

TITLE OF THE INVENTION

GAME DEVICE, METHOD FOR CONTROLLING OPERATION OF
GAME DEVICE, AND GAME PROGRAM

TECHNICAL FIELD

[0001] The present invention relates to a game device for acquiring a prize, a method for controlling an operation of the game device, and a game program.

BACKGROUND ART

[0002] Conventionally, a crane game device placed in an amusement facility is known as a game device for acquiring a prize (for example, Patent Document 1). In such a crane game device, a crane arm holds a prize placed in a prize storage part and moves horizontally in a game space to a position above an opening. Thus, the crane game device requires a space in which the crane arm can move horizontally. Therefore, the crane game device is inevitably increased in size, and the amusement facility requires a space for placing the crane game device.

[0003] On the other hand, in the field of game devices in recent years, there is a demand for downsizing the game devices so that a larger number of the game devices can be placed in a limited space. Under such circumstances, it is structurally difficult for conventional crane game devices to meet the demand for downsizing. Therefore, is demanded a game device that can be downsized while providing a player with a sense of excitement which has not been previously available.

PRIOR ART DOCUMENT

PATENT DOCUMENT

[0004] Patent document 1: JP 2000-84236 A

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0005] It is an object of the present invention to provide a game device that can be downsized and can provide a player with a sense of excitement. Further, it is another object of the present invention to provide a method for controlling an operation of the game device and a game program.

MEANS FOR SOLVING THE PROBLEMS

[0006] Such objects are achieved by the present inventions (1) to (13) described below.

[0007] (1) A game device that transfers a prize located in a game space to a prize take-out space, the game device comprising:

an operation part for receiving an operation input from a player;

a game field for placing the prize; and

a moving mechanism including a prize holding part for holding the prize and the moving mechanism for moving the prize holding part based on the operation input,

wherein when a predetermined trigger is activated, the game field allows the game space to communicate with the prize take-out space, so that the prize is transferred to the prize take-out space.

[0008] (2) The game device according to the above (1), wherein the moving mechanism is provided in a vicinity of the game field.

[0009] (3) The game device according to the above (1), wherein the moving mechanism includes:

a driving part provided in a vicinity of the game

field;

a support part connected to the driving part and provided along a vertical direction; and

a movable part moving along the support part and provided so as to protrude from the support part.

[0010] (4) The game device according to the above (3), wherein the movable part extends in a horizontal direction perpendicular to the vertical direction and is provided so as to face the game field.

[0011] (5) The game device according to the above (1), wherein the prize holding part is configured to rotate about an axis parallel to a vertical direction.

[0012] (6) The game device according to the above (3), wherein the prize holding part is provided at a tip end of the movable part.

[0013] (7) The game device according to the above (1), wherein the game field is configured to form an opening by sliding movement.

[0014] (8) The game device according to the above (1), wherein the game field includes an auxiliary field provided along an outer periphery of the game field.

[0015] (9) The game device according to the above (8), wherein the auxiliary field is inclined toward the game field.

[0016] (10) The game device according to the above (1) further comprising:

a housing defining the game space and the prize take-out space; and

an input part that is provided on an upper surface

of the housing in the game space and receives an input from the prize holding part.

[0017] (11) The game device according to the above (1), wherein the predetermined trigger is the operation input to the operation part, a time when the prize holding part reaches a predetermined position, or an input to an input part by the prize holding part.

[0018] (12) A method for controlling an operation of a game device that transfers a prize located in a game space to a prize take-out space, the method comprising:
receiving an operation input from a player;
lowering a prize holding part based on the operation input;
holding the prize by the prize holding part;
raising the prize holding part;
allowing the game space to communicate with the prize take-out space when a predetermined trigger is activated; and
releasing the prize held by the prize holding part.

[0019] (13) A game program for causing a computer of a game device for transferring a prize located in a game space to a prize take-out space to function as:
operation input means for receiving an operation input from a player;
lowering means for lowering a prize holding part based on the operation input;
holding means for holding the prize by the prize holding part;
raising means for raising the prize holding part;
means for allowing the game space to communicate with the prize take-out space when a predetermined trigger is activated; and
releasing means for releasing the prize held by the

prize holding part.

[0020] Further, the above objects are also achieved by the present inventions (1) to (12) described below.

[0021] (1) A holding device for holding a prize comprising:

a main body having a first driving part; and
a rotating body provided below the main body,
wherein the main body has a slip ring part
connected to the rotating body,

wherein the rotating body has an arm unit for
holding the prize, and

wherein the rotating body is configured to rotate
about a central axis of the slip ring part by driving of
the first driving part.

[0022] (2) The holding device according to the above
(1), wherein the rotating body is configured to rotate
360° about the central axis of the slip ring part.

[0023] (3) The holding device according to the above
(1), wherein the arm unit includes a plurality of arm
units, and

wherein the plurality of arm units are arranged
around the central axis.

[0024] (4) The holding device according to the above
(1), wherein the arm unit includes:

a movable unit having a second driving part
different from the first driving part, and

an arm portion connected to the movable unit.

[0025] (5) The holding device according to the above
(4), wherein the arm portion has a lighting device
arranged along from a base end to a tip end of the arm

portion.

[0026] (6) The holding device according to the above (4), wherein the arm unit includes a plurality of arm units, and

wherein the arm portion of each of the plurality of arm units is configured to rotate independently about a base end of the arm portion by driving of the second driving part.

[0027] (7) A moving mechanism used in a game device that transfers a prize located in a game space to a prize take-out space through an opening, the moving mechanism comprising:

a driving part;

a support part connected to the driving part;

a first movable part connected to the support part and movable along the support part; and

a prize holding part provided on the first movable part,

wherein the support part is provided along a first direction perpendicular to the opening.

[0028] (8) The moving mechanism according to the above (7), wherein the moving mechanism is provided in a vicinity of the opening.

[0029] (9) The moving mechanism according to the above (7), wherein the first movable part extends in a second direction perpendicular to the first direction from the support part.

[0030] (10) The moving mechanism according to the above (7), wherein the first movable part has a receiving portion for receiving the prize holding part, and

wherein the receiving portion is positioned above

the opening.

