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(56) Related Art
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ABSTRACT

The cabinet 1 has an identical configuration on both sides. That is, each side has the video monitor 2 for displaying the contents of a game and the operation panel 3 for giving instructions for operating the game. Each side also has the speaker 4 for generating effect sounds for the game as well as the coin slot 5. Each side has the second display 6 for showing the winner display that is displayed when the player has continuously won the game, the third display 7 for displaying the current number of wins, and the fourth display 8 for maintaining/updating and displaying the maximum number of wins since a specified time. The present invention provides a highly exciting video game system.

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Regulation 3.2

AUSTRALIA

Patents Act 1990

ORIGINAL

COMPLETE SPECIFICATION

STANDARD PATENT

Invention Title: VIDEO GAME SYSTEM

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

GH&CO REF: P50404B:CLC:SB

VIDEO GAME SYSTEM

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to a highly exciting video game system.

Description of the Prior Art

Among various game systems available today, the video game system is most popular. The video game system, which draws persons or vehicles (hereafter called characters) on the screen, has an input device such as a joy-stick or buttons. With this input device, the player manipulates the characters and tries to attain the specified purpose, for example, to win a war. The video game system, featuring sophisticated, versatile character movement, is widely accepted in the homes and penny arcades.

Recently, more and more competition-type video game systems are introduced. A competition-type video game system has a plurality of input devices, and allows a plurality of characters to appear on the screen. When each player participates in a war or a car race, he gives instructions to his own character, via an input device, to manipulate it as he wishes.

Typically, two players play a game on a competition-type video game system. Such a video game system has a similar input device and display screen on each side of a cabinet.

[Problems to Be Solved by the Invention]

On a competition-type video game system, a player wants to compete with as many players as possible and gets more and more excited as he beats them. However, on today's competition-type video game system, it is impossible to instantly know who is the current winner and how many players he has beaten.

This makes it difficult, even when a player has beaten many players, to get him satisfied and excited. This also prevents by-standers from participating the game, because they cannot instantly know the current player's skill. Thus, a highly exciting video game system, which gives both the players and bystanders the information on the current user's skill, has long been awaited.

This invention seeks to solve the problems associated with a prior art described above. It is an object of this invention to provide a highly exciting video game system. It is another object of this invention to provide a video game system which displays easy-to-understand information on the player's skill.

SUMMARY OF THE INVENTION

According to one aspect of the present invention there is provided a video game system having a processing circuit for executing a game allowing a plurality of players to play a game to compete against each other, the game processing circuit being adapted to determine a continuous winning status of said play indicating that a player has won at least the previous game;

first display means for displaying the contents of said game; and

second display means responsive to the game processing circuit to display the continuous winning status of said play, wherein said second display means and said first display means are separately provided.

According to another aspect of the present invention there is provided a video game system having a game processing circuit for executing a game allowing a plurality of players to play the game to compete against each other, said video game system comprising:

a first display for displaying the contents of said game;

a second display separate from the first display and responsive to the game processing circuit to display the continuous winning status of the play and for displaying a win-loss result of said play; and

a display control circuit for controlling the operation of said second display;

wherein said display control circuit and said game processing circuit are separately provided and the game processing circuit is adapted to determine a continuous winning status of the play indicating that a player has won at the least the previous game.

Another aspect of this invention is a video game system comprising third display means for displaying the current number of wins in the play.

According to the aspect of this invention, the display means, which shows the current number of wins, provides an objective criteria for the skill of the player.

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This display makes the player feel satisfied and gets him more excited. This also gives by-standers information on the player's skill and thus makes them feel tempted to play the game.

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Another aspect of this invention is a video game system comprising the fourth display means for updating, maintaining, and displaying the maximum number of wins since a specified time.

According to the aspect of this invention, the maximum number of wins is updated/maintained and displayed. This makes both the player and by-standers feel tempted to update the maximum number of wins, getting them more excited.

Another aspect of this invention is a video game system having a game processing circuit for executing a game allowing a plurality of players to play the game to compete each other, the video game system comprising: a first display for displaying the contents of the game; a second display for displaying a win-loss result of the play; and a display control circuit for controlling the operation of the second display, wherein the display control circuit and the game processing circuit are separately provided.

According to the aspect of this invention, the game processing circuit for executing the game and the display control circuit for controlling the second display are provided separately. This means that the results of many games may be displayed simply by replacing the game processing circuit.

