first drawing condition flags in the first tip image display unit 11h and blank out their tip image areas. Then, the CPU 21 transmits a first center drawing start request to the central control device from the input/output port 21a (S14). Accordingly, in the center drawing apparatus 3, a first center drawing to be described later is performed.

**[0086]** Further, when winning of the second count-up award has been determined in the above-described drawing process (Yes in S15), the CPU 21 of the station control device 20, after the varying displays in the symbol display regions 11a to 11c are stopped and displayed, outputs predetermined performance signals to the illumination control unit and the audio control unit 26, respectively, to carry out predetermined performances. Then, the CPU 21 being a constituent of the second drawing condition counting unit 110 records one of the five second drawing condition flags stored in the RAM 23 (S16). At this time, the CPU 21 also stores the credit quantity bet on a winning line where the second count-up award was won by this slot game as a bet history associated with the second drawing condition flag stored this time out of the five bet histories stored in the second accumulated bet amount storage unit 111. Thereafter, the CPU 21 sends the fact that it has recorded a second drawing condition flag and its bet history to the display control unit 25, and the display control unit 25, in response thereto, updates the display in a second tip image display unit 11i (refer to FIG. 3) corresponding to said second drawing condition flag. Concretely, when the second drawing condition flag recorded this time corresponds to a second tip image from the right of the second tip image display unit 11i shown in FIG. 3, the tip image is displayed in a second tip image area that has been blank. At this time, in the displayed tip image, the credit quantity indicated by the corresponding bet history is displayed. That is, the credit quantity (bet history) bet on a winning line when the second count-up award was won corresponding to this tip image is displayed in the tip image. Therefore, it can be understood, for example, in terms of the second tip image from the right of the second tip image display unit 11i in FIG. 3, that the bet history is 2.

**[0087]** Further, the CPU 21 decides whether the five second drawing condition flags stored in the RAM 23 have all been recorded (S17). When it has been decided by this decision that

all have been recorded, the CPU 21 outputs predetermined performance signals to the illumination control unit and the audio control unit 26, respectively, to carry out predetermined performances. Further, the CPU 21 being a constituent of the second drawing condition counting unit 110, after resetting some or all of the five second drawing condition flags stored in the RAM 23 (all second drawing condition flags are reset in the present embodiment), sends that fact to the display control unit 25, and the display control unit 25, in response thereto, updates the display so as to delete all five tip images corresponding to the second drawing condition flags in the second tip image display unit 11*i* and blank out their tip image areas. Then, the CPU 21 transmits a first center drawing start request to the central control device from the input/output port 21*a* (S18). Accordingly, in the center drawing apparatus 3, a first center drawing to be described later is performed.

[0088] In the present embodiment, as described above, because there are two types of flags to serve as the start condition for a first center drawing, after, for example, the first drawing condition flags are all recorded and a first center drawing is performed, the first drawing condition flags are reset, but the second drawing condition flags are kept unchanged without being reset. If there is only one type of flags to serve as the start condition for a first center drawing, because the flags are reset after a first center drawing is performed, flags must be saved from the start in order to perform a next first center drawing, and thus the player is likely to finish the play at the timing where a first center drawing is performed. However, according to the present embodiment, even after a first center drawing is performed, because one type of flags are kept unchanged without being reset, the player can be prevented from finishing the play.

[0089] Further, when winning of the second center drawing award has been determined in the above-described drawing process (Yes in S19), the CPU 21 of the station control device 20, after the varying displays in the symbol display regions 11*a* to 11*c* are stopped and displayed, outputs predetermined performance signals to the illumination control unit and the audio control unit 26, respectively, to carry out predetermined performances. Then, the CPU 21 transmits a second center drawing start request to the central control device from the input/output port 21*a* (S20). Accordingly, in the center drawing apparatus 3, a second center drawing to be described later is performed.

[0090] Next, the configuration of the center drawing apparatus 3 will be described.

[0091] FIG. 8 is a perspective view of the center drawing apparatus 3.

[0092] FIG. 9 is a perspective view when the center drawing apparatus 3 is viewed from a different angle from that of FIG. 8.

[0093] The center drawing apparatus 3 of the present embodiment is constituted mainly with a vertical ring drawing device 40 serving as a first drawing mechanism for supporting these drawing devices 40, 50 from vertically below, an inclined ring drawing device 50 serving as a second drawing mechanism, a device supporting base 60, two display devices 71, 72, and a ball transfer device 80 that inserts a drawing ball 73 serving as a drawing rolling object into each of the drawing devices 40, 50 and collects the drawing ball 73 from each of the drawing devices 40, 50. The first display device 71 is arranged so as to allow the player to perform visual recognition through a hollow region of the vertical ring

drawing device 40, and the second display device 72 is arranged in its part inside of the hollow region of the inclined ring drawing device 50.

[0094] At an upper portion of the device supporting base 60, a rotary table 64 on which the vertical ring drawing device 40, the inclined ring drawing device 50, the two display devices 71, 72, the ball transfer device 80, and so on are placed is provided. This rotary table 64 can be rotated around a rotating shaft parallel to the vertical direction by a table driving device (not shown). Accordingly, it can be made, for the respective station units 2, so that the vertical ring drawing device 40 and the inclined ring drawing device 50 face the front thereof.

[0095] The vertical ring drawing device 40, as shown in FIG. 8, includes a doughnut-shaped body structure part that is configured, with its hollow region exposed in part to the outside, so as to surround the hollow region, and is arranged so that its rotating shaft becomes parallel with respect to the horizontal direction. At an inner peripheral surface of the vertical ring drawing device 40, a plurality of drawing pockets 41 each having an internal space to allow for accommodating only approximately one drawing ball 73 are formed throughout its circumferential direction. In the present embodiment, ten drawing pockets 41 are provided at equal intervals at the inner peripheral surface of the vertical ring drawing device 40. For the vertical ring drawing device 40, at a ring inner peripheral surface side of a framework base member 42, an inner peripheral surface member 43 formed with openings serving as entrances of the drawing pockets 41 is attached. Moreover, at a ring outer peripheral surface side of the framework base member 42, an outer peripheral surface member 44 fixed to the device supporting base 60 is arranged facing the same. The framework base member 42 and the inner peripheral surface member 43 of the vertical ring drawing device 40 are rotationally driven counterclockwise in FIG. 8 by a first driving device 61 provided on the device supporting base 60. Accordingly, the drawing pockets 41 of the vertical ring drawing device 40 rotationally move. Then, when the drawing ball 73 enters into any of the drawing pockets 41 of the vertical ring drawing device 40, the drawing ball 73 moves along with the drawing pocket 41 remaining accommodated in the drawing pocket 41.

[0096] When a mechanical drawing is performed by the vertical ring drawing device 40, the drawing ball 73 is dropped onto the inner peripheral surface of the vertical ring drawing device 40 from a ball drop-in opening 86*a*. In the present embodiment, the inner peripheral surface of the vertical ring drawing device 40 is roughly divided into two regions in its rotating shaft direction. That is, the two regions are a pocket region (region at the front side in FIG. 8) where drawing pockets 41 are provided and a non-pocket region (region at the back side in FIG. 8) where no drawing pockets 41 are provided. The pocket region and non-pocket region are divided by a plurality of projection walls 43*a* intermittently arranged throughout the entire circumference. A clearance formed between the projection walls 43*a* has a width to allow approximately one drawing ball 73 to pass therethrough.

[0097] The drawing ball 73 is dropped onto the non-pocket region of the inner peripheral surface of the vertical ring drawing device 40 from the ball drop-in opening 86*a*. The non-pocket region is formed so as to incline toward the pocket region at a lower position of the vertical ring drawing device 40. Accordingly, the drawing ball 73 on the non-pocket region receives a force to move toward the pocket region due to

gravity. Since the drawing ball 73 immediately after being dropped has a large relative moving speed with respect to the projection walls 43a, the drawing ball 73 is restricted by the projection walls 43a to move in a reciprocating manner like a pendulum on the non-pocket region along the circumferential direction of the vertical ring drawing device 40 without being able to pass through the clearance between the projection walls 43a. Thereafter, when the force of the drawing ball 73 gradually abates, and the relative moving speed with respect to the projection walls 43a is reduced, the drawing ball 73 is enabled to pass through the clearance between the projection walls 43a due to the inclination of the non-pocket region, and moves to the pocket region side. On the pocket region, a plurality of projection portions 43b to prevent the drawing ball 73 from entering into the drawing pocket 41 are provided. The drawing ball 73 that has moved to the pocket region side is flicked by the projection portions 43b while drifting on the pocket region, and finally enters into any of the drawing pockets 41.