[0031] (11) The moving mechanism according to the above (9) further comprising a second movable part connected to the support part and movable along the support part,

wherein the second movable part extends in the second direction and an opposite direction to the first movable part.

[0032] (12) The moving mechanism according to the above (7), wherein the prize holding part is the holding device according to any one of (1) to (6).

[0033] In addition, the above objects are also achieved by the present inventions (1) to (10) described below.

[0034] (1) A prize replenishment device for replenishing a prize to a game field comprising:

a base; and

a prize replenishment unit provided on the base,

wherein the prize replenishment unit includes:

a driving part for generating power;

a displacement part for providing the prize to the game field; and

a locking part for locking the displacement part and maintaining a posture of the displacement part in a state that the prize is capable of being placed on the displacement part,

wherein the displacement part is configured to replenish the prize to the game field by release of locking between the displacement part and the locking part based on the power.

[0035] (2) The prize replenishment device according

to the above (1), wherein the prize replenishment unit further includes a power applying part for applying the power to the locking part, and

wherein the power applying part applies the power to the locking part by rotating.

[0036] (3) The prize replenishment device according to the above (2), wherein the locking part rotates toward the displacement part in response to receiving the power from the power applying part, so that the locking between the displacement part and the locking part is released.

[0037] (4) The prize replenishment device according to the above (1), wherein the prize replenishment unit further includes a placement part for placing the prize, and

wherein the placement part is detachably provided on the displacement part.

[0038] (5) The prize replenishment device according to the above (1), wherein the prize replenishment unit further includes a main body including:

a first space,

a second space adjacent to the first space, and

a third space adjacent to the first space and the second space,

wherein the driving part is located in the first space,

wherein the locking part is located in the second space, and

wherein the displacement part is located in the third space.

[0039] (6) The prize replenishment device according to the above (1), wherein the base includes:

a first support member, and

a second support member positioned below and vertically spaced apart from the first support member,
wherein the prize replenishment unit includes a plurality of prize replenishment units, and
wherein the plurality of prize replenishment units are provided on the first support member and the second support member.

[0040] (7) The prize replenishment device according to the above (6), wherein each of the plurality of prize replenishment units further includes a main body for accommodating the driving part, the locking part, and the displacement part,
wherein the main body is engaged with the first support member and the second support member.

[0041] (8) The prize replenishment device according to the above (6), wherein the prize replenishment unit arranged on the second support member is configured to replenish the prize to the game field before the prize replenishment unit arranged on the first support member.

[0042] (9) The prize replenishment device according to any one of the above (1) to (8) further comprising a guide part that is provided on the base and guides the prize from the prize replenishment unit to the game field.

[0043] (10) A game device that transfers a prize located in a game space to a prize take-out space, the game device comprising:

an operation part for receiving an operation input from a player;
a game field for placing the prize;
a moving mechanism including a prize holding part for holding the prize and the moving mechanism for moving

the prize holding part based on the operation input; and
a prize replenishment device for replenishing the prize to the game field,
wherein the prize replenishment device includes a base and a prize replenishment unit provided on the base,
wherein the prize replenishment unit includes:
a driving part for generating power;
a displacement part for providing the prize to the game field; and
a locking part for locking the displacement part and maintaining a posture of the displacement part in a state that the prize is capable of being placed on the displacement part, and
wherein the displacement part is configured to replenish the prize to the game field by release of locking between the displacement part and the locking part based on the power.

EFFECT OF THE INVENTION

[0044] According to the present invention, it is possible to provide the game device that can be downsized and provide the player with a sense of excitement. According to the present invention, it is also possible to provide the method for controlling the operation of such a game device and the game program for such a game device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0045] Fig. 1 is a schematic perspective view showing a game device according to a first embodiment of the present invention.

Fig. 2 is a block diagram showing a configuration of the game device according to the first embodiment of the present invention.

Fig. 3 is an enlarged schematic perspective view showing a moving mechanism of the game device according to the first embodiment of the present invention.

Fig. 4 is a schematic side view showing the moving mechanism of the game device according to the first embodiment of the present invention.

Fig. 5 is a schematic perspective view showing a prize holding part of the game device according to the first embodiment of the present invention.

Fig. 6 is an exploded schematic perspective view showing the prize holding part of the game device according to the first embodiment of the present invention.

Fig. 7 is a schematic front view showing an internal configuration of the prize holding part of the game device according to the first embodiment of the present invention.

Fig. 8 is a schematic perspective view showing a connected state of the prize holding part of the game device according to the first embodiment of the present invention.

Fig. 9 is a schematic perspective view showing the internal configuration of the prize holding part of the game device according to the first embodiment of the present invention.

Fig. 10 is a schematic perspective view showing a game field of the game device according to the first embodiment of the present invention.

Fig. 11 is an enlarged schematic perspective view showing the game field of the game device according to the first embodiment of the present invention.

Fig. 12 is an enlarged schematic perspective view showing the game field of the game device according to the first embodiment of the present invention.

Fig. 13 is an enlarged schematic perspective view showing an auxiliary field of the game device according to the first embodiment of the present invention.

Fig. 14 is a schematic perspective view showing an input part of the game device according to the first embodiment of the present invention.

Fig. 15 is an enlarged schematic perspective view showing a prize replenishment device of the game device according to the first embodiment of the present invention.

Fig. 16 is an enlarged schematic perspective view showing a prize replenishment unit of the game device according to the first embodiment of the present invention.

Fig. 17 is an enlarged schematic perspective view showing an internal configuration of the prize replenishment unit of the game device according to the first embodiment of the present invention.

Fig. 18 is an enlarged schematic perspective view showing the internal configuration of the prize replenishment unit of the game device according to the first embodiment of the present invention.

Fig. 19 is an enlarged schematic perspective view showing the internal configuration of the prize replenishment unit of the game device according to the first embodiment of the present invention.

Fig. 20 is an enlarged schematic perspective view showing the internal configuration of the prize replenishment unit of the game device according to the first embodiment of the present invention.

Fig. 21 is a flowchart for explaining an operation of the game device according to the first embodiment of the present invention.

Fig. 22 is a flowchart for explaining an operation of the prize replenishment device of the game device according to the first embodiment of the present invention.