Another aspect of this invention is a video game system comprising a third display for displaying the current number of wins in the play is connected to the display control circuit.

According to another aspect of this invention, two different displays, i.e. the second and third displays, are integrally controlled by one display control circuit to increase the processing efficiency and to make the video game system compact.

Another aspect of this invention is a video game system comprising a fourth display for updating/maintaining the maximum number of wins since a specified time and for displaying it is connected to the display control circuit.

According to the aspect of this invention, a plurality of displays, i.e. the second, third and fourth displays, are integrally controlled by one display control circuit to increase the processing efficiency and to make the video game system compact.

A preferred embodiment of the present invention will now be described by way of example only with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective diagram showing the external view of the video game system of the first embodiment of the invention.

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Figure 2 is a functional block diagram showing the circuit configuration of the video game system of the first embodiment of this invention.

Figure 3 is a circuit block diagram showing the configuration of the display control circuit used in the video game system of the first embodiment of this invention.

Figure 4 is a flowchart showing the operation of the display control circuit used in the first embodiment of this invention.

[Symbols]

1: Cabinet

2: Video monitor

3: Operation panel

4: Speaker

5: Coin slot

6: Second display

7: Third display

8: Fourth display

11: Game processing circuit

12: Video circuit

13: Display control circuit

14: Backup battery

15: CPU

16: ROM

17: RAM

18: I/O port

19: Photo-coupler

20: Driver

21. 22, 23: LED display

24: SSR

25: Lamp

STEP: Each procedure of the procedure

DETAILED DESCRIPTION

Referring to the attached drawings, there is shown preferred embodiments of this invention.

(1) Configuration of the First Embodiment

This embodiment corresponds to claims 1 to 6 and 10 to 18. It is an object of this invention to provide a highly exciting video game system. It is another object of this invention to provide a video game system which displays easy-to-understand information on the player's skill.

Figure 1 is a perspective view showing the external view of the video game system of this embodiment (hereafter called "this system"). As shown in this figure, this system has the similar configuration on both sides of the cabinet 1. On each side, the cabinet has the video monitor 2 (corresponds to the first display means) which displays the

contents of the game and the operation panel 3 through which the player manipulates the game. There is also the speaker 4 which generates effect sounds of the game and the coin slot 5.

Each side has additional three displays which are separate from the video monitor 2. They are the second display 6 which displays that the player's is a winner (winner display), the third display 7 which displays the number of opponents the player has beaten (current number of wins), and the fourth display 8 which displays the maximum number of opponents the player has beaten since a specified time (maximum number of wins). The second display 6, third display 7, and fourth display 8 are located above the video monitor 2.

The second display 6, which displays that the player is a winner, is composed of red semitransparent synthetic resins. Within this display is a lamp which blinks while the player is a winner. In addition, the second display 6 has the characters "WINNER" which remain on while the player is a winner. These characters may be composed of LEDs or electro-luminescence. The third display 7 has a 2-digit LED display which shows the current number of wins. The fourth display 8 has a two-digit LED display which shows the maximum number of wins.

Figure 2 is a functional block diagram showing the circuit configuration of this system. As shown in this diagram, this system has the game processing circuit 11 which processes the game program

based on the operation signals sent from the operation panel 3 while reading program routines from ROM and using the work areas allocated in RAM. Upon detecting the coin drop signal from the coin selector at the coin slot 5, this game processing circuit 11 starts the game and, when the game ends, generates the win-loss signal indicating which player has won.

The game processing circuit 11 connects, via the video circuit 12, to the video monitor 2. The display contents, determined by the game processing circuit 11, are converted to video signals for display on the video monitor 2.

This system also has the display control circuit 13 which displays and controls the winner display, the current number of wins, and the maximum number of wins. This display control circuit 13 is on a board separate from that of the game processing circuit 11. The display control circuit 13 receives the win-loss signal from the game processing circuit 11, and updates the current number of wins and the maximum number of wins. And, it displays the winner display on the second display 6, the current number of wins on the third display 7, and the maximum number of wins on the fourth display 8. Even after the video game system power is once turned off and then turned on, the maximum number of wins is maintained because it is backed up by the backup battery 14.

Note that the second display 6 and display control circuit 13

comprise the second display means, that the third display 7 and display control circuit 13 comprise the third display means, and that the fourth display 8, display control circuit 13, and backup battery 14 comprise the fourth display means.