[0098] In the present embodiment, a part surrounding the drawing pockets 41 in the pocket region forms an inclined surface that inclines towards each of the drawing pockets 41. Accordingly, since it becomes easier for the drawing ball 73 rolling on the pocket region to enter into the drawing pocket 41, the mechanical drawing time (time until the drawing ball enters into the drawing pocket after being dropped-in) by the vertical ring drawing device 40 can be reduced, and control of the mechanical drawing time by adjusting the rotating speed of the vertical ring drawing device 40 becomes easy.

[0099] The drawing ball 73 that has entered into the drawing pocket 41 at a lower portion of the vertical ring drawing device 40 is transferred by rotary drive to an upper side of the vertical ring drawing device 40 with a rotational movement of the drawing pocket 41. At the upper side of the vertical ring drawing device 40, since the inner peripheral surface with the drawing pockets 41 provided faces vertically downward, the drawing ball 73 falls out of the drawing pocket 41 due to its own weight if remaining as is. In the present embodiment, as shown in FIG. 8, for prevention of this fall-out, fall-out preventing rails 47a, 47b (refer to FIG. 13) serving as a supporting member are provided so as to face the inner peripheral surface at an upper part of the vertical ring drawing device 40. Accordingly, there is provided a configuration where the drawing ball 73 transferred to the upper side of the vertical ring drawing device 40, which is supported by the fall-out preventing rails 47a, 47b, can rotationally move along the vertical ring drawing device 40 due to rotary drive. Concretely, as a result of a rear edge portion in the transfer direction of an opening of the drawing pocket functioning as a push-out member to push the drawing ball 73 at its rear in the transfer direction, movement of the drawing ball 73 in a direction (horizontal direction) perpendicular to the transfer direction is restricted by bilateral edge portions in the transfer direction of the opening functioning as restriction members, while the transfer ball 73 is rolled or slid while being transferred on the fall-out preventing rails 47a, 47b.

[0100] On the other hand, the configuration of the inclined ring drawing device 50 is different from that of the foregoing vertical ring drawing device 40 in the point that its rotating shaft is inclined with respect to both of the vertical direction and horizontal direction and the point that entrances of the drawing pockets 51 are opened to an outer peripheral surface side, but has the same configuration as that of the vertical ring drawing device 40 in the point, as shown in FIG. 8 and FIG.

9, of having a doughnut-shaped body structure part that is configured, with its hollow region exposed in part to the outside so as to surround the hollow region. When described in detail, at an outer peripheral surface of the inclined ring drawing device 50, a plurality of drawing pockets 51 each having an internal space to allow for accommodating only approximately one drawing ball 73 are formed throughout its circumferential direction. In the present embodiment, twenty drawing pockets 51 are provided at equal intervals at the outer peripheral surface of the inclined ring drawing device 50. For the inclined ring drawing device 50, on a pedestal 54 fixed to a device supporting base 60, a partition member 52 for partitioning the drawing pockets 51 from each other is provided. The partition member 52 of the inclined ring drawing device 50 is rotationally driven counterclockwise in the figure on the pedestal 54 by a driving device (not shown) provided on the device supporting base 60. Accordingly, the drawing pockets 51 of the vertical ring drawing device 50 rotationally move.

[0101] The drawing ball 73 is temporarily retained by being blocked by a shutter 83a at a ball drop-in standby unit 83 as shown in FIG. 9, and then dropped onto a slope 54a of the inclined ring drawing device 50 as a result of the shutter 83a moving as shown in FIG. 10. The slope 54a is arranged so as to be adjacent to the partition member 52 at a lower position of the inclined ring drawing device 50, and formed so as to incline toward the partition member 52. Accordingly, the drawing ball 73 on the slope 54a receives a force to move toward the partition member 52 due to gravity. Since the drawing ball 73 immediately after being dropped has a large relative moving speed with respect to the drawing pockets 51 of the partition member 52, the drawing ball 73 moves in a reciprocating manner like a pendulum on the slope 54a along the circumferential direction of the inclined ring drawing device 50 without being able to enter into the drawing pocket 51. Thereafter, when the force of the drawing ball 73 gradually abates, and the relative moving speed with respect to the drawing pocket 51 is reduced, the drawing ball 73 is enabled to enter into the drawing pocket 51, and finally enters into any of the drawing pockets 51.

[0102] In the present embodiment, the vertical ring drawing device 40 and the inclined ring drawing device 50 are arranged so that part of each other's drawing device is located in the other's hollow region. In greater detail, in the present embodiment, the drawing devices 40, 50 are arranged so that the two drawing devices 40, 50 are mutually connected like a chain. Generally, in a configuration, such as the vertical ring drawing device 40 or the inclined ring drawing device 50, having a hollow region, its hollow region is likely to become a dead space, and a mechanical drawing machine including such a configuration is likely to be increased in size. Particularly, when two or more drawing devices having hollow regions exist as in the present embodiment, a plurality of dead spaces can exist, and thus the mechanical drawing machine is more likely to be increased in size. In the present embodiment, by putting each other's body structure parts into the dead spaces of the drawing devices 40, 50, each other's dead spaces are canceled out. Accordingly, even when two or more drawing devices having hollow regions exist, it can be suppressed to increase the mechanical drawing machine (center drawing apparatus 3) in size unnecessarily, so that a mechanical drawing machine with a compact structure can be realized.

[0103] Although, the vertical ring drawing device 40 and the inclined ring drawing device 50 in the present embodi-

ment are both in doughnut shapes where the body structure part has a closed loop, but may be in U-shapes or C-shapes where the loop of the body structure part is partially open.

[0104] FIG. 11 is a block diagram showing a schematic configuration of the main part of a central control device 30 that controls the center drawing apparatus 3.

[0105] The central control device 30 is constituted with a CPU 31, an input/output port 31a, a ROM 32, a RAM 33, a first rotation control unit 34a, a second rotation control unit 34b, a table driving control unit 35, a display control unit 36, a transfer control unit 37, a first sensor control unit 38a, a second sensor control unit 38b, and so on. The input/output port 31a is used for performing data communications with each station control device 20. The ROM 32 stores data such as various types of programs and various types of databases to be used by the CPU 31, and outputs these to the CPU 31. The RAM 33 temporarily stores variable data calculated by the CPU 31 and the like or stores various types of varying data such as a jackpot retention count. The first rotation control unit 34a, under the control of the CPU 31, controls the first driving device 61 that rotationally drives the vertical ring drawing device 40. The second rotation control unit 34b, under the control of the CPU 31, controls the second driving device 62 that rotationally drives the inclined ring drawing device 50. The table driving control unit 35, under the control of the CPU 31, controls a table driving device 63 that rotationally drives the rotary table 64. The display control unit 36 constitutes a display unit in cooperation with the first display device 71 for the vertical ring drawing device 40 and the second display device 72 for the inclined ring drawing device 50, and under the control of the CPU 31, performs display control of these display devices 71, 72 that displays a screen for explanation of the drawing or performances and the like. The transfer control unit 37, under the control of the CPU 31, controls various driving devices such as a transfer channel switching mechanism present in the ball transfer device 80. The first sensor control unit 38a, according to output signals from a first ball sensor 45 to be described later provided in the vertical ring drawing device 40 and a first pattern sensor 46, outputs a winning pocket signal corresponding to the drawing pocket 41 into which the drawing ball 73 has entered to the CPU 31. The second sensor control unit 38b, according to output signals from a second ball sensor 55 to be described later provided in the inclined ring drawing device 50 and a second pattern sensor 56, outputs a winning pocket signal corresponding to the drawing pocket 51 into which the drawing ball 73 has entered to the CPU 31.