Fig. 23 is a view for explaining the operation of the game device according to the first embodiment of the present invention.

Fig. 24 is a view for explaining the operation of the prize replenishment device of the game device according to the first embodiment of the present invention.

Fig. 25 is a schematic perspective view showing a game field of a game device according to a third embodiment of the present invention.

Fig. 26 is a schematic perspective view showing a moving mechanism of a game device according to a fourth embodiment of the present invention.

Fig. 27 is a schematic perspective view showing a moving mechanism of a game device according to a fifth embodiment of the present invention.

Fig. 28 is a schematic perspective view showing a game field of a game device according to a sixth embodiment of the present invention.

Fig. 29 is a schematic perspective view showing a game field of a game device according to a seventh embodiment of the present invention.

Fig. 30 is a schematic perspective view showing a game device according to an eighth embodiment of the present invention.

Fig. 31 is a schematic perspective view showing a moving mechanism of a game device according to a ninth embodiment of the present invention.

Fig. 32 is a schematic perspective view showing a game field of a game device according to a tenth embodiment of the present invention.

DESCRIPTION OF THE EMBODIMENTS

[0046] Hereinafter, a game device of the present invention will be described in detail based on preferred embodiments shown in the accompanying drawings. For purposes of explanation, the upper side in each figure will be referred to as "upper", the lower side thereof will be referred to as "lower", the left side thereof will be referred to as "left", the right side thereof will be referred to as "right", the near side of the page will be referred to as "front", and the rear side of the page will be referred to as "rear".

[0047] <<First Embodiment>>

1. Game Device

Fig. 1 is a schematic perspective view showing a game device according to a first embodiment of the present invention. Fig. 2 is a block diagram showing a configuration of the game device according to the first embodiment of the present invention. As shown in Fig. 1, the game device 1 of the present invention is a game device for two players in which two players can play simultaneously. However, the game device 1 may be a game device for one player.

[0048] The game device 1 of the present invention includes a prize acquisition game device 1A and a prize acquisition game device 1B which are provided adjacent to each other. The number of the prize acquisition game devices 1A, 1B is not particularly limited, and may be three or more. Each of the prize acquisition game devices 1A and 1B is a game device that transfers a prize from a game space 215 to a prize take-out space 223. Hereinafter, the configuration of each part of the prize acquisition game devices 1A and 1B will be described. Since the prize acquisition game devices 1A and 1B have the same configuration, the configuration of each part of the prize acquisition game device 1A will be representatively described.

[0049] The prize acquisition game device 1A (hereinafter also simply referred to as "the game device 1") includes a housing 2, an operation part 3, a moving mechanism 4, a game field 5, a prize replenishment device 6, an input part 7, a storage part 8, and a control part 9. The configuration of each part will be described below.

[0050] <Housing>

The housing 2 is formed into a box shape. Each component of the game device 1 is placed on or accommodated in the housing 2. A shape of the housing 2 is not particularly limited and can be changed to, for example, a triangular prismatic shape, an elliptical cylinder shape, or a cylindrical shape. The housing 2 includes an upper housing 21 and a lower housing 22.

[0051] (Upper Housing)

The upper housing 21 is formed in a substantially prismatic shape. Since a front surface and side surfaces of the upper housing 21 are appropriately formed of a transparent member, an interior of the game device 1 can be visually recognized from outside. A space defined by the upper housing 21 serves as a game space 215.

[0052] (Lower Housing)

The lower housing 22 is connected at an upper portion thereof to the upper housing 21. The lower housing 22 is used to accommodate the storage part 8 and the control part 9. Further, the lower housing 22 includes a prize outlet 221, a prize take-out plate 222, and a prize take-out space 223. A space defined by the lower housing 22 serves as the prize take-out space 223.

[0053] The prize outlet 221 is provided on a front surface of the lower housing 22. The prize outlet 221 allows the prize to be taken out from the prize take-out space 223, and is formed into a rectangular shape. The prize take-out plate 222 is provided at an upper portion of the prize outlet 221 so as to close the prize outlet 221. The prize take-out plate 222 is formed into a rectangular shape corresponding to the shape of the prize outlet 221. The prize take-out space 223 has a function of holding a dropped prize and communicates with the game space 215 via the game field 5.

[0054] <Operation Part>

The operation part 3 has a function of receiving input information from a player. As shown in Fig. 1, the operation part 3 includes a cylindrical push button and a joystick. The cylindrical push button and the joystick are provided on an upper portion of the front surface of the lower housing 22. When the push button is pressed, the moving mechanism 4 is driven, thereby causing the prize holding part 46 to move vertically downward. When the joystick is operated, the prize holding part 46 rotates about a vertical axis (the Z-axis).

[0055] The number of the push buttons is not particularly limited, and may be two or more. The joystick may be omitted. In this case, in a standby state before a start of a game, the prize holding part 46 continuously rotates. When the push button is pressed, rotation of the prize holding part 46 is configured to stop. The operation part 3 may alternatively include, depending on a configuration of the game device 1, a rotary button, a dial, or a display screen configured from a touch panel.

[0056] <Moving Mechanism>

Fig. 3 is an enlarged schematic perspective view showing a moving mechanism of the game device according to the first embodiment of the present invention. Fig. 4 is a schematic side view showing the moving mechanism of the game device according to the first embodiment of the present invention.

[0057] Unlike a conventional crane game device, the moving mechanism 4 is connected to a side portion of the prize holding part 46 and has a function of moving the

prize holding part 46 in a vertical direction (the Z-axis direction). Thus, the moving mechanism 4 is erected from an upper portion of the lower housing 22 and is formed into an elongated shape. A position at which the moving mechanism 4 is placed is not particularly limited, and the moving mechanism 4 may be provided on a rear side or a lateral side of the upper housing 21. In order not to interfere with progress of the game, the moving mechanism 4 is preferably provided outside the game field 5. In the present embodiment, the moving mechanism 4 is provided near a center of the game device 1, specifically between the prize acquisition game device 1A and the prize acquisition game device 1B and adjacent to the game field 5.