Referring to the circuit block diagram in Figure 3, there is shown a sample configuration of the display control circuit 13. As shown in this diagram, the ROM 16 containing the display control program and the RAM 17 used for the work area are connected to the central processing unit (CPU) 15. The photo-coupler 19 and the driver 20 are connected to the CPU 15 via the I/O port 18. The photo-coupler 19 acts as a connector between the display control circuit 13 and the game processing circuit 11. The driver 20 is a display driver circuit composed of transistors. To this driver 20, the LED displays 21 for use on the second display 6 which displays characters, the 2-digit LED displays 22 for use on the third display 7, and the 2-digit LED displays 23 for use on the fourth display 8 are connected, each for one player (1P) and two players (2P). Also connected to the driver 20 is the SSR 24 through which the lamps 25 of the second display 6 are connected to the AC power which is not shown in the diagram. The SSR 24 is a semiconductor relay which controls the connection between the lamp 25 and the AC power.

(2) Operation and Effect of the First Embodiment

The first embodiment having the configuration described above

performs operation as follows. Figure 4 is a flowchart showing the operation of the display control circuit 13 of this system. This system stores the number of maximum wins in the RAM which is powered by the backup battery 14. Although the maximum number of wins usually indicates the maximum number since this game system was manufactured, the system may be designed so that the player is able to initialize it through a pre-defined operation. The display control circuit 13 reads the maximum number of wins immediately after the power is turned on and displays it on the fourth display 8 in the digital format (step 31). Then, the circuit waits for the win-loss signal to be sent from the game processing circuit (step 32).

This system allows the player to select one of two modes: one-player mode in which a player plays the game with the computer and two-player mode in which a player plays the game with another player. In both modes, the contents of the game are displayed on the video monitor. In the two-player mode, when one of the players has continuously beaten the opponents, the second display 6 on the winning player side displays the characters "WINNER" and, at the same time, blinks the winner display lamp. In addition, the third display 7 displays the current number of wins. These operations are performed as follows.

The game processing circuit 11 generates the win-loss signal each time the game is over. The win-loss signal is a digital signal

indicating which player has won. If the winner has continuously won the game (step 33), the display control circuit 13 increments the current number of wins by one (step 34) and updates the number of wins on the third display 7 (step 35). If the winner has continuously won the game and the current number of wins exceeds the maximum number of wins (Step 36), the circuit replaces the maximum number of wins with the current number of wins (step 37) and immediately updates the maximum number of wins on the fourth display (step 38).

If the winner, indicated by the win-loss signal, has changed (step 33), the circuit turns off the lamp on the loser's side (step 39) and the current-number-of-wins indication on the loser's side (step 40). Instead, the circuit turns on the lamp on the winner's side (step 41), initializes the current number of wins to 1 (step 42), and displays the current number of wins on the third display 7 on the winner's side (step 43).

The following explains, in detail, how the display control circuit 13 operates. The win-loss signal from the game processing circuit 11 is sent to the CPU 15 via the photo-coupler 19 and the I/O port 18. Upon receiving this signal, the CPU 15 sends the display control signal to the driver 20 according to the display control program stored in the ROM 16. Then, the driver 20 sends the drive signal to the LED displays 21, 22, 23, and SSR24 according to the display control signal. The LED displays 21, 22, and 23 each display data according to the

corresponding drive signal. The SSR 24 performs relay switching according to the drive signal to turn on or blinks the lamp 25. The current number of wins and the maximum number of wins are maintained in the RAM 17.

Steps 39 to 43 are performed for the loser's side even after the win-loss signal is received for the first time after the power is turned on. In this case, the display turn-on/turn-off operation on the loser's side is redundant. However, other steps are required to turn on the display for the first winner.

The display of the current number of wins may be started when the player has continuously won the game the specified number of times (for example, three consecutive times). The winner display and the current number of wins may be turned off any time. For example, if a coin is not dropped within a specified time after the game is over, the display may be canceled assuming that the players have changed.

As described above, when the player continuously won the game, the video game system in this embodiment displays the winner display, indicating that the player is a winner, on the second display 6 which is separate from the video monitor 2 which is the first display means. This winner display makes the player feel satisfied and gets him more excited; at the same time, the display stimulates the bystanders and makes them feel tempted to participate in the game.

The winner display, indicated by the blinking lamp and the

characters, visually stimulates the players and bystanders and, as a result, gets them more excited.