[0106] FIG. 12 is a perspective view showing an overall configuration of the ball transfer device 80 to be connected to a ball discharge unit provided in each of the vertical ring drawing device 40 and the inclined ring drawing device 50.

[0107] FIG. 13 is a perspective view for explaining the ball transfer device 80 and its peripheral configuration.

[0108] FIG. 14 is a side view for explaining the ball transfer device 80 and its peripheral configuration.

[0109] First, description will be given of the configuration of the ball transfer device 80 along a transfer channel of the drawing ball 73 to be discharged from the ball discharge unit of the vertical ring drawing device 40.

[0110] In the present embodiment, as described above, at an upper part of the vertical ring drawing device 40, the fall-out preventing rails 47a, 47b to prevent the drawing ball 73 that rotationally moves remaining in the drawing pocket 41 from falling out of the drawing pocket 41 are provided. These

fall-out preventing rails 47a, 47b have, as shown in FIG. 13, two divided parts in their circumferential direction, and a gap that allows the drawing ball 73 to pass therethrough is formed therebetween. This gap functions as a ball discharge unit (hereinafter, referred to as a "first ball discharge unit") 48 of the vertical ring drawing device 40. That is, the drawing ball 73 transferred by rotary drive of the vertical ring drawing device 40, when having reached a position to face the first ball discharge unit 48, falls downward due to its own weight through the first ball discharge unit 48.

[0111] Moreover, on the first ball discharge unit 48, a shutter 47c serving as a discharge switching unit functioning as discharge switching means to take a discharging state or non-discharging state to or not to discharge the drawing ball 73 from the first ball discharge unit 48 is provided. This shutter 47c can be moved to a ball passing position shown in FIG. 15 to block the first ball discharge unit 48 and a ball discharging position shown in FIG. 16 to open the first ball discharge unit 48 by a driving device 47d that is controlled by the transfer control unit 37 of the central control device 30. When the drawing ball 73 passes through the first ball discharge unit 48 when the shutter 47c is located at the ball passing position as shown in FIG. 15, the drawing ball 73 does not fall from the first ball discharge unit 48, and rotationally moves another round around the vertical ring drawing device 40 remaining in the drawing pocket 41. On the other hand, when the drawing ball 73 passes through the first ball discharge unit 48 when the shutter 47c is located at the ball discharging position as shown in FIG. 16, the drawing ball 73 falls from the first ball discharge unit 48. Thus, in the present embodiment, it can be selectively executed, by controlling the operation of the shutter 47c, whether to discharge the drawing ball 73 that has entered into the drawing pocket 41 from the first ball discharge unit 48 or pass the drawing ball 73 through the first ball discharge unit 48 without discharging, and make the drawing ball 73 rotationally move another round around the vertical ring drawing device 40.

[0112] Below the first ball discharge unit 48, an upper end portion of a first transfer rail 82 of the ball transfer device 80 is arranged. This first transfer rail 82 is, as shown in FIG. 14, gently inclined, and its lower end portion is open. Below the lower end portion of the first transfer rail 82, a second transfer rail 84 that is inclined toward the ball drop-in standby unit 83 to transfer the drawing ball 73 by its own weight from the transfer channel switching device 81 to the ball drop-in standby unit 83 of the inclined ring drawing device 50 is arranged. Therefore, when the drawing ball 73 transferred along the first transfer rail 82 falls from the lower end portion of the first transfer rail 82, the drawing ball 73 is received by the second transfer rail 84, and transferred along the second transfer rail 84 to the ball drop-in standby unit 83 of the inclined ring drawing device 50.

[0113] In the middle of the first transfer rail 82, as shown in FIG. 17 and FIG. 18, a fall opening 82a which allows the drawing ball 73 to pass therethrough is formed. On this fall opening 82a, a shutter 82b that takes a discharging state or non-discharging state to or not to discharge the drawing ball 73 from the fall opening 82a is provided. This shutter 82b can be moved to a blocking position shown in FIG. 17 to block the fall opening 82a and an opening position shown in FIG. 18 to open the fall opening 82a by a driving device 82c that is controlled by the transfer control unit 37 of the central control device 30. When the drawing ball 73 passes through the fall opening 82a when the shutter 82b is located at the blocking

position as shown in FIG. 17, the drawing ball 73 does not fall from the fall opening 82a, and is transferred to the lower end portion of the first transfer rail 82. On the other hand, when the drawing ball 73 passes through the fall opening 82a when the shutter 82b is located at the opening position as shown in FIG. 18, the drawing ball 73 falls from the fall opening 82a.

[0114] Below the fall opening 82a of the first transfer rail 82, an upper end portion of a third transfer rail 85 of the ball transfer device 80 is arranged. This third transfer rail 85 is gently inclined as shown in FIG. 14, and its lower end portion is connected to an entrance of the transfer channel switching device 81. Here, in the present embodiment, by driving control of the transfer channel switching device 81 as to be described later, the drawing ball 73 is supplied to the vertical ring drawing device 40 or the inclined ring drawing device 50, which enables a mechanical drawing using the drawing ball 73 in the vertical ring drawing device 40 or the inclined ring drawing device 50. Then, the drawing balls 73 to be supplied to the vertical ring drawing device 40 or the inclined ring drawing device 50 are retained side by side in a lower end-side part of the third transfer rail 85 connected to the entrance side of the transfer channel switching device 81. That is, in the present embodiment, the lower end-side part of the third transfer rail 85 and the transfer channel switching device 81 constitute a ball retaining unit.

[0115] Therefore, in the present embodiment, it can be selectively executed, by controlling the operation of the shutter 82b, whether to send the drawing ball 73 discharged from the first ball discharge unit 48 to the ball drop-in standby unit 83 of the inclined ring drawing device 50 or to the ball retaining unit.

[0116] Next, description will be given of the configuration of the ball transfer device 80 along a transfer channel of the drawing ball 73 to be discharged from the ball discharge unit of the inclined ring drawing device 50.

[0117] In the present embodiment, as described above, on a rotational movement channel of the drawing pockets 51 in the pedestal 54 of the inclined ring drawing device 50, a notch portion that allows the drawing ball 73 to pass therethrough is formed. This notch portion functions as a ball discharge unit (hereinafter, referred to as a "second ball discharge unit") 58 of the inclined ring drawing device 50. That is, the drawing ball 73 transferred by rotary drive of the inclined ring drawing device 50, when having reached a position to face the second ball discharge unit 58, is discharged due to its own weight through the second ball discharge unit 58, as shown in FIG. 12.

[0118] Moreover, on the second ball discharge unit 58, in the same manner as the first ball discharge unit 48 of the vertical ring drawing device 40, a shutter 57 serving as a discharge switching unit functioning as discharge switching means to take a discharging state or non-discharging state to or not to discharge the drawing ball 73 from the second ball discharge unit 58 is provided. This shutter 57 is driven by the driving device 47d to operate integrally with the shutter 47c of the vertical ring drawing device 40 and can be moved to a ball passing position shown in FIG. 15 to block the second ball discharge unit 58 and a ball discharging position shown in FIG. 16 to open the second ball discharge unit 58. When the drawing ball 73 passes through the second ball discharge unit 58 when this shutter 57 is located at the ball passing position as shown in FIG. 15, the drawing ball 73 does not fall from the second ball discharge unit 58, and rotationally moves another round around the inclined ring drawing device 50 remaining

in the drawing pocket 51. On the other hand, when the drawing ball 73 passes through the second ball discharge unit 58 when the shutter 57 is located at the ball discharging position as shown in FIG. 16, the drawing ball 73 falls from the second ball discharge unit 58. Thus, in the present embodiment, it can be selectively executed, by controlling the operation of the shutter 57, whether to discharge the drawing ball 73 that has entered into the drawing pocket 51 from the second ball discharge unit 58 or pass the discharge ball 73 through the second ball discharge unit 58 without discharging, and make the drawing ball 73 rotationally move another round around the inclined ring drawing device 50.