[0058] Since the game device 1 includes two prize acquisition game devices 1A and 1B, the moving mechanism 4 includes a first set for the prize acquisition game device 1A and a second set for the prize acquisition game device 1B. Thus, the two prize acquisition game devices 1A and 1B can be operated by one moving mechanism 4, thereby making it possible to reduce an overall size of the game device 1. Since the first set and the second set of the moving mechanism 4 have the same configuration, the first set for the prize acquisition game device 1A will be described below. The first set includes a driving part 41, a shaft 42, a stopping mechanism 43, a guide rail 44, a movable part 45, a prize holding part 46, a detection device 47, and wiring 48. The term "support part" may refer to the shaft 42 alone, or to the shaft 42 in combination with the guide rail 44.

[0059] (Driving Part)

The driving part 41 functions as a power source for moving the movable part 45. The driving part 41 is

provided at the upper portion of the lower housing 22 between the prize acquisition game device 1A and the prize acquisition game device 1B. The driving part 41 is not particularly limited as long as it is capable of rotating the shaft 42 or moving the movable part 45. In the present embodiment, the driving part 41 includes a motor 411 and a main body 412 that accommodates the motor 411.

[0060] (Shaft)

The shaft 42 is connected to the driving part 41. The shaft 42 is erected from a rotational shaft of the motor 411 and extends vertically upward. A shape of the shaft 42 is not particularly limited, and may be, for example, a rod shape, a prismatic shape, an elongated shape, or a plate shape. The shaft 42 has screw-like grooves or helical ridges on a surface of the shaft 42. These are angled at a predetermined angle with respect to the Z-axis. Thus, rotation of the shaft 42 allows the movable part 45 to move upward and downward in the Z-axis direction. Thus, the shaft 42 functions to move the movable part 45.

[0061] (Stopping Mechanism)

The stopping mechanism 43 functions as a braking device for stopping the movement of the movable part 45. The stopping mechanism 43 is provided at a tip end of the shaft 42. Thus, the stopping mechanism 43 is provided above the housing 2 between the prize acquisition game device 1A and the prize acquisition game device 1B. The configuration of the stopping mechanism 43 is not particularly limited as long as it can stop the rotation of the shaft 42 or the movement of the movable part 45. In the present embodiment, the stopping mechanism 43 includes a braking device 431 and a plate 432 to which the braking device 431 is attached. The

plate 432 of the stopping mechanism 43 faces the main body 412 of the driving part 41.

[0062] (Guide Rail)

The guide rail 44 functions to guide the movement of the movable part 45. The guide rail 44 is erected from the main body 412 of the driving part 41 and extends upward to the plate 432 of the stopping mechanism 43 along the Z-axis direction. The guide rail 44 is provided parallel to the shaft 42 and on a rear side of the shaft 42 in the game space 215, namely, being spaced apart from the shaft 42 in the Y-axis direction. A shape of the guide rail 44 is not particularly limited, and may be, for example, a prismatic shape, a rod shape, an elongated shape, or a cylindrical shape. In the present embodiment, the guide rail 44 is formed into a prismatic shape. With this configuration, the movable part 45 reliably engages with the guide rail 44, thereby allowing the movable part 45 to be reliably guided in the vertical direction.

[0063] (Movable Part)

The movable part 45 functions to move the prize holding part 46. The movable part 45 is provided on the shaft 42 so as to protrude from the shaft 42 in a horizontal (the X-axis) direction of the game device 1. Further, the movable part 45 extends in the X-axis direction to a position directly above the game field 5. The movable part 45 includes a base portion 451, a receiving portion 452, and a connecting portion 453 that connects the base portion 451 and the receiving portion 452.

[0064] The base portion 451 is connected to the shaft 42. The base portion 451 has a through-hole through which the shaft 42 extends and a notch engaging with the

guide rail 44. The through-hole and the notch are provided adjacent to each other along a horizontal (the Y-axis) direction. With this configuration, the base portion 451 can be reliably engaged with the shaft 42 and the guide rail 44, so that the movable part 45 can be moved stably.

[0065] The receiving portion 452 functions to receive the prize holding part 46. A shape of the receiving portion 452 is not particularly limited and may be, for example, a box shape, a plate shape, or a substantially U-shape in vertical cross section. In the present embodiment, the receiving portion 452 is formed into a box shape without a bottom surface. A predetermined member of the prize holding part 46 is arranged on an upper surface of the receiving portion 452. The receiving portion 452 is provided at a tip end of the connecting portion 453 and faces the game field 5. With this configuration, the prize holding part 46 can be positioned to face the game field 5, thereby allowing the prize holding part 46 to reliably hold the prize on the game field 5. The receiving portion 452 is connected to the prize holding part 46.

[0066] The connecting portion 453 functions to connect the base portion 451 and the receiving portion 452. A shape of the connecting portion 453 is not particularly limited as long as the connecting portion 453 can withstand the weight of the prize holding part 46. The connecting portion 453 may be formed into, for example, a rod shape, a box shape, or a rectangular shape. A length of the connecting portion 453 is not particularly limited, but is preferably a length such that the receiving portion 452 faces the game field 5. In other words, it is preferred that the length of the connecting portion 453 is set such that an imaginary

line connecting the vicinity of a center of the prize holding part 46 and the vicinity of a center of the game field 5 is parallel to the Z-axis. With this configuration, the prize holding part 46 can reliably hold the prize on the game field 5.

[0067] (Prize Holding Part)

The prize holding part (holding device) 46 functions to hold the prize. The prize holding part 46 is connected to the receiving portion 452 and is provided at a tip end of the movable part 45. A shape of the prize holding part 46 is not particularly limited and may be, for example, a spherical shape, a prismatic shape, or a bale shape. Details of the prize holding part 46 will be described later.

[0068] (Detection Device)

The detection device 47 functions to define a range of a movement of the prize holding part 46. The detection device 47 includes a first detection device group 471 and a second detection device group 472 spaced apart from each other in the Z-axis direction. The first detection device group 471 is positioned on the lower side of the moving mechanism 4. The second detection device group 472 is positioned on the upper side of the moving mechanism 4.