In this embodiment in which the second display 6, third display 7, and fourth display 8 are located above the video monitor 2, the winner display stands out, attracts the player's or bystander's attraction, and gets them more excited.

The third display 7, which shows the current number of wins, provides an objective criteria for the skill of the player. This display makes the player feel satisfied and gets him more excited. This also gives by-standers the information on the player's skill and thus makes them feel tempted to play the game.

This embodiment displays the current number of wins, enabling the players and by-standers to understand it instantly. It also updates and displays the maximum number of wins, thus making both players and by-standers to feel tempted to update the maximum number of wins.

The video game system of this embodiment is a competition-type game system in which the players sit face to face. And, the second, third, and fourth display means on each side further stimulate the player's desire to fight. Thus, this invention especially brings great benefits.

The display control circuit 13, which integrally controls various types of displays and lamps such as the LED displays 21, 22, and 23

and lamp 25, increases the processing efficiency and makes the video game system more compact.

The game processing circuit 11 and the display control circuit 13, though connected by the photo-coupler 19, are separate circuits. Therefore, as long as the signal from the game processing circuit 11 is compatible with the signal that drives the display control circuit 13, replacing only the game processing circuit 11 with another game processing circuit 11 makes it possible, in many kinds of games, to turn on the current number of wins, the maximum umber of wins, and the characters "WINNER" and to turn on and blink the winner display.

(3) Other Embodiments

This invention is not restricted to the preferred embodiment described above, but may be embodied in other specific forms, such as those described below, without departing from the spirit or essential characteristics thereof. For example, the third and fourth display means are not always required. The first display means and other display means may be any type of display such as a liquid crystal display, video projector, or electro-luminescence.

The characters displayed on the second display means need not be "WINNER"; they may be any characters indicating the win-loss result of the game such as "WINNING" or "LOSER". In addition, these characters need not be displayed on a LED display or electro-luminescence; it may be written on the synthetic resin plate under

which the lamp is provided.

Instead of the number of wins, the third display means may display as many opponent characters as the number of wins (corresponds to claim 7). This display gives the player the intuitive, realistic information on the number of wins, making the game more exciting.

The second, third, and fourth displays need not be located above the first display means. The win-loss result shown on the second display means need not be indicated by light, but may be indicated on a display plate or by such characters as a doll waving a flag. The number of wins displayed on the third display means is not limited to a number or opponent characters, but may be as many circles or squares as the number of wins.

When a winning player plays a non-competition game, the third display means may be constructed so that it maintains the number of wins before the current game (corresponds to claim 8). In this case, the system does not count the number of wins of the player when he plays the game with the computer. Therefore, the display shows the number of times the player has actually beaten the opponents, increasing the reliability of the display of wins.

The third display means may be constructed so that it resets the number of wins if the player loses during a non-competition game (corresponds to claim 9). In this case, the system resets the number

of wins if the player loses during a non-competition game. This makes it difficult for the player to maintain the current number of wins, getting the player more excited.

The signal sent from the game processing circuit 11 to the display control circuit 13 may be code signals, instead of the win-loss signal, each corresponding to the display mode of each display. For example, assigning hexadecimal numeric codes to the numeric patterns or the lamp on-off or blink patterns to be displayed on the displays 21, 22, and 23 makes it possible for number codes to be displayed on the LED displays 21, 22, and 23; it also makes it possible for the lamp 25 to turn on or blink according to the number codes from the game processing circuit 11. If the code signal compatibility is still maintained in the video game system in this configuration, another game processing circuit 11 may be used, ensuring the versatility of the display control circuit 13 as in the above embodiment.

The game processing circuit 11 may be able to maintain the number of wins and the maximum number of wins. In particular, when the game processing circuit 11 sends code signals to the display control circuit 13, the game processing circuit 11 generates code signals according to the number of wins. This requires the game processing circuit 11 to maintain and update the current number of wins and the maximum number of wins.

The LED displays 21, 22, and 23 can display not only numbers,

such as the current number of wins, but also ornamental symbols. In particular, a 7-segment or 16-segment display or dot-matrix display can display characters as well. When ornamental symbols or characters are displayed, assigning numeric codes or symbols to characters makes it possible the code signals, compatible with the display of the number of wins, to be used.

Effect of the Invention

As described above, this invention provides an exciting video game system.

While a preferred embodiment has been described, variations thereto will occur to those skilled in the art within the scope of the present inventive concepts which are delineated by the following claims.