[0119] The drawing ball 73 to be discharged from the second ball discharge unit 58 is, by a discharge slope 58a, guided to the upper end portion of the foregoing third transfer rail 85 of the ball transfer device 80. Therefore, the drawing ball 73 discharged from the second ball discharge unit 58 is transferred by the third transfer rail 85 to the entrance of the transfer channel switching device 81, that is, the ball retaining unit.

[0120] FIG. 19, FIG. 20, and FIG. 21 are views for explaining a schematic configuration and operation of the transfer channel switching device 81.

[0121] The transfer channel switching device 81 is constituted mainly with an eccentric rotating member 81a and a drive motor (not shown) that rotates the eccentric rotating member 81a. The eccentric rotating member 81a is constituted with a disk-like member, and the drive motor is connected to a rotating shaft provided at an eccentric position deviated from its disk center. The drive motor is controlled in its rotating direction and rotating angle by the transfer control unit 37 of the central control device 30. In the present embodiment, the eccentric rotating member 81a stops, in a standby state, as shown in FIG. 19, with its longer radius side-end portion farthest from the rotating shaft of the eccentric rotating member 81a facing vertically directly down. In this standby state, the drawing ball 73 located at the most downstream side out of the drawing balls 73 retained side by side in the lower end-side part of the third transfer rail 85 connected to the entrance of the transfer channel switching device 81 enters into the transfer channel switching device 81 as shown in FIG. 19. At this time, the drawing ball 73 at the most downstream side is positioned vertically above the eccentric rotating member 81a.

[0122] In the transfer channel switching device 81, there are provided two exits of a first exit connected to an upper end portion of a fourth transfer rail 86 inclined toward a ball drop-in position of the vertical ring drawing device 40 and a second exit connected to the upper end portion of the second transfer rail 84 inclined toward the ball drop-in standby unit 83 of the inclined ring drawing device 50. Bottom surfaces of these exits are each located at a position higher than a lower position of the drawing ball 73 positioned inside of the transfer channel switching device 81 in the standby state. Therefore, in the standby state, when the drawing ball 73 enters into the transfer channel switching device 81, a member 81c that forms a bottom portion of the entrance, members 81d, 81e that form the bottom surfaces of the first exit and second exit, respectively, and a wall surface member 81f that is provided at a side portion facing the entrance are in contact with four-way side portions of the drawing ball 73, and the drawing ball 73 is placed in a state restricted from rolling, and held without exiting from the exit of the transfer channel switching device 81.

[0123] Thereafter, when the drive motor rotationally drives counterclockwise in the figure, the longer radius side-end portion of the eccentric rotating member **81a** rotates vertically upward as shown in FIG. 20. Accordingly, a peripheral part facing in the rotating direction of the eccentric rotating member **81a** gradually pushes up the drawing ball **73** from a lower side of the drawing ball **73** to the side of the first exit connected to the upper end portion of the fourth transfer rail **86**. Then, around the time that the longer radius side-end portion of the eccentric rotating member **81a** faces vertically directly up, the drawing ball **73** is pushed out toward the fourth transfer rail **86** as well as lifted by the peripheral part of the eccentric rotating member **81a** to the height of the first exit, and the drawing ball **73** is transferred from the first exit through the fourth transfer rail **86** to the ball drop-in position of the vertical ring drawing device **40**.

[0124] Similarly, as a result of control from the transfer control unit **37**, when the drive motor rotationally drives clockwise in the figure, the longer radius side-end portion of the eccentric rotating member **81a** rotates vertically upward, as shown in FIG. 21. Accordingly, a peripheral part facing in the rotating direction of the eccentric rotating member **81a** gradually pushes up the drawing ball **73** from a lower side of the drawing ball **73** to the side of the second exit connected to the upper end portion of the second transfer rail **84**. Then, around the time that the longer radius side-end portion of the eccentric rotating member **81a** faces vertically directly up, the drawing ball **73** is pushed out toward the second transfer rail **84** as well as lifted by the peripheral part of the eccentric rotating member **81a** to the height of the second exit, and the drawing ball **73** is transferred from the second exit through the second transfer rail **84** to the ball drop-in standby unit **83** of the inclined ring drawing device **50**.

[0125] Next, description will be given of a configuration and operation for detecting which of the drawing pockets **41**, **51** the drawing ball **73** has entered into.

[0126] In the present embodiment, since the configuration and operation relating to this detection is almost the same between the vertical ring drawing device **40** and the inclined ring drawing device **50**, in the following description, the inclined ring drawing device **50** will be described as an example, and description of the vertical ring drawing device **40** will be omitted.

[0127] FIG. 22 is a perspective view showing a configuration of the second pattern sensor **56** provided in the inclined ring drawing device **50**.

[0128] In the present embodiment, as described above, the partition member **52** that forms the drawing pockets **51** is driven so as to rotationally move, in order to rotationally move the drawing pockets **51**. On the other hand, the central control device **30** is fixedly arranged inside of the device supporting base **60**. Therefore, if a sensor for detecting that the drawing ball **73** has entered into each drawing pocket **51** is provided on the partition member **52** so as to rotationally move together with the drawing pocket **51**, it is difficult to transmit an output signal of the sensor stably to the central control device **30**.

[0129] Therefore, in the present embodiment, a configuration is adopted for detecting which of the rotationally moving drawing pockets the drawing ball **73** has entered into by using only a sensor that is fixedly arranged.

[0130] When described in detail, as shown in FIG. 9, the second ball sensors **55** are fixedly arranged at a lower part of the inclined ring drawing device **50** and a part of the pedestal

**54** through which the drawing pockets **51** pass. In the present embodiment, a total of seven second ball sensors **55** of one at the lowermost portion of a rotational movement channel of the drawing pockets **51** and three each on both circumferential sides thereof are arranged separated at intervals the same as circumferential intervals between the drawing pockets **51**. The seven second ball sensors **55** are all sensors constituted with mechanical switches, and by the drawing ball **73** that has entered into any of the drawing pockets **51** pushing down by its own weight a switch piece of the second ball sensor **55** through which the drawing ball **73** is first to pass, the drawing ball **73** is detected by said second ball sensor **55**.

[0131] Here, an output signal (ball detection signal) alone of the second ball sensor **55** is not enough to identify which of the drawing pockets **51** the drawing ball **73** has entered into. Therefore, which of the drawing pockets **51** the drawing ball **73** has entered into is identified by using not only a ball detection signal of the second ball sensor **55** but also an output signal (pattern signal) of the second pattern sensor **56** shown in FIG. 22.

[0132] The second pattern sensor **56** is fixedly arranged at an inner peripheral surface side of the inclined ring drawing device **50** and a part (part shown by the symbol A in FIG. 9) facing the ball drop-in standby unit **83**. This second pattern sensor **56** reads mark patterns of mark plates **52a** of the same number as that of drawing pockets **51** and provided at an inner peripheral surface of the partition member **52** so as to be at equal intervals to each other. Each mark plate **52a** includes one trigger piece **52b** and at most five mark pieces **52c**, and mutually different mark patterns are formed by combination of the presence and absence of the mark pieces **52c**. The second pattern sensor **56** is constituted with five mark sensors **56a** for detecting the mark pieces **52c** of the mark plate **52a** and one trigger sensor **56b** to detect the trigger piece **52b** of the mark plate **52a**. The mark sensors **56a** and the trigger sensor **56b** are all transmissive optical sensors, and perform detection based on whether an optical path is interrupted by the mark pieces **52c** and the trigger piece **52b**.

[0133] The second pattern sensor **56**, every time the trigger piece **52b** is detected by the trigger sensor **56b**, outputs a pattern signal indicating a combination of output signals of the five mark sensors **56a** at that detection to the second sensor control unit **38b** of the central control device **30**. It is assumed that the drawing ball **73** has entered into the drawing pocket **51**, and this has been detected by the second ball sensor **55** (second ball sensor **55** at the center in the circumferential direction) located at the lowermost portion among the seven second ball sensors **55**. In this case, a ball detection signal is output from that second ball sensor **55**, and this ball detection signal is input to the second sensor control unit **38b** of the central control device **30**. The second sensor control unit **38b** that has received the ball detection signal, by being input with a pattern signal from the second pattern sensor **56** simultaneously with or immediately after that reception, identifies the drawing pocket **51** corresponding to that pattern signal as a drawing pocket into which the drawing ball **73** has entered.