[0069] The first detection device group 471 includes a lower limit sensor 471a for a small arm, a lower limit sensor 471b for a large arm, and a first mounting portion 471c on which the lower limit sensors 471a and 471b are mounted. The first mounting portion 471c is provided between the shaft 42 of the first set and the shaft 42 of the second set, and erected vertically upward from the main body 412 of the driving part 41. The two lower limit sensors 471a and 471b are provided on the first

mounting portion 471c so as to be spaced apart from each other by a predetermined distance along the Z-axis. Further, the two lower limit sensors 471a and 471b are provided so as to protrude from the first mounting portion 471c in the X-axis direction and face each shaft 42. With this configuration, the movable part 45 connected to the shaft 42 can be detected by the lower limit sensors 471a and 471b, thereby preventing an arm portion 405 of the prize holding part 46 from colliding with the game field 5.

[0070] The lower limit sensor 471a for the small arm detects a lower limit of the movement of the prize holding part 46 having a small-sized arm. The lower limit sensor 471b for a large arm detects a lower limit to which the prize holding part 46 having a large-sized arm is movable. Since an arm portion for the small arm is small, the lower limit sensor 471a for the small arm is provided below the lower limit sensor 471b for the large arm. The predetermined distance varies depending on a size of the prize holding part 46 and is preferably about 5 to 10 cm.

[0071] On the other hand, the second detection device group 472 includes a home position sensor 472a, an upper limit sensor 472b, and a second mounting portion 472c on which the home position sensor 472a and the upper limit sensor 472b are mounted. The second mounting portion 472c is provided between the shaft 42 of the first set and the shaft 42 of the second set, and erected vertically downward from the plate 432 of the stopping mechanism 43. The home position sensor 472a and the upper limit sensor 472b are provided on the second mounting portion 472c so as to be spaced apart from each other by a predetermined distance along the Z-axis direction. Further, the home position sensor 472a and

the upper limit sensor 472b are provided so as to protrude from the second mounting portion 472c in the X-axis direction and face each shaft 42. Thus, the movable part 45 connected to the shaft 42 can be detected, thereby preventing the arm portion 405 of the prize holding part 46 from colliding with a ceiling of the upper housing 21 or the input part 7. In addition, the prize holding part 46 can be reliably positioned at a home position.

[0072] The home position sensor 472a detects a position (the home position) at which the prize holding part 46 should be located when the game is started. The upper limit sensor 472b detects an upper limit to which the prize holding part 46 is movable. The home position sensor 472a is provided below the upper limit sensor 472b. The predetermined distance varies depending on the size of the prize holding part 46 and is preferably about 5 to 10 cm.

[0073] Although the detection device 47 includes the four sensors described above, the number of the sensors is not limited thereto. The number of the lower limit sensors 471a and 471b may be one, and the number of the lower limit sensors 471a and 471b and the upper limit sensor 472b may be three or more. The detection device 47 may be omitted. The number of the detection device groups is not limited and may be one. In this case, an elongated sensor may be provided so as to extend along the shaft 42. With this configuration, since the movement of the movable part 45 can constantly be monitored, the movement of the prize holding part 46 can be detected in real time.

[0074] As described above, the moving mechanism 4 is provided between the prize acquisition game device 1A

and the prize acquisition game device 1B. The first set and the second set of the moving mechanism 4 are arranged adjacent to each other along the X-axis direction of the game device 1. Thus, the movable part 45 of the first set extends in the X-axis direction toward the prize acquisition game device 1A. On the other hand, the movable part 45 of the second set extends in the X-axis direction toward the prize acquisition game device 1B. That is, the movable part 45 of the first set and the movable part 45 of the second set protrude in opposite directions from each other. Thus, the one moving mechanism 4 can move the prize holding parts 46 used in the two game devices 1, that is, the prize acquisition game device 1A and the prize acquisition game device 1B, upward and downward.

[0075] (Wiring)

The wiring 48 functions to transmit power for rotating the prize holding part 46 and to transmit power for opening and closing the arm portion 405 of the prize holding part 46. A base end of the wiring 48 is connected to a power source (not shown). On the other hand, a tip end of the wiring 48 is connected to the connecting portion 453 of the movable part 45. With this configuration, electric power is supplied to a mechanism of the prize holding part 46 through the movable part 45. Thus, as described later, the prize holding part 46 can be electrically rotated, driven, and can emit light. A position of the wiring 48 is not particularly limited as long as the power can be supplied to the prize holding part 46. The wiring 48 may be accommodated in the lower housing 22.

[0076] As described above, unlike the conventional crane game device, the game device 1 of the present invention has no structure in an upper space of the game

space 215, and thus the prize holding part 46 can be moved upward and downward to a vicinity of the ceiling of the housing 2. Thus, it is possible to turn a player's eyes over a wide range from top to bottom of the game space 215, thereby enhancing the player's motivation to play. Further, since the moving mechanism 4 does not move the prize holding part 46 in the X-axis and Y-axis directions, the game device 1 can be downsized.

[0077] <Prize Holding Part>

Next, the prize holding part 46 will be described in detail. Fig. 5 is a schematic perspective view showing a prize holding part of the game device according to the first embodiment of the present invention. Fig. 6 is an exploded schematic perspective view showing the prize holding part of the game device according to the first embodiment of the present invention. Fig. 7 is a schematic front view showing an internal configuration of the prize holding part of the game device according to the first embodiment of the present invention. Fig. 8 is a schematic perspective view showing a connected state of the prize holding part of the game device according to the first embodiment of the present invention. Fig. 9 is a schematic perspective view showing the internal configuration of the prize holding part of the game device according to the first embodiment of the present invention. Fig. 5 shows a state in which arm portions are open (an open state), and Fig. 7 shows a state in which one of the arm portions is closed (a closed state).

[0078] As shown in Fig. 5, the prize holding part 46 includes a main body 49 and a rotating body 40 attached to a lower end of the main body 49. Although not shown in Fig. 5, the prize holding part 46 further includes

sensor devices as will be described later. Each component will be described in detail below.