THE CLAIMS DEFINING THE INVENTION

1. A video game system having a processing circuit for executing a game allowing a plurality of players to play a game to compete against each other, the game processing circuit being adapted to determine a continuous winning status of said play indicating that a player has won at least the previous game;

first display means for displaying the contents of said game; and

second display means responsive to the game processing circuit to display the continuous winning status of said play, wherein said second display means and said first display means are separately provided.

2. A video game system as claimed in claim 1, wherein said second display means displays said win-loss result by either turning on or blinking a light.

3. A video game system as claimed in claim 1, wherein said second display means is provided above said first display means.

4. A video game system as claimed in claim 1, further comprising third display means for displaying the current number of wins in said play.

5. A video game system as claimed in claim 4, wherein said third display means is provided above first display means.

6. A video game system as claimed in claim 4, wherein said third display means displays said current number of wins as a number.

7. A video game system as claimed in claim 3, wherein said third display means displays said current number of opponents a player has beaten and the current number of wins.

8. A video game system as claimed in claim 4, wherein said third display means maintains the numbers of wins before the current game when said player, who has continuously won, plays a non-competition-type game.

9. A video game system as claimed in claim 4,

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wherein said third display means resets said current number of wins when said player, who has continuously won, loses a non-competition-type game.

10. A video game system as claimed in claim 4, further comprising he fourth display means or updating, maintaining and displaying the maximum number of wins since a specified time.

11. A video game system as claimed in claim 10, comprising a cabinet wherein both sides thereof include said first display means, an operation panel for giving instructions to a game and said fourth display means.

12. A video game system as claimed in claim 4, comprising a cabinet wherein both sides thereof include said first display means, an operation panel for giving instructions to a game and a third display means.

13. A video game system as claimed in claim 1, comprising a cabinet wherein both sides thereof include said first display means, an operation panel for giving instructions to a game and said second display means.

14. video game system having a game processing circuit for executing a game allowing a plurality of players to play the game to compete against each other, said video game system comprising:

a first display for displaying the contents of said game;

a second display separate from the first display and responsive to the game processing circuit to display the continuous winning status of the play and for displaying a win-loss result of said play; and

a display control circuit for controlling the operation of said second display;

wherein said display control circuit and said game processing circuit are separately provided and the game processing circuit is adapted to determine a continuous winning status of the play indicating that a player has won at the least the previous game.

15. A video game system as claimed in claim 15,

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further comprising a third display connected to the display control circuit and for displaying the current number of wins in said play.

16. A video game system as claimed in claim 15, further comprising a fourth display connected to the display circuit and for updating/maintaining and displaying the maximum number of wins since a specified time.

17. A video game system as claimed in claim 15, wherein said third display has at least one LED display or dot matrix display controlled by a driver connected to said display control circuit.

18. A video game system as claimed in claim 16, wherein said fourth display has at least one LED display or dot matrix display controlled by a driver connected to said display control circuit.

19. A video game system substantially as hereinbefore described with reference to the accompanying drawings.

Dated this 9th day of November 1999

SEGA ENTERPRISES LTD

By their Patent Attorneys

GRIFFITH HACK

Fellows Institute of Patent and

Trade Mark Attorneys of Australia

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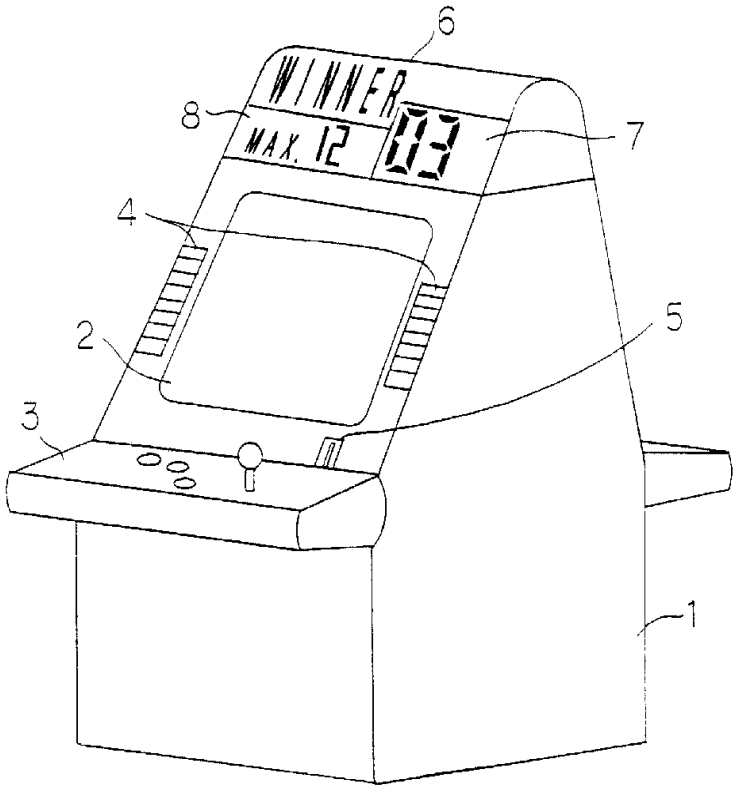

FIG-1

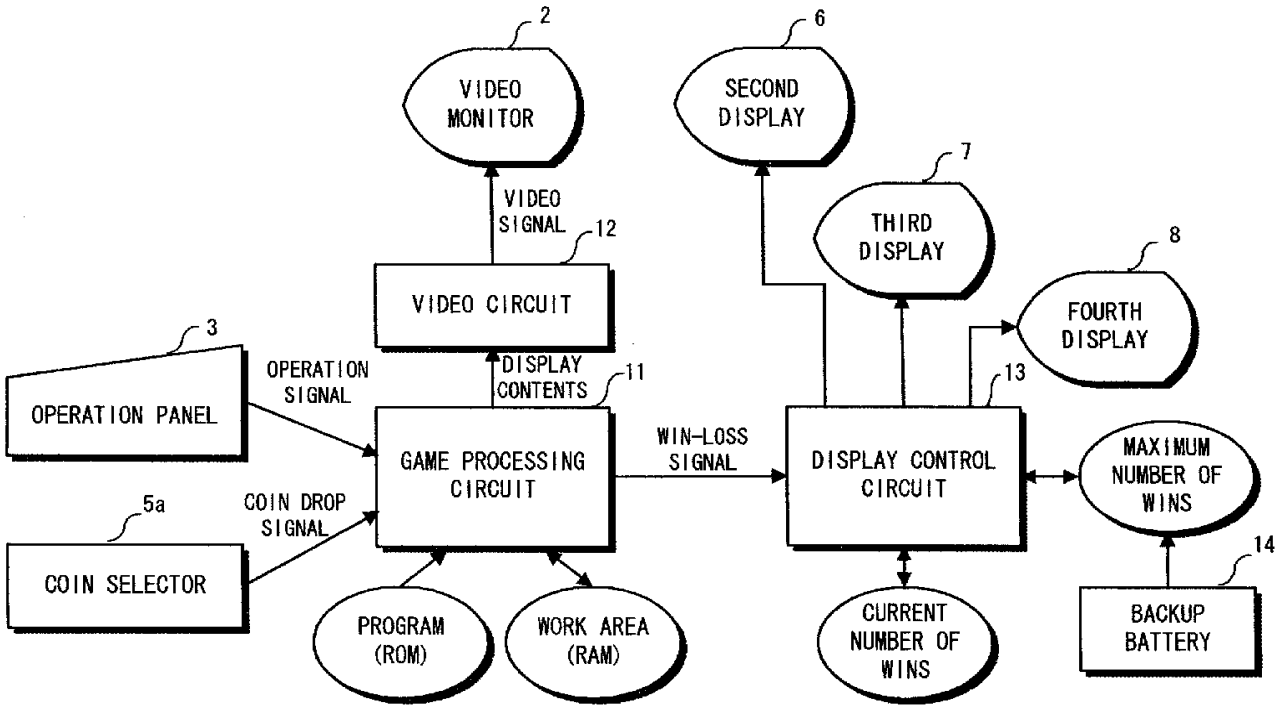
2
VIDEO MONITOR
6
SECOND DISPLAY
7
THIRD DISPLAY
8
FOURTH DISPLAY
VIDEO SIGNAL
12
VIDEO CIRCUIT
3
OPERATION PANEL
OPERATION SIGNAL
DISPLAY CONTENTS
11
GAME PROCESSING CIRCUIT
WIN-LOSS SIGNAL
13
DISPLAY CONTROL CIRCUIT
MAXIMUM NUMBER OF WINS
5a
COIN SELECTOR
COIN DROP SIGNAL
PROGRAM (ROM)
WORK AREA (RAM)
CURRENT NUMBER OF WINS
14
BACKUP BATTERY

FIG-2

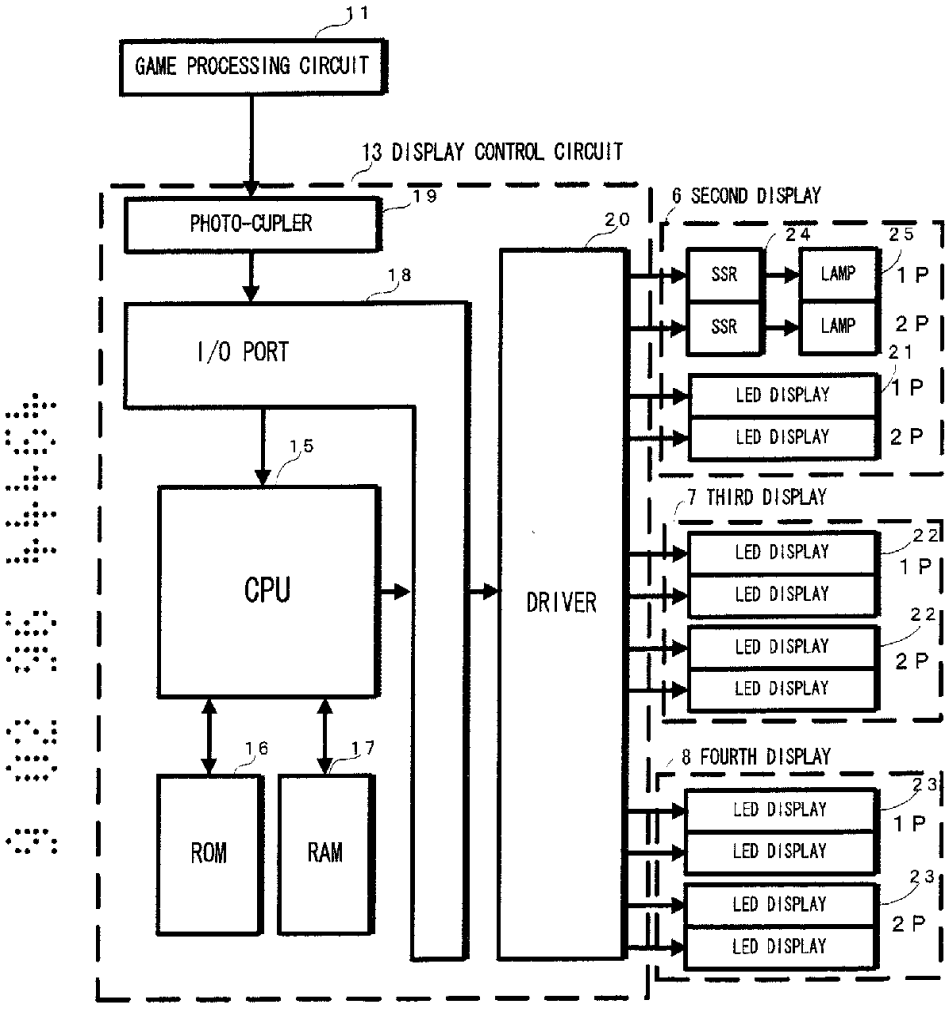
11
GAME PROCESSING CIRCUIT
13 DISPLAY CONTROL CIRCUIT
19
PHOTO-CUPLER
18
I/O PORT
15
CPU
16
ROM
17
RAM
20
DRIVER
6 SECOND DISPLAY
24
25
SSR
LAMP
1 P
SSR
LAMP
2 P
21
LED DISPLAY
1 P
LED DISPLAY
2 P
7 THIRD DISPLAY
22
LED DISPLAY
1 P
LED DISPLAY
LED DISPLAY
22
2 P
LED DISPLAY
8 FOURTH DISPLAY
23
LED DISPLAY
1 P
LED DISPLAY
23
LED DISPLAY
2 P
LED DISPLAY

FIG-3

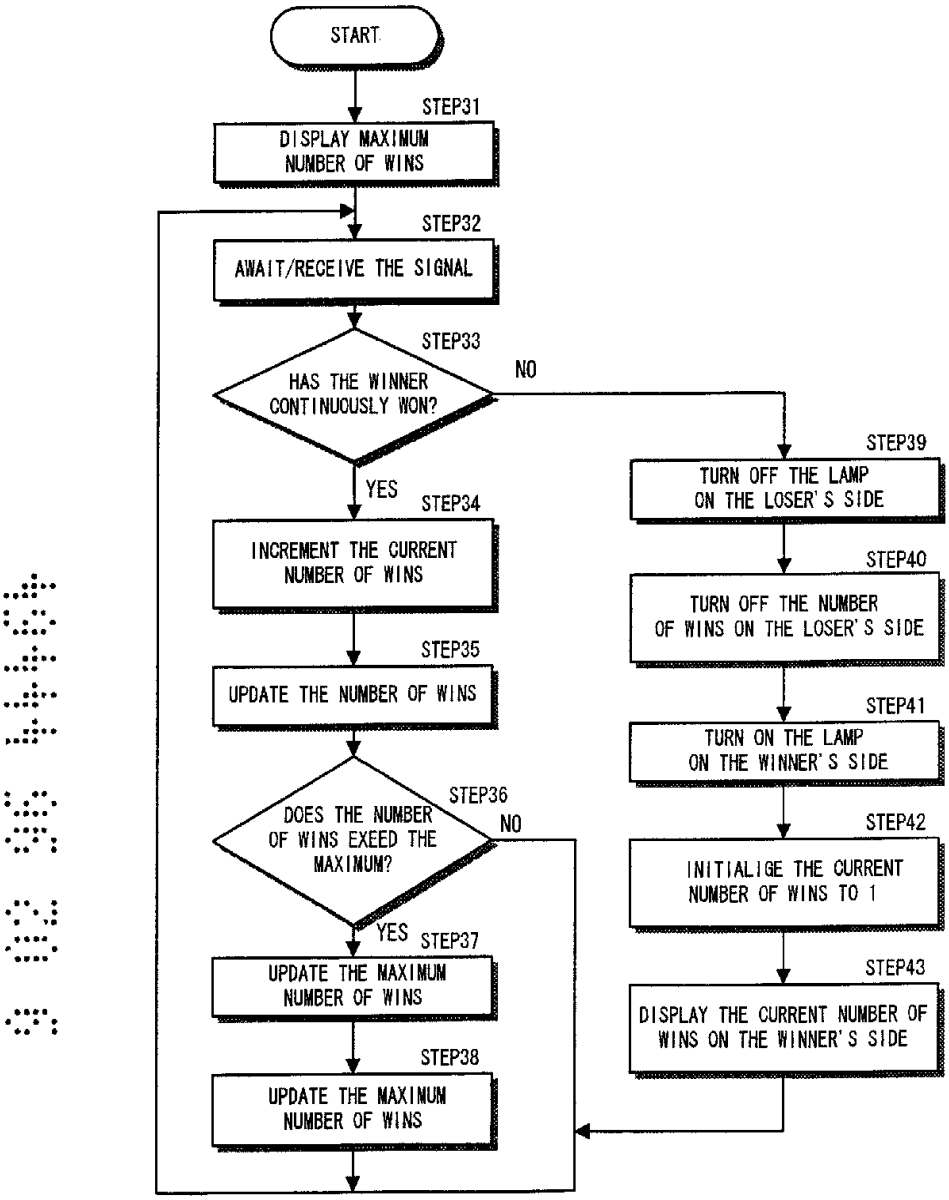
START
STEP31
DISPLAY MAXIMUM NUMBER OF WINS
STEP32
AWAIT/RECEIVE THE SIGNAL
STEP33
HAS THE WINNER CONTINUOUSLY WON?
NO
YES
STEP34
INCREMENT THE CURRENT NUMBER OF WINS
STEP35
UPDATE THE NUMBER OF WINS
STEP36
DOES THE NUMBER OF WINS EXEED THE MAXIMUM?
NO
YES
STEP37
UPDATE THE MAXIMUM NUMBER OF WINS
STEP38
UPDATE THE MAXIMUM NUMBER OF WINS
STEP39
TURN OFF THE LAMP ON THE LOSER'S SIDE
STEP40
TURN OFF THE NUMBER OF WINS ON THE LOSER'S SIDE
STEP41
TURN ON THE LAMP ON THE WINNER'S SIDE
STEP42
INITIALIGE THE CURRENT NUMBER OF WINS TO 1
STEP43
DISPLAY THE CURRENT NUMBER OF WINS ON THE WINNER'S SIDE

FIG-4