[0134] That is, the positional relationship between the second pattern sensor **56** and the second ball sensor **55** located at the lowermost portion is fixed. Concretely, when the drawing pocket **51** into which the drawing ball has entered is located at a facing position with the second ball sensor **55**, the mark pattern of the mark plate **52a** provided at the inner peripheral surface side of a drawing pocket shifted with respect to that

drawing pocket 51 by five pockets to the downstream side in the rotational movement direction of the drawing pockets is detected by the second pattern sensor 56. Therefore, when the drawing ball 73 is detected by the second ball sensor 55 located at the lowermost portion, the mark pattern of the mark plate 52a detected by the second pattern sensor 56 corresponds to a drawing pocket shifted with respect to the drawing pocket 51 arranged at a facing position of that mark plate 52a by five pockets to the upstream side in the rotational movement direction of the drawing pockets. Accordingly, the second sensor control unit 38b that has received a ball detection signal from the lowermost second ball sensor 55, by receiving a pattern signal from the second pattern sensor 56 simultaneously with or immediately after that reception, can identify a drawing pocket into which the drawing ball 73 has entered, for example, with reference to a data table indicating their correspondence. Then, the second sensor control unit 38b outputs a winning pocket signal indicating the identified drawing pocket to the CPU 31.

[0135] Here, in the present embodiment, there are provided seven second ball sensors 55, and the positional relationships between the second ball sensors 55 and the second pattern sensor 56 are different from each other. Therefore, the correspondence between a pattern signal from the second pattern sensor 56 and a drawing pocket into which the drawing ball 73 has entered differs from one second ball sensor 55 to detect the drawing ball 73 to another. Concretely, for example, a mark pattern read by the second pattern sensor 56 when the second ball sensor 55 arranged at the most upstream side in the rotational movement direction of the drawing pockets has detected the drawing ball 73 corresponds to a drawing pocket shifted with respect to the drawing pocket 51 arranged at a facing position of its mark plate 52a by eight pockets to the upstream side in the rotational movement direction of the drawing pockets. Further, for example, a mark pattern read by the second pattern sensor 56 when the second ball sensor 55 arranged at the most downstream side in the rotational movement direction of the drawing pockets has detected the drawing ball 73 corresponds to a drawing pocket shifted with respect to the drawing pocket 51 arranged at a facing position of its mark plate 52a by two pockets to the upstream side in the rotational movement direction of the drawing pockets.

[0136] Although it suffices to provide at least one second ball sensor 55, the reasons that a plurality of second ball sensors 55 are provided in the present embodiment are as follows.

[0137] First, this is for identifying the drawing pocket 51 at a timing as early as possible from the point in time where the drawing ball 73 has entered into that drawing pocket. That is, in the present embodiment, the drawing ball 73 does not always enter into the lowermost drawing pocket, and can enter into any of the drawing pockets 51 in a range of a total of five drawing pockets of two drawing pockets each on both sides of the lowermost drawing pocket. In this case, by providing one second ball sensor 55 only near the most downstream side in the rotational movement direction of the drawing pockets within this range, the drawing pocket into which the drawing ball 73 has entered can be identified. However, in this case, after the drawing ball 73 enters into the drawing pocket 51, that drawing pocket 51 cannot be identified until the drawing pocket 51 moves to the position of the second ball sensor 55. Therefore, the drawing pocket 51 cannot be identified for a while after the drawing ball 73 entered into that drawing pocket 53, which can cause adverse effects such as a

delay in a performance. To cope therewith, by providing a plurality of second ball sensors 55 as in the present embodiment, the maximum delay time after the drawing ball 73 enters into the drawing pocket 51 until this is detected can be reduced. Accordingly, the drawing pocket 51 can be identified at an early timing from the point in time where the drawing ball 73 has entered into that drawing pocket 51, so that the adverse effects such as a delay in a performance can be reduced.

[0138] Second, this is for allowing to continue the game progress (mechanical drawing) without downtime even when, for example, detection becomes unstable due to malfunction of the second ball sensor 55, deterioration with age in push-in of the switch piece of the second ball sensor 55 by the drawing ball 73, and the like. That is, providing a plurality of second ball sensors 55 as in the present embodiment allows ball detection by the next second ball sensor 55 even in the case of failure in detection by the second ball sensor 55 that reaches immediately after the drawing ball 73 has entered into the drawing pocket 51, thereby allowing continuing the game progress (mechanical drawing) without downtime.

[0139] Although, in the present embodiment, a description has been given for the case where the second control unit 38b that has received a ball detection signal identifies the drawing pocket into which the drawing ball 73 has entered based on a pattern signal received simultaneously with or immediately after that reception, another method may be adopted. For example, a method of the second sensor control unit 38b always storing the latest pattern signal, for identifying a drawing pocket into which the drawing ball 73 has entered based on the latest pattern signal stored therein when having received a ball detection signal may be adopted. This method is excellent in the point that the drawing pocket 51 can be identified at an earlier timing.

[0140] Next, description will be given of the flow of a first center drawing (mechanical drawing) using the vertical ring drawing device 40 to be performed in the center drawing apparatus 3.

[0141] FIG. 23 is a flowchart showing the flow of one first center drawing.

[0142] When the CPU 31 of the central control device 30 serving as a specific control performing unit functioning as specific control performing means receives a first center drawing start request, via the input/output port 31a, from any of the station units 2 (S21), the CPU 31 registers a station ID to identify said station unit 2 in a drawing waiting database of the RAM 33 (S22). Then, in the order of receiving the first center drawing start requests, the CPU 31 sequentially performs first center drawings (specific control) for two players of the station units 2. When starting the first center drawing, first, the CPU 31 outputs, to the table driving control unit 35, a drive command to make the station unit 2 of two players performing the first center drawing face the front of the vertical ring drawing device 40. Accordingly, the table driving control unit 35 rotationally drives the rotary table 64 so that the front of the vertical ring drawing device 40 faces that station unit 2. Thereafter, the CPU 31 outputs, to the transfer control unit 37, a command to send the drawing ball 73 to the ball drop-in opening 86a. The transfer control unit 37, upon receiving this command, rotationally drives a drive motor 81b of the transfer channel switching device 81 to rotate an eccentric cam 81a as shown in FIG. 20. Accordingly, the drawing ball 73 is dropped from the ball drop-in opening 86a through

the fourth transfer rail **86** onto the non-pocket region on the inner peripheral surface of the vertical ring drawing device **40** (S23).

[0143] The drawing ball **73** that has been dropped onto the non-pocket region is restricted by the projection walls **43a** while moving in a reciprocating manner like a pendulum on the non-pocket region along the circumferential direction of the vertical ring drawing device **40**, and is gradually weakened in force. Then, when the relative moving speed with respect to the projection walls **43a** is sufficiently reduced, the drawing ball **73** passes through the clearance between the projection walls **43a** due to the inclination of the non-pocket region, and moves to the pocket region side. Thereafter, the drawing ball **73** that has moved onto the pocket region receives a certain external force from the surface of the pocket region on which the same moves while drifting on the pocket region, and enters into any of the drawing pockets **41** when passing through the drawing pocket **41**.