[0079] [Main Body]

A side portion of the main body 49 is connected to the movable part 45 of the moving mechanism 4. That is, the receiving portion 452 of the movable part 45 is inserted from the side portion of the main body 49 and connected to the main body 49. Thus, when the movable part 45 moves in the Z-axis direction, the prize holding part 46 also moves in the Z-axis direction. Unlike the conventional crane game device, the main body 49 has no structure on an upper portion of the main body 49. With this configuration, the prize holding part 46 is visually emphasized in appearance, thereby providing a visual effect to the player. In addition, the upper space of the game space 215 can be effectively utilized. Such a main body 49 includes a slip ring part 491, a motor 492, and a cover member 493 that covers the slip ring part 491 and the motor 492.

[0080] (Slip Ring Part)

The slip ring part 491 includes a pulley 4911, a slip ring 4912, and a shaft 4913. The slip ring 4912 includes an inner cylindrical portion (not shown) fixed to the shaft 4913 and an outer cylindrical portion (not shown) fixed to the receiving portion 452 of the movable part 45. When the pulley 4911 rotates, the shaft 4913 and the inner cylindrical portion of the slip ring 4912 rotate together. The inner cylindrical portion of the slip ring 4912, which is rotating, slides on the outer cylindrical portion. As a result, electric power and electrical signals can be transmitted to the rotating body 40. As shown in Fig. 7, the shaft 4913 serves as a rotation shaft R of the rotating body 40.

[0081] Since the shaft 4913 serves as the rotation shaft R of the rotating body 40, the slip ring 4912 is arranged at the center of the main body 49. The slip ring 4912 is provided on an upper surface of the receiving portion 452 at a side of a tip end of the receiving portion 452. By using the slip ring 4912, the rotating body 40 can be smoothly rotated without entangling wiring or the like. The slip ring 4912 is not particularly limited, and commercially available slip rings may be used.

[0082] (Motor)

The motor (driving part) 492 functions to rotate the rotating body 40. Specifically, the motor 492 rotates the rotating body 40 by means of a belt (not shown) connecting a pulley at a tip end of the motor 492 and the pulley 4911. Although a configuration of the motor 492 is not particularly limited, the motor 492 is configured as a rotary motor in the present embodiment. The motor 492 is provided on the upper surface of the receiving portion 452 at a side of a base end of the receiving portion 452. That is, the motor 492 and the slip ring part 491 are arranged on the receiving portion 452 in that order from the base end toward the tip end of the receiving portion 452. However, the arrangement of the motor 492 and the slip ring 4912 is not limited thereto. The slip ring 4912 and the motor 492 may be arranged on the receiving portion 452 in that order from the base end toward the tip end of the receiving portion 452.

[0083] (Cover Member)

The cover member 493 is not particularly limited as long as it can cover the slip ring 4912 and the motor 492. In the present embodiment, the cover member 493 is formed into a substantially hemispherical shape. The

cover member 493 may be integrally formed with a cover member 403 of the rotating body 40 described later.

[0084] [Rotating Body]

The rotating body 40 is provided vertically below the main body 49. The rotating body 40 is configured to rotate when the motor 492 is driven. That is, the rotating body 40 is configured to rotate 360° in a horizontal direction about the rotation shaft R as a central axis. With this configuration, even if the prize is placed in any postures on the game field 5, the arm portion 405 can be positioned at an appropriate angle relative to the prize. A rotation direction of the rotating body 40 is not particularly limited, and may be clockwise or counterclockwise. This can be arbitrarily set by the control part 9. The rotating body 40 includes a flange 401, arm units 402 provided on the flange 401, and the cover member 403 that accommodates the flange 401 and the arm units 402.

[0085] (Flange)

The flange 401 is formed into a disk shape and is positioned at an upper portion of the rotating body 40. Thus, the flange 401 functions to partition the rotating body 40 and the main body 49. The flange 401 is connected at a center thereof to the shaft 4913 of the slip ring 4912. With this configuration, the rotating body 40 is configured to rotate by rotation of the shaft 4913.

[0086] (Arm unit)

The arm units 402 are arranged about the rotation shaft R with centering the rotation shaft R. Although the number of the arm units 402 is not particularly limited, in the present embodiment, two arm units 402 are provided. The two arm units 402 are provided

opposite each other with respect to the rotation shaft R. With this configuration, the arm portions 405 described later are aligned in a direction perpendicular to the rotation shaft R, thereby allowing the arm portions 405 to effectively hold the prize. If a plurality of arm units 402 are provided, the rotating body 40 includes a plurality of arm portions 405, thereby enabling the prize to be held more reliably. Each of the arm units 402 includes a movable unit 404 and an arm portion 405 connected to the movable unit 404.

[0087] The movable unit 404 is provided directly below the flange 401 and rotates together with the flange 401. The movable unit 404 functions to move the arm portion 405. The movable unit 404 includes a driving motor (driving part) 4041, a rotating means 4042, a cam 4043, a fixing shaft 4044, a connecting means 4045, and a biasing means 4046.

[0088] The driving motor 4041 is configured to apply a rotational force to the rotating means 4042. Thus, a shaft of the driving motor 4041 is connected to the rotating means 4042. When the driving motor 4041 is driven, the shaft rotates, thereby causing the rotating means 4042 to rotate. The rotating means 4042 is in contact with the cam 4043. The cam 4043 is connected to the connecting means 4045 by the fixing shaft 4044. The cam 4043 is formed into a fan shape. Thus, the arc of the cam 4043 or a central angle defining the arc corresponds to a rotation angle of the arm portion 405. When the rotating means 4042 rotates, the cam 4043 also rotates about the fixing shaft 4044 through an angle corresponding to an arc length of the cam 4043.

[0089] The connecting means 4045 functions to receive the arm portion 405, that is, it functions as a

socket. Thus, the connecting means 4045 is formed into a shape corresponding to a shape of a base end of the arm portion 405. With this configuration, the arm portion 405 can be easily attached and detached. Since the connecting means 4045 is fixed together with the cam 4043 by the fixing shaft 4044, the rotation of the cam 4043 causes the connecting means 4045 to rotate, thereby causing the arm portion 405 to rotate about the fixing shaft 4044. Alternatively, the base end of the arm portion 405 may be directly fixed to the fixing shaft 4044 without providing the connecting means 4045.

[0090] The connecting means 4045 is configured to allow the arm portion 405 to be attached thereto and detached therefrom. Thus, the connecting means 4045 may be provided with a switch for determining whether the arm portion 405 has been attached or detached, and any type (kind) of the arm portion 405 has been attached or detached. The switch is configured to be in an ON state when the arm portion 405 is attached to the connecting means 4045. Conversely, the switch is configured to be in an OFF state when the arm portion 405 is removed from the connecting means 4045. Thus, the switch is provided inside the connecting means 4045. With this configuration, the control part 9 or a drive control part described later can identify the presence or absence of the arm portion 405, thereby allowing the arm units 402 to be individually controlled.

[0091] As shown in Fig. 7, the biasing means 4046 is provided on an outer surface of the movable unit 404 and the connecting means 4045. Thus, the biasing means 4046 biases the connecting means 4045 relative to the movable unit 404, thereby biasing the arm portion 405 toward the open state.

[0092] The arm portion 405 is connected to the connecting means 4045 of the movable unit 404. With this configuration, the arm portion 405 is detachably attached to the connecting means 4045. A shape of the arm portion 405 is not particularly limited, and may be, for example, L-shaped, V-shaped, U-shaped, or J-shaped. Among these, the shape of the arm portion 405 is preferably L-shaped. With this configuration, a tip end of the arm portion 405 can enter below the prize so as to hold the prize, thereby increasing a likelihood of holding the prize.

[0093] The arm portion 405 may have a lighting device (not shown) at an outer side of the arm portion 405 and inside the arm portion 405. A position of the lighting device is not particularly limited, and the lighting device may be provided at an inner side of the arm portion 405 and inside the arm portion 405, or on a surface of the arm portion 405. The number of the lighting devices is also not limited, and may be one or two or more. When a plurality of lighting devices are used, the plurality of lighting devices are preferably arranged continuously from the base end toward the tip end of the arm portion 405. With this configuration, in addition to decorative lighting effects and promotional effects by the housing 2, decorative lighting effects and promotional effects by the prize holding part 46 can also be achieved.

[0094] The plurality of lighting devices may be intermittently provided inside the arm portion 405, or may be coupled so as to form a single elongated lighting device. The plurality of lighting devices may include lighting devices having different emission colors, or the lighting devices having different emission colors may be arranged alternately. Further, the lighting

devices may be grouped by emission color, the groups of the respective emission colors may be provided alternately. Such lighting devices may be constituted from, for example, LEDs. With this configuration, the lighting devices can be turned on or blink during the gameplay or the standby state of the game, thereby providing the decorative lighting effects and the promotional effects by the arm portion 405.

[0095] As described above, the main body 49 and the rotating body 40 are constituted by connecting the shaft 4913 and the flange 401. Wiring from the slip ring 4912 is connected to the movable unit 404 via the flange 401. Thus, electric power is supplied to the movable unit 404, thereby enabling the movable unit 404 to move and the lighting device to emit light.

[0096] The rotating body 40 rotates when the motor 492 is driven. At this time, since the wiring is connected to the movable unit 404 through a through-hole (not shown) of the flange 401, there is no risk that the wiring is wound around another member. In this manner, the rotating body 40 continues to rotate as long as the motor 492 is being driven. Thus, even without a moving mechanism that moves along the X-Y axes and is mounted on the conventional crane game device, the arm portion 405 can be positioned at an appropriate angle with respect to the Z-axis according to an arrangement state of the prize.

[0097] Further, since the prize holding part 46 includes the slip ring part 491, electric power can be supplied to the rotating body 40 without requiring complicated mechanical components as in conventional prize holding parts. Thus, since the lighting device of the arm portion 405 can be illuminated, the arm portion

405 can provide the decorative lighting effects. In addition, since the arm portion 405 can be rotated by the movable unit 404, the number of the mechanical components can be reduced, thereby providing the prize holding part 46 with a simplified configuration.

[0098] Further, since the slip ring part 491 is connected to the control part 9, the control part 9 can collectively manage, for example, an emission state of the lighting device, a holding force of each arm portion 405, and a driving state of each movable unit 404. With this configuration, without requiring a complicated mechanical configuration, it is possible to easily set the holding force, the emission state, and the driving state.

[0099] Instead of control by the control part 9, the main body 49 and/or the rotating body 40 may include a drive control part. The drive control part is provided on the upper surface of the receiving portion 452 and/or in the vicinity of the arm unit 402. The drive control part controls driving of the slip ring part 491 and the motor 492. Further, the drive control part can manage the emission state of the lighting device, the rotation of each arm portion 405, the holding force of each arm portion 405, the driving state of each movable unit 404, and the like. With this configuration, apart from the control part 9, various types of data relating to the arm portion 405, the slip ring part 491, the motor 492, and the like can be obtained, and managed, and various settings therefor can be made.

[0100] (Cover Member)

The cover member 403 has a function of accommodating the flange 401 and the arm unit 402. A shape of the cover member 403 is not particularly limited

as long as it can accommodate these components. For example, the cover member 403 may have a cylindrical shape, a prismatic shape, a truncated conical shape, or the like. The cover member 403 may be integrally formed with the cover member 493 of the main body 49.

[0101] [Sensor Devices]

The prize holding part 46 includes a first sensor device (not shown) and a second sensor device different from the first sensor device. The first sensor device is provided at a lower portion of the rotating body 40 shown in Figs. 5 to 7 (that is, a stomach portion of the prize holding part 46). The first sensor device detects whether the arm portion 405 is holding the prize. Thus, the first sensor device may include various types of sensors such as a pressure-sensitive sensor, a constant-pressure sensor, an infrared sensor, and a photoelectric sensor.

[0102] The second sensor device is positioned between the shaft 4913 and the flange 401. The second sensor device detects whether the arm portion 405 has come into contact with the prize. When the arm portion 405 has come into contact with the prize, the flange 401 is configured so as to tilt relative to the rotation shaft R. Thus, the second sensor device recognizes contact by means of the pressure-sensitive sensor, a pressure sensor, or the like. When the second sensor device detects contact between the arm portion 405 and the prize, lowering of the prize holding part 46 is stopped.

[0103] Unlike the prize holding part of the conventional crane game device, the prize holding part 46 as described above is supplied with electric power. Thus, the prize holding part 46 includes not only a

mechanical configuration but also an electrical configuration. Accordingly, the structure of the prize holding part 46 can be simplified as compared with the conventional prize holding part. Further, various functions of the prize holding part 46 can be managed by the control part 9, and the prize holding part 46 itself can provide the decorative lighting effect. In addition, the rotating body 40 may constantly rotate before the start of the game, or may rotate in response to an input to the operation part 3 from the player. In this manner, the rotation of the rotating body 40 can enhance the entertainment property of the game.

[0104] <Game Field>

Fig. 10 is a schematic perspective view showing a game field of the game device according to the first embodiment of the present invention. Fig. 11 is an enlarged schematic perspective view showing the game field of the game device according to the first embodiment of the present invention. Fig. 12 is an enlarged schematic perspective view showing the game field of the game device according to the first embodiment of the present invention. Fig. 13 is an enlarged schematic perspective view showing an auxiliary field of the game device according to the first embodiment of the present invention. Fig. 11 shows a state in which the game field is closed (a closed state), and Fig. 12 shows a state in which the game field is open (an open state).

[0105] The game field 5 functions as a portion on which the prize used in the game is placed. The game field 5 is provided between the game space 215 and the prize take-out space 223 in the housing 2. With this configuration, the game space 215 communicates with the prize take-out space 223 through the game field 5. The

game field 5 is configured such that, when a predetermined trigger is activated, the game space 215 communicates with the prize take-out space 223 and the opening 216 is formed. As shown in Figs. 10 and 13, the game field 5 includes a shutter mechanism 51, an auxiliary field 52, and sensor devices 53.

[0106] [Shutter Mechanism]

The shutter mechanism 51 is provided on an upper surface or in the upper portion of the lower housing 22. For example, two arrangement regions 225 are formed in the upper portion inside the lower housing 22 along both side surfaces of the lower housing 22, and protrude in the X-axis direction. The shutter mechanism 51 may be arranged in the arrangement regions 225. The shutter mechanism 51 can support or drop the prize by opening and closing. That is, when the shutter mechanism 51 opens, the opening 216 is formed in the game field 5 (Fig. 12). A size of the opening 216 corresponds to a cross-sectional size of the housing 2. A shape of the opening 216 corresponds to a shape of the shutter mechanism 51. As shown in Fig. 11, the shutter mechanism 51 includes a driving part 511, a movable part 512, and a shutter part (placement part) 513. The driving part 511 and the movable part 512 may collectively be referred to as a driving mechanism.

[0107] (Driving Part)

The driving part 511 functions to move the movable part 512 and is constituted of a motor. The position of the driving part 511 is not particularly limited as long as it does not affect operation of the respective components of the shutter mechanism 51. In the present embodiment, the driving part 511 is provided at a front portion of a side portion of the shutter mechanism 51. The driving part 511 is driven in accordance with an

instruction from the control part 9 when the prize holding part 46 holding the prize reaches the home position. Alternatively, the driving part 511 may be driven in response to the operation of the operation part 3 by the player.

[0108] (Movable Part)

The movable part 512 functions to open and close the shutter part 513. Thus, the movable part 512 is formed into an elongated shape along a side portion of the shutter part 513. Further, since the movable part 512 is moved by the driving part 511, the movable part 512 is provided adjacent to the driving part 511. As the movable part 512 moves, the shutter part 513 moves, thereby forming the opening 216. Such a movable part 512 includes a pair of pulleys 5121, an annular belt 5122, a moving part 5123, and a guide rail 5124.

[0109] One pulley 5121a of the pair of pulleys 5121 is connected to a rotation shaft of the motor so as to rotate. The other pulley 5121b is spaced apart from the one pulley 5121a by a predetermined distance. The predetermined distance is set longer than a length of the shutter part 513. The belt 5122 is wound around the pair of pulleys 5121, and thus moves around the pair of pulleys 5121.

[0110] The moving part 5123 functions to move the shutter part 513. One side surface of the moving part 5123 is attached to an upper portion of the belt 5122. With this configuration, rotation of the belt 5122 causes the moving part 5123 to move linearly between the pair of pulleys 5121. Further, the other side surface of the moving part 5123 is attached to the shutter part 513. With this configuration, linear movement of the moving part 5123 causes the shutter part 513 to move within a

movable range of the moving part 5123.

[0111] A shape of the moving part 5123 is not particularly limited as long as the moving part 5123 moves along the belt 5122, and may be, for example, cylindrical or prismatic. A length of the moving part 5123 is also not particularly limited. In order to open and close the shutter part 513 stably and reliably, the length of the moving part 5123 is preferably about 5 to 15 cm. The moving part 5123 includes a through-hole for receiving the guide rail 5124.

[0112] The guide rail 5124 functions to guide movement of the moving part 5123. Thus, the guide rail 5124 is formed into an elongated rod shape. The guide rail 5124 is provided between the belt 5122 and the shutter part 513 along a movement direction (the Y-axis direction) of the moving part 5123. The guide rail 5124 passes through and engages with the moving part 5123. With this configuration, the movement of the moving part 5123 can be reliably guided.

[0113] (Shutter Part)

The shutter part 513 functions as a support body on which the prize is placed. The shutter part 513 is formed into a size corresponding to the cross-sectional size of the housing 2 and is arranged in the arrangement regions 225. Further, the shutter part 513 is connected to the moving part 5123 at one end of a side portion thereof. With this configuration, as the moving part 5123 moves, the shutter part 513 moves. At this time, no arrangement regions 225 are present on a rear side of the lower housing 22. That is, the arrangement regions 225 are formed along the Y-axis direction from a front surface of the lower housing 22 to a position short of a rear surface of the lower housing 22. Thus, when the

shutter part 513 moves in the Y-axis direction and reaches a portion where the arrangement regions 225 are not present, the shutter part 513 moves in the Z-axis direction (Fig. 12). Thus, a part of the shutter part 513 hangs downward in the Z-axis direction, thereby allowing space to be effectively utilized and the housing 2 to be downsized.

[0114] As the shutter part 513 moves to open, the opening 216 is formed. Thus, