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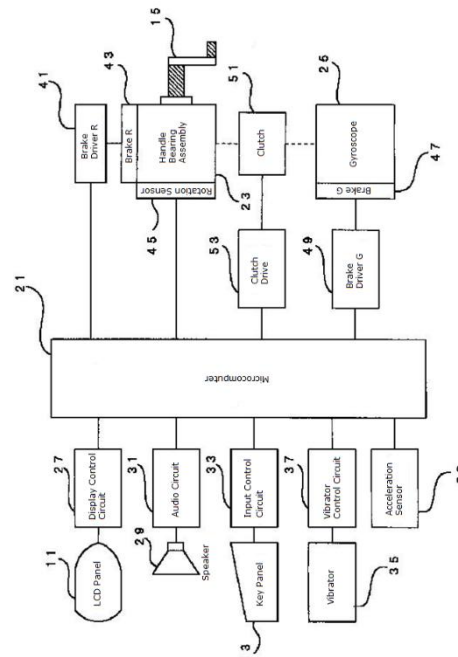
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(54) [Title of the Invention] Fishing Simulation Game Device

(57) [Abstract]

[Problem] To provide a fishing simulation game device that allows a player to physically feel the load on the fishing rod.

[Solution] Provided is a fishing simulation game device equipped with a key panel 13, a display panel 11, a reel handle 15, an acceleration sensor 39 responsive to movement by the device itself, a vibrator 35 for vibrating the device, and a microcomputer 21, all integrally housed inside a device housing, the fishing simulation game device characterized in that a gyroscope 25 is provided inside the device housing and connected to a rotation mechanism 23 of the reel handle 15 such that the gyroscope rotates in tandem via a one-way clutch 51, and the gyroscopic torque generated by the rotation of the gyroscope 25 creates resistive force to the rod-bending displacement of the device housing.



[Claims]

[Claim 1] A fishing simulation game device equipped with a key panel, a display panel, a reel handle, a rotation sensor detecting rotation of the reel handle, an acceleration sensor responsive to movement by the device itself, a vibrator for vibrating the device, and a microcomputer, all integrally housed inside a device housing, the microcomputer executing a game program to perform game processing in response to signals from the key panel, the rotary sensor, and the acceleration sensor, and to display progress in the game processing on the display panel, the fishing simulation game device characterized in that a gyroscope is provided inside the device housing and connected to a rotation mechanism of the reel handle such that the gyroscope rotates in tandem via a one-way clutch, and the gyroscopic torque generated by the rotation of the gyroscope creates resistive force to the rod-bending displacement of the device housing.

[Claim 2] The fishing simulation game device according to claim 1, wherein a clutch mechanism is provided to disengage the gyroscope from the rotation mechanism of the reel handle, the clutch mechanism being controlled by the microcomputer.

[Claim 3] The fishing simulation game device according to claim 2, wherein a brake mechanism is provided to decelerate rotation of the gyroscope, the brake mechanism being controlled by the microcontroller.

[Detailed Description of the Invention]

[0001]

[Technical Field of the Invention] The present invention relates to a fishing simulation game device, and more specifically to a technique for providing players with a more realistic feel.

[0002]

[Prior Art] Recently, fishing simulation game devices such as the one described below have gained popularity. FIG. 1 shows a front view of a typical game device main unit. The LCD panel 11, located in the top front, graphically displays information such as a map of the surrounding fishing area, fishing line tension, the length of fishing line deployed into the water, the type of lure selected, the lure position (depth), and underwater conditions resembling those of a fish finder. Below the LCD panel 11 is a key panel 13. A reel handle 15, modeled after an actual reel, is provided on the right side of the game device. A grip 17 is formed at the bottom of the game device. The grip 17 serves both as a grip for the player to hold the game device in a hand and as a battery storage box. The main unit incorporates a microcontroller that controls

the entire device, an accelerometer that detects acceleration applied to the game main unit and reports it to the microcontroller, a vibrator that vibrates the game main unit according to instructions from the microcontroller, and a speaker that outputs sounds required for the game based on instructions from the microcontroller.

[0003] To make progress in the game, the player operates a selection switch while referring to the LCD panel 11, choosing various game conditions such as the "point" (fishing spot) and the "rig" (lure, etc.). Once the game conditions have been determined in this manner, the player presses a specific button on the key panel 13 while holding the grip 17 with one hand and swings the game main unit downward from above, performing a casting operation (tossing the tackle into the water) just like real fishing. The acceleration applied to the game device during casting is detected by an acceleration sensor. The microcomputer then determines the length of line released and the depth of the lure based on this acceleration, displaying this information on the LCD panel 11. The player waits for a "bite" (a fish taking the lure) while referring to the information displayed on the LCD panel 11 and operating the reel handle and key panel. The microcomputer generates a "bite" at an appropriate time and notifies the player of the bite by vibrating the game device via the vibrator, etc. The player snaps his or her wrist upward at the time of the "bite" to perform a "hooking" motion (the motion of pulling the rod toward oneself to skillfully set the hook in the fish's mouth). The accelerometer detects the acceleration applied to the game device during the hooking motion and transmits this data to the microcomputer. The microcomputer determines whether the fish has been successfully hooked or has escaped based on this acceleration.

[0004] If the microcontroller determines that the fish has been hooked, it notifies the player by vibrating the vibrator or emitting water sounds from the speaker. The player then engages in "fighting" (the struggle to reel in the hooked fish) by operating the reel handle, taking care not to break the line due to excessive tension. If the player successfully reels in the line until its length reaches zero, the microcomputer displays the catch results, such as the weight of the caught fish, on the LCD panel 11. It also registers this catch result in the memory of the microcomputer so the player can refer to it later if necessary.

[0005]

[Problem to Be Solved by the Invention] As many anglers would agree, the true thrill of

fishing lies in enjoying the sensation of the "bite." A characteristic of the game device lies in enabling players to experience this "bite" sensation.

[0006] However, the sensation provided by the vibrator represents only a portion of the physical sensations felt through the fishing rod during actual fishing. Particularly during the "fight," the rod experiences not only vibration but also the load exerted by the "pull" of the fish. A vibrator alone cannot convey this sensation to the player. Therefore, if this type of game device could allow players to physically feel the load on the fishing rod, it could provide a more realistic sensation and would likely increase the popularity of the game device beyond current levels.

[0007] It is an object of the present invention to solve this problem by providing a fishing simulation game device that allows players to physically feel the load applied to the fishing rod when a fish is hooked.

[0008]

[Means for Solving the Problem] In order to achieve this object, a first aspect of the present invention is a fishing simulation game device equipped with a key panel, a display panel, a reel handle, a rotation sensor detecting rotation of the reel handle, an acceleration sensor responsive to movement by the device itself, a vibrator for vibrating the device, and a microcomputer, all integrally housed inside a device housing, the microcomputer executing a game program to perform game processing in response to signals from the key panel, the rotary sensor, and the acceleration sensor, and to display progress in the game processing on the display panel, the fishing simulation game device characterized in that a gyroscope is provided inside the device housing and connected to a rotation mechanism of the reel handle such that the gyroscope rotates in tandem via a one-way clutch, the gyroscopic torque generated by the rotation of the gyroscope creates resistive force to the rod-bending displacement of the device housing, and the player holding the game device physically feels the load on a fishing rod.

[0009] In a second aspect of the present invention, a clutch mechanism is provided to disengage the gyroscope from the rotation mechanism of the reel handle, and the clutch mechanism is controlled by the microcomputer.

[0010] In a third aspect of the present invention, a brake mechanism is provided to decelerate rotation of the gyroscope, the brake mechanism being controlled by the microcontroller.

[0011]

[Embodiments of the Invention] The following describes in detail the game device in an embodiment of the present invention. The appearance of the fishing simulation game device in the present embodiment is the same as that of the game device of the prior art described above (FIG. 1).

[0012] === Configuration of the Gaming Device ===

FIG. 2 shows a schematic block diagram of the internal configuration of the game device. The main components of this game device include a microcontroller 21 that controls the entire device, including a CPU, RAM, ROM, and timer, a handle bearing assembly 23 that serves as the bearing for the reel handle 15, and a gyroscope 25.

[0013] The microcomputer 21 is connected to a display control circuit 27 connected to the LCD panel 11, an audio circuit 31 connected to the speaker 29, an input control circuit 33 connected to the key panel 13, a vibrator control circuit 37 controlling the vibrator 35, and an acceleration sensor 39 detecting acceleration applied to the game device.

[0014] A brake R 41 is provided in the handle bearing portion 23 to apply rotational load to the reel handle 15. The brake R 41 is controlled by the microcomputer 21 via a brake driver R 43. The handle bearing assembly 23 includes a rotation sensor 45 that detects the rotational speed of the reel handle 15 and transmits it to the microcomputer 21. The gyroscope 25 is set within the game device so that its rotational axis faces the front-back direction of the game device (the direction perpendicular to the paper surface in FIG. 1). Another brake G 47 is provided for the gyroscope 25 to control its rotation, and the brake G 47 is controlled by the microcomputer 21 via another brake driver G 49.

[0015] The handle bearing assembly 23 and the gyroscope 25 are mechanically connected via a linkage mechanism, such as a shaft or belt system, using a clutch 51. The microcomputer 21 turns the power transmission of the clutch 51 ON and OFF via the clutch driver 53. The gyroscope 25 rotates in conjunction with the handle bearing unit 23 only when the clutch 51 is ON. The clutch 51 transmits power unidirectionally (one-way) from the handle bearing assembly 23 to the gyroscope 25.

[0016] === Game Flow ===

This game device is a fishing simulation game device, functioning as a simulated fishing rod. The player grips the grip 17 as if holding a real fishing rod and enjoys the game by operating the reel handle 15 and key panel 13 while referring to the information displayed on the LCD panel 11.

[0017] (1) Initializing the Gaming Device

The game program is stored in a non-volatile memory inside the microcontroller 21. When the game device is turned ON, the microcontroller 21 starts the game program. At startup, the microcontroller 21 initializes each component in the game device, releases brake R 41, turns the clutch 51 OFF, and also releases brake G 47.

[0018] (2) Setting the Game Conditions

The player selects the fishing spot and lure by operating the key panel 13 while referring to the map and lure number displayed on the LCD panel 11.

[0019] (3) Casting

Casting is performed by swinging the game device downward from above, simulating a real fishing rod. The microcomputer 21 detects the acceleration during this motion via the acceleration sensor 39. Based on this value, it calculates the line length and tension after casting 21 and determines the display content on the LCD panel 11.

[0020] (4) "Baiting" to "Hooking"

After casting, the player monitors the underwater scene on the LCD panel 11 while operating the reel handle 15 or the key panel 13 to adjust the lure's position to the "depth" where fish are most abundant. At the appropriate time, the game program generates a "bite" (indicating a fish has taken the lure), vibrates the vibrator 31, and emits a sound from the speaker 27 to notify the player of the bite. Upon detecting the bite, the player performs a so-called "hooking" operation by snapping the game device upward. The game program measures the acceleration applied to the game device during the hooking operation using the acceleration sensor 39, along with the time elapsed from the bite to the hookset. The game program determines whether the fish was successfully hooked or escaped based on the measured acceleration and time. If it determines the fish has been successfully hooked, it emits a predetermined sound from the speaker 27, vibrates the vibrator 31, and switches the clutch 51 to the ON position.

[0021] (5) Fighting (Struggling with a Fish)

When the player rotates the reel handle 15, the gyroscope 25 rotates in tandem with the rotational force of the reel handle 15. As is well known, applying external force to a rotating gyroscope 25 in a direction that tilts its axis of rotation generates a resistive force within the gyroscope 25 due to gyroscopic torque. Therefore, during "fighting," if the player moves the game device as if casting a real fishing rod, the gyroscope 25 inside the device generates resistive force. This resistive force is perceived by the player as a fish pulling on the rod. At this

time, the game program also controls the brake R 41 to increase or decrease the rotational load on the reel handle 15 based on progress in the game, controls the rotational speed of the gyroscope 25 via the brake G 47 to increase or decrease the resistive force, and applies vibrations from the vibrator 35 to create a more realistic sensation.

[0022] (6) Determining the Results From Fighting a Fish

The game program continuously monitors whether the rotation speed of the reel handle 15 sent from the rotation sensor 43, and the player's operation of the key panel 13 are appropriate. When the fishing line is reeled in and its length has become zero, the game program determines that a fish has been successfully caught. It then displays the catch details (fish species, weight, etc.) on the LCD panel 11 and registers these details in the memory of the microcontroller.

[0023] If an inappropriate operation occurs during the fight, the game program outputs sound effects like a line snapping from the speaker 27. In order to create the sensation of a fish escaping and a sudden loss of load on the fishing rod, it turns the clutch 51 OFF and abruptly stops rotation of the gyroscope 25 using the brake G 47. The game program then displays a message on the LCD panel 11 informing the player that the fish has escaped.

[0024] (7) End of Game

If no operation is performed on either the reel handle 15 or the key panel 13 for a set period of time, the microcomputer 21 automatically turns off power to the game device.

[0025] === Another Application ===

In actual fishing, the load on the fishing rod continuously fluctuates even when the reel is not being rotated, due to the fish struggling. However, since the game device uses the rotational force of the reel handle 15 to rotate the gyroscope 25, it cannot provide the player with the sensation of the load on the fishing rod increasing as described above unless the player rotates the reel handle 15.

[0026] In order to solve this problem, the gyroscope 25 should be rotated by a motor instead by the rotational force of the reel handle 15, and the rotation of the motor should be controlled by the game program via a motor control driver. This enables the rotational speed of the gyroscope 25 to be increased even when the reel handle 15 is not rotating, providing the player with a more realistic sensation that is closer to actual fishing.

[0027]

[Effects of the Invention] As described above, the fishing simulation game device of the

present invention provides a gyroscope connected inside the device housing to rotate in tandem with the reel handle rotation mechanism via a one-way clutch. The gyroscopic torque generated by rotation of the gyroscope produces resistive force against the rod-bending displacement of the device housing. This enables a player to experience the realistic sensation of load on the fishing rod, which was previously unattainable by devices of the prior art.

[0028] Also, by providing a clutch mechanism to disconnect the gyroscope from the reel handle rotation mechanism controlled by the microcomputer and a brake mechanism to restrain rotation of the gyroscope, the resistive force can be varied, allowing the player to experience an even more realistic sensation.

[Brief Description of the Drawings]

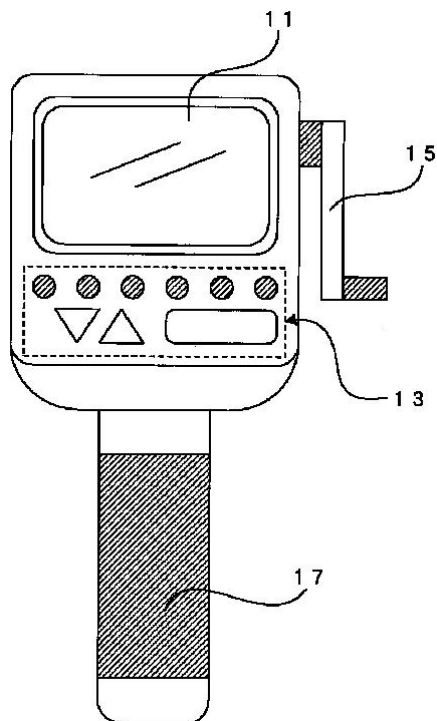
[FIG. 1] FIG. 1 is a front view of the game device in an embodiment of the present invention.

[FIG. 2] FIG. 2 is a diagram showing the block configuration of the game device in an embodiment of the present invention.

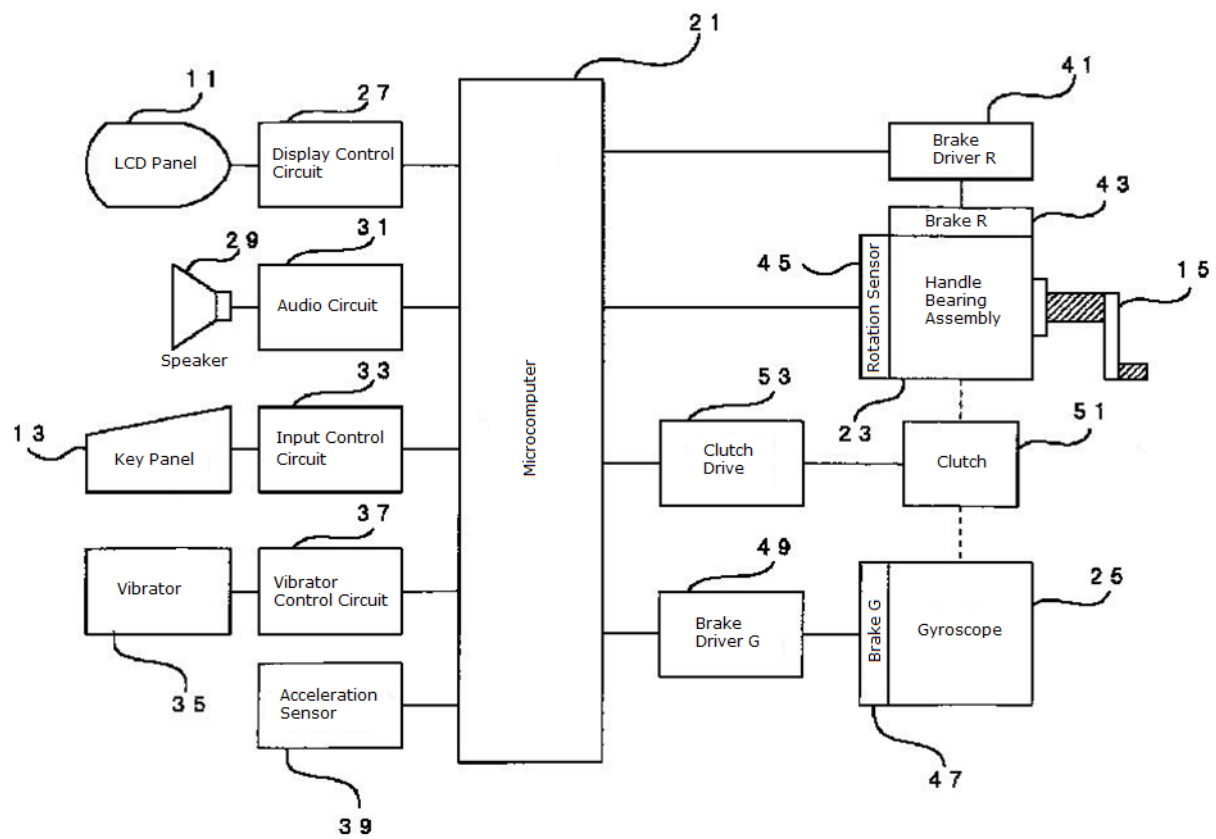
[Reference Numbers]

- 11: LCD panel
- 13: Key panel
- 15: Reel handle
- 17: Grip
- 21: Microcomputer
- 23: Handle bearing assembly
- 25: Gyroscope
- 35: Vibrator
- 41: Brake R
- 43: Brake driver R
- 45: Rotation sensor
- 47: Brake G
- 49: Brake driver G
- 51: Clutch

[FIG. 1]



[FIG. 2]



TRANSLATION CERTIFICATION

Date: 2025/09/04

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- Japanese

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Samuel Wu, Managing Director of this company, attests to the following:

"To the best of my knowledge, the aforementioned documents are a true, full and accurate translation of the specified documents."



Signature of **Samuel Wu**, Managing Director

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