[0144] Here, if the rotating speed of the vertical ring drawing device **40** is always constant, the surface moving speed of the pocket region also becomes constant, and the external force the drawing ball **73** receives from the surface of the pocket region also becomes constant. For this reason, such a situation that the drawing ball **73** on the pocket region continues rolling on an orbit to avoid the drawing pockets **41**, and the drawing ball **73** never enters into the drawing pocket **41** can occur. Therefore, in the present embodiment, a constitution for timing by a timing unit (not shown) the time elapsed since the drawing ball **73** was dropped into the vertical ring drawing device **40** is provided. Then, the CPU **31** determines, based on the elapsed time timed by the timing unit, whether a predetermined specified time has elapsed (S25). This specified time can be arbitrarily set. In the present embodiment, this specified time is set to a period such as to allow securing a sufficient time required until the drawing ball enters into the drawing pocket **41** unless the drawing ball **73** falls into such a situation that the drawing ball **73** on the pocket region continues rolling on such an orbit as to avoid the drawing pockets **41** (in the usual case). Therefore, in the usual case, the drawing ball **73** enters into any of the drawing pockets **41** before the specified time has elapsed, and a winning pocket signal corresponding to that drawing pocket **41** is output to the CPU **31** from the first sensor control unit **38a** (S24).

[0145] On the other hand, when the specified time has elapsed without the CPU **31** receiving a winning pocket signal (Yes in S25), the CPU **31** first performs a deceleration advance notifying process (S26). This deceleration advance notifying process is a process for making the first display device **71** display a countdown image to notify in advance the player of when the rotating speed of the vertical ring drawing device **40** will be reduced. When described in detail, the CPU **31** that has determined that the specified time has elapsed sends a countdown performance command to the display control unit **36**. The display control unit **36**, upon receiving this countdown performance command, performs display control to make the first display device **71** display a countdown image. Then, the CPU **31**, almost simultaneously with the timing at which the countdown image switches to an image showing a deceleration timing, performs a process for reducing the rotating speed of the vertical ring drawing device **40** by the first rotation control unit **34a** (S27).

[0146] If the drawing ball **73** has entered into any of the drawing pocket **41** and the CPU **31** has received its winning pocket signal after the specified time has elapsed and before

the rotating speed of the vertical ring drawing device **40** is reduced, the countdown performance is cancelled at that point in time, and the process for reducing the rotating speed of the vertical ring drawing device **40** (S27) is also not performed.

[0147] Further, when such a situation is assumed that the drawing ball **73** does not enter into the drawing pocket **41** and is put on another orbit to continue avoiding the drawing pockets **41** even after the rotating speed of the vertical ring drawing device **40** has been reduced, such a constitution, for example, of timing a time elapsed since deceleration by the timing unit, and when the elapsed time has passed over a predetermined time (which may be set to a period different from that of the above-described specified time), further reducing the rotating speed of the vertical ring drawing device **40** after performing a deceleration advance notifying process or conversely increasing the rotating speed can also be adopted.

[0148] When the rotating speed of the vertical ring drawing device **40** is reduced as in the present embodiment, the surface moving speed of the pocket region varies, which can thus change the external force that the drawing ball **73** receives from the surface of the pocket region (rolling surface) on which the same moves. Accordingly, even when the drawing ball **73** rolling on the pocket region is put on an orbit to continue avoiding the drawing pockets **41**, the drawing ball **73** can be deviated from the orbit. As a result, the occurrence of a situation that the drawing ball **73** rolling on the pocket region never enters into the drawing pocket **41** can be prevented.

[0149] When the dropped drawing ball **73** has entered into any of the drawing pockets **41** and the CPU **31** has received a winning pocket signal corresponding to that drawing pocket **41** from the first sensor control unit **38a** (Yes in S24), the CPU **31** refers to a first award determination table stored in the RAM **33** to determine an award corresponding to that winning pocket signal. In the present embodiment, awards that can be won in the first center drawing are roughly divided into a payout award (dividend payout award) to pay out the quantity of credit corresponding to the award to the player, a free game award for starting a free game being a special game in a slot game that is performed in the station unit **2**, and a second center drawing award for performing a second center drawing using the inclined ring drawing device **50**. Then, the CPU **31**, based on the winning pocket signal received from the first sensor control unit **38a** and the first award determination table, identifies an award won by this time of first center drawing.

[0150] When winning of the dividend payout award has been determined (Yes in S28), the CPU **31** controls the first display device **71** and other performance units (illumination unit, sound outputting unit, and so on) to carry out predetermined performances. Then, the CPU **31** transmits a dividend payout command according to odds of the won dividend payout award from the input/output port **31a** to the station control device **20** of the station unit **2** (S29). That is, in the present embodiment, the dividend payout award includes a plurality of types of dividend payout awards of different odds. There is, for example, a dividend payout award with odds of 20 times, a dividend payout award with odds of 30 times, and a dividend payout award with odds of 50 times, and these dividend payout awards are respectively allocated to separate drawing pockets **41**. Then, when the drawing pocket **73** enters into the drawing pocket **41** of the dividend payout award, a



dividend payout command including odds allocated to that drawing pocket 41 is transmitted to the station control device 20 of the station unit 2.

[0151] When the station control device 20 receives such a dividend payout command, the CPU 21 being a constituent of the payout processing unit 104A, if the first center drawing performed this time is one the start condition for which has been satisfied by recording all first drawing condition flags, for example, reads out the five bet histories stored in the first accumulated bet amount storage unit 109 corresponding to the first drawing condition flags. Then, the CPU 21 performs a payout process for adding the credit quantity for which an accumulated value of the bet histories is multiplied by the odds included in this dividend payout command to the common credit data stored in the common credit data storage unit 105. Thereafter, the CPU 21 resets the five bet histories stored in the first accumulated bet amount storage unit 109.

[0152] On the other hand, when winning of the free game award has been determined (Yes in S30), the CPU 31 controls the first display device 71 and other performance units (illumination unit, sound outputting unit, and so on) to carry out predetermined performances. Then, the CPU 31 transmits a free game start command from the input/output port 31a to the station control device 20 of the station unit 2 (S31). The CPU 21 of the station control device 20 that has received this free game start command executes a program for the free game, and controls the progress of the free game until a predetermined free game finishing condition is satisfied. The free game of the present embodiment is a slot game that can be played without betting credit, and the content of the slot game may be the same as or different from that of a normal slot game. In addition, a bonus game award to start a bonus game (which may be a game other than a slot game) being a special game may be adopted in place of the free game award.

[0153] Further, when winning of the second center drawing award has been determined (No in S30), the CPU 31 controls the first display device 71 and other performance units (illumination unit, sound outputting unit, and so on) to carry out predetermined performances. Then, the CPU 31 shifts to an operation mode of performing a second center drawing (S40).

[0154] Next, description will be given of the flow of the second center drawing (mechanical drawing) using the inclined ring drawing device 50 to be performed in the center drawing apparatus 3.

[0155] FIG. 24 is a flowchart showing the flow of one second center drawing.

[0156] When a second center drawing starting condition that the CPU 31 of the central control device 30 receives a second center drawing start request, via the input/output port 31a, from any of the station units 2 or that winning of the second center drawing award has been determined in the first center drawing is satisfied (S41), the CPU 31 performs a second center drawing for the player of that station unit 2. When starting the second center drawing, the CPU 31 outputs, to the table driving control unit 35, a drive command to make the station unit 2 of the player performing the second center drawing face the front of the inclined ring drawing device 50. Accordingly, the table driving control unit 35 rotationally drives the rotary table 64 so that the front of the inclined ring drawing device 50 faces that station unit 2.

[0157] Thereafter, the CPU 31 outputs, to the transfer control unit 37, a command to send the drawing ball 73 to the ball drop-in standby unit 83. Here, the transfer control unit 37 performs an operation different depending on the difference

in the satisfied second center drawing start condition. Concretely, when the second center drawing start condition has been satisfied by receiving a second center drawing starting request from the station unit 2, the transfer control unit 37 rotationally drives the drive motor 81b of the transfer channel switching device 81 to rotate the eccentric cam 81a as shown in FIG. 21. Accordingly, the drawing ball 73 is transferred through the second transfer rail 84 to the ball drop-in standby unit 83 (S42). On the other hand, when the second center drawing start condition has been satisfied by that winning of the second center drawing award has been determined in the first center drawing, the transfer control unit 37 moves the shutter 47c provided on the first ball discharge unit 48 of the vertical ring drawing device 40 to the ball discharging position as shown in FIG. 16, and moves the shutter 82b provided on the fall opening 82a of the first transfer rail 82 to the closing position as shown in FIG. 17. Accordingly, the drawing ball 73 that has entered into the drawing pocket 41 corresponding to the second center drawing award of the first center drawing is transferred from the first ball discharge unit 48 through the first transfer rail 82 to the ball drop-in standby unit 83 (S42).

[0158] Next, the CPU 31 outputs, to the transfer control unit 37, a drop-in command of the drawing ball 73. The transfer control unit 37 that has received this drop-in command performs drive control to move the shutter 83a that has blocked the drawing ball 73 in the ball drop-in standby unit 83, as shown in FIG. 10. Accordingly, the drawing ball 73 that has been blocked by the shutter 83a is dropped onto the slope 54a of the inclined ring drawing device 50 (S43).

[0159] Here, if the rotating speed of the inclined ring drawing device 50 is always constant, the relative moving speed of the drawing pocket 51 with respect to the slope 54a also becomes constant, and thus for example, even with the force of the drawing ball 73 sufficiently weakened, the drawing ball 73 may fall into such a situation that this is flicked by an opening edge part (partition member 52) of the drawing pocket 51 every time in the same manner. Therefore, in the present embodiment, a constitution for timing by a timing unit (not shown) the time elapsed since the drawing ball 73 was dropped into the inclined ring drawing device 50 is provided. Then, the CPU 31 determines, based on the elapsed time timed by the timing unit, whether a predetermined specified time has elapsed (S45). This specified time can be arbitrarily set. In the present embodiment, this specified time is set to a period such as to allow securing a sufficient time required until the drawing ball 73 enters into the drawing pocket 51 unless the drawing ball 73 on the slope 54a falls into such a situation as described above (in the usual case). Therefore, in the usual case, the drawing ball 73 enters into any of the drawing pockets 51 before the specified time has elapsed, and a winning pocket signal corresponding to that drawing pocket 51 is output to the CPU 31 from the second sensor control unit 38b (S44).

[0160] On the other hand, when the specified time has elapsed without the CPU 31 receiving a winning pocket signal (Yes in S45), the CPU 31 first performs a deceleration advance notifying process (S46). This deceleration advance notifying process is a process for making the second display device 72 display a countdown image to notify in advance the player of when the rotating speed of the inclined ring drawing device 50 will be decreased. When described in detail, the CPU 31 that has determined that the specified time has elapsed sends a countdown performance command to the display control unit 36. The display control unit 36, upon

receiving this countdown performance command, performs display control to make the second display device 72 display a countdown image. Then, the CPU 31, almost simultaneously with the timing at which the countdown image switches to an image showing a deceleration timing, performs a process for decreasing the rotating speed of the inclined ring drawing device 50 by the second rotation control unit 34b (S47).

[0161] If the drawing ball 73 has entered into any of the drawing pockets 51 and the CPU 31 has received its winning pocket signal after the specified time has elapsed and before the rotating speed of the inclined ring drawing device 50 is decreased, the countdown performance is cancelled at that point in time, and the process for decreasing the rotating speed of the inclined ring drawing device 50 (S47) is also not performed.

[0162] Further, when it is assumed that the drawing ball 73 does not enter into the drawing pocket 51 and falls into such a situation as described above even after the rotating speed of the inclined ring drawing device 50 has been decreased, such a constitution, for example, of timing a time elapsed since deceleration by the timing unit, and when the elapsed time has passed over a predetermined time (which may be set to a period different from that of the above-described specified time), further decreasing the rotating speed of the inclined ring drawing device 50 after performing a deceleration advance notifying process or conversely increasing the rotating speed can also be adopted.

[0163] When the rotating speed of the inclined ring drawing device 50 is decreased as in the present embodiment, the relative moving speed of the drawing pocket 51 with respect to the slope 54a varies, which can thus change such a situation as described above. Accordingly, the occurrence of a situation that the drawing ball 73 rolling on the slope 54a never enters into the drawing pocket 51 can be prevented.

[0164] When the dropped drawing ball 73 has entered into any of the drawing pockets 51 and the CPU 31 has received a winning pocket signal corresponding to that drawing pocket 51 from the second sensor control unit 38b (S44), the CPU 31 refers to a second award determination table stored in the RAM 33 to determine an award corresponding to that winning pocket signal. In the present embodiment, awards that can be won in the second center drawing are roughly divided into a payout award (dividend payout award) to pay out the quantity of credit corresponding to the award to the player, and a free game award for starting a free game being a special game in a slot game that is performed in the station unit 2. Then, the CPU 31, based on the winning pocket signal received from the second sensor control unit 38b and the second award determination table, identifies an award won by this time of second center drawing.

[0165] When winning of the dividend payout award has been determined (Yes in S48), the CPU 31 controls the second display device 72 and other performance units (illumination unit, sound outputting unit, and so on) to carry out predetermined performances. Then, the CPU 31 transmits a dividend payout command according to odds of the won dividend payout award from the input/output port 31a to the station control device 20 of the station unit 2 (S49). That is, in the present embodiment, as in the case of the first center drawing, the dividend payout award in the second center drawing also includes a plurality of types of dividend payout awards of different odds. However, it is desirable to set the odds of the dividend payout award in the second center drawing, even the

lowest odds, higher than the highest odds of the dividend payout award in the first center drawing. For example, a dividend payout award with odds of 100 times, a dividend payout award with odds of 500 times, and a dividend payout award with odds of 1000 times are provided, and these dividend payout awards are respectively allocated to separate drawing pockets 41. Then, when the drawing pocket 73 enters into the drawing pocket 41 of the dividend payout award, a dividend payout command including odds allocated to that drawing pocket 41 is transmitted to the station control device 20 of the station unit 2.

[0166] When the station control device 20 receives such a dividend payout command, the CPU 21 being a constituent of the payout processing unit 104A, if the second center drawing performed this time is one the start condition for which has been satisfied by recording all first drawing condition flags, for example, reads out the five bet histories stored in the first accumulated bet amount storage unit 109 corresponding to the first drawing condition flags. Then, the CPU 21 performs a payout process for adding the credit quantity for which an accumulated value of the bet histories is multiplied by the odds included in this dividend payout command to the common credit data stored in the common credit data storage unit 105. Thereafter, the CPU 21 resets the five bet histories stored in the first accumulated bet amount storage unit 109.

[0167] On the other hand, if the second center drawing performed this time is one the start condition for which has been satisfied by winning the second center drawing award through a slot game, the CPU 21 reads out all bet histories stored in the both of the first accumulated bet amount storage unit 109 and the second accumulated bet amount storage unit 111. Then, the CPU 21 performs a payout process for adding the credit quantity for which an accumulated value of the bet histories is multiplied by the odds included in this dividend payout command to the common credit data stored in the common credit data storage unit 105. In this case, the CPU 21 does not reset five bet histories stored in the first accumulated bet amount storage unit 109 and the second accumulated bet amount storage unit 111.

[0168] Further, when winning of the free game award has been determined (No in S48), the CPU 31 controls the second display device 72 and other performance units (illumination unit, sound outputting unit, and so on) to carry out predetermined performances. Then, the CPU 31 transmits a free game start command from the input/output port 31a to the station control device 20 of the station unit 2 (S50). The CPU 21 of the station control device 20 that has received this free game start command executes a program for the free game, and controls the progress of the free game in the same manner as in the case of a free game award of the first center drawing until predetermined free game finishing conditions are satisfied. As a matter of course, a bonus game award to start a bonus game (which may be a game other than a slot game) being a special game may be adopted in place of the free game award. It is preferable that the free game to be executed as a result of winning the free game award in the second center drawing is set so as to have conditions advantageous to the player, such as relaxing predetermined free game finishing conditions as compared with those for the free game to be executed as a result of winning the free game award in the first center drawing.

[0169] Although, in the present embodiment, a description has been given for the case where the respective independent games that are carried out in the respective game units A, B of

the station unit 2 are slot games, the independent games may be of other game contents. For example, a rescue game having a game screen as shown in FIG. 25 may be carried out. FIG. 25 shows a game screen in a single play mode, and in a dual play mode, the separate game screen 11j shown in FIG. 25 is displayed double. In addition, this game, when a door image displayed on the separate game screen 11j is touched, performs a process for subtracting one portion of credit from common credit data, and a character of a type corresponding to the door image is selected, and the selected characters are sequentially stored in a predetermined selected character storage area. A character image corresponding to the selected character is displayed in a character display unit 11k in an upper portion of the screen. When the number of the same types of characters has reached three in the selected character storage area, data for said three characters is deleted from the selected character storage area, and the images of said three characters are deleted also from the character display unit 11k, and further, 3, the number of the deleted characters is added to a predetermined count value. In this game, the number of characters stored in the selected character storage area exceeding 7 results in game over, data in the selected character storage area is deleted, and the above-described predetermined count value is also reset to zero. When the predetermined count value reaches a specified value, one or two or more first drawing condition flags or second drawing condition flags are recorded as a clear bonus. Then, when all of either the first drawing condition flags or second drawing condition flags have been recorded, as in the case of the embodiment described above, a first center drawing is performed in the center drawing apparatus 3.

[0170] The independent games that are performed in the respective game units A, B of the respective station units 2 of the token-operated game machine 1 of the present embodiment are all the same games (slot games), but a plurality of types of games may be mixed. For example, slot games may be carried out in the respective game units A, B of one station unit, and rescue games as in the foregoing may be carried out in another station unit. Alternatively, a slot game may be carried out in the game unit A of a station unit 2, and a rescue game may be carried out in the game unit B of the station unit 2.

[0171] In the present embodiment, a description has been given, as an example, of the token-operated game machine that controls game progress on the condition of receiving tokens (bet object) from a player, but the present invention can also be similarly applied to a game system and so on to be installed in a casino and so on that controls game progress on the condition of receiving other types of tokens or money (currency).

[0172] Further, in the present embodiment, a description has been given for the case where the credit data that is used by players respectively playing at the game units A, B of the same station unit 2 is common credit data, but the players may use separate credit data, respectively. However, in the case of a configuration where a plurality of players use, in common, credit data as in the present embodiment, there is a relationship formed between these players for increasing the common credit data in cooperation with each other despite separately playing independent games that are made to progress independently of each other. Generally, in conventional betting game apparatuses such as in a token-operated game machine or a casino game machine that uses credit data as bet objects and payout objects, because individual players

respectively play independent games by using separate credit data, the idea of increasing common credit data in cooperation with each other does not exist. Therefore, the configuration of the present embodiment where a plurality of players use, in common, common credit data can provide unprecedented game attractiveness in the betting game apparatuses.

[0173] In addition, such an effect of providing unprecedented game attractiveness in a betting game apparatus is not limited to the configuration of the present embodiment, that is, the configuration of recording common drawing condition flags according to the results of respective independent games respectively played by a plurality of players, as long as a plurality of players use, in common, common credit data. That is, as long as the respective bet object receiving units of a plurality of betting game apparatuses for performing independent games that progress independently of each other by using credit data as bet objects and payout objects perform, as a bet receiving process, a process for reducing the credit quantity of common credit data stored in the common credit data storage unit and the respective payout processing units of said betting game apparatuses perform, as a payout process, a process for increasing the credit quantity of common credit data stored in the common credit data storage unit, there is a relationship formed between a plurality of players for increasing the common credit data in cooperation with each other, so that unprecedented game attractiveness can be provided in the betting game apparatuses.

[0174] Further, in the present embodiment, by dropping the drawing ball 73 a plurality of number of times with the shutter 47c provided on the first ball discharge unit 48 moved to the ball passing position as shown in FIG. 15, the drawing pocket 41 in which the drawing ball 73 is already entered is blocked by that drawing ball 73, and thus a subsequent drawing ball enters into any of the remaining drawing pockets 41. With such a constitution, when there is, for example, a game setting so that winning the second center drawing award becomes the biggest goal, it becomes possible to provide such game attractiveness that the probability that, when the drawing ball 73 dropped first enters into the drawing pocket 41 to which an award other than the second center drawing award has been allocated, the drawing ball 73 dropped next enters into the drawing pocket 41 to which the second center drawing award has been allocated becomes higher. Although this explanation is for the case with the vertical ring drawing device 40, the same applies also to the case with the inclined ring drawing device 50.

[0175] In the above-described embodiment, means realized by software such as a computer program may be optionally realized by hardware such as a circuit board and a chip. Moreover, means realized by hardware such as a circuit board and a chip may be optionally realized by software such as a computer program.

[0176] Reference Signs List

[0177] 1: Token-operated Game Machine

[0178] 2: Station Unit

[0179] 3: Center Drawing Apparatus

[0180] 11: Touch Panel

[0181] 20: Station Control Device

[0182] 30: Central Control Device

[0183] 101A, 101B: Game Progress Control Unit

[0184] 102A, 102B: Operation Receiving Unit

[0185] 103A, 103B: Bet Receiving Unit

[0186] 104A, 104B: Payout Processing Unit

[0187] 105: Common Credit Data Storage Unit

- [0188] 106: Common Display Unit  
 [0189] 107: Mode Switching Unit  
 [0190] 108: First Drawing Condition Counting Unit  
 [0191] 109: First Accumulated Bet Amount Storage Unit  
 [0192] 110: Second Drawing Condition Counting Unit  
 [0193] 111: Second Accumulated Bet Amount Storage Unit

1. A game apparatus comprising:

an operation receiving unit which receives an operation by a player;

a bet object receiving unit which performs a bet receiving process for receiving a variable amount of bet objects according to a bet amount operation which the operation receiving unit has received;

a game progress control unit which, by executing a predetermined game progress program, controls progress of a game that is repeatedly performed on a game start condition that the bet object receiving unit performs the bet receiving process;

a payout processing unit which, in accordance with a progress result of a game controlled by the game progress control unit, performs a payout process for paying out a predetermined amount of payout objects to a player;

a counting unit which counts a specific control start condition count value according to a progress result of a game controlled by the game progress control unit;

an accumulated bet amount storage unit which stores an accumulated amount of bet objects bet in a game when the counting unit counted the specific control start condition count value; and

a specific control performing unit which starts specific control based on the specific control start condition count value satisfying a predetermined specific control start condition,

wherein the payout processing unit, in accordance with the specific control by the specific control performing unit, performs a payout process for paying out payout objects of an amount according to the accumulated amount of bet objects stored in the accumulated bet amount storage unit.

2. The game apparatus according to claim 1,

wherein the specific control to be performed by the specific control performing unit is control to perform a drawing for deciding whether a predetermined award is won or not, and

the payout processing unit, when a result that the predetermined award has been won comes out in a drawing by the specific control performing unit, performs a payout

process for paying out payout objects of an amount according to the accumulated amount of bet objects stored in the accumulated bet amount storage unit.

3. The game apparatus according to claim 2, wherein the drawing is a mechanical drawing using a drawing object.

4. The game apparatus according to claim 1,

wherein the game progress control unit controls progress of a slot game to cause a varying display of a plurality of types of symbols on a predetermined display part, and if a predetermined symbol combination is stopped and displayed on a winning line when the varying display is then stopped, pay out payout objects of an amount according to the symbol combination to a player, so that the number of winning lines is increased as a larger amount of bet objects which the bet object receiving unit receives, and

the counting unit counts the specific control start condition count value according to a progress result of the slot game that a special symbol combination is stopped and displayed on the winning line.

5. The game apparatus according to claim 1, comprising

a second counting unit which counts a second specific control start condition count value according to a progress result of a game controlled by the game progress control unit; and

a second accumulated bet amount storage unit which stores an accumulated amount of bet objects bet in a game when the second counting unit counted the second specific control start condition count value,

wherein the specific control performing unit starts the specific control based on either the specific control start condition count value or the second specific control start condition count value satisfying a predetermined specific control start condition,

when the specific control start condition count value satisfies the predetermined specific control start condition, a process for resetting the specific control start condition count value while maintaining the second specific control start condition count value is performed, and

when the second specific control start condition count value satisfies the predetermined specific control start condition, a process for resetting the second specific control start condition count value while maintaining the specific control start condition count value is performed.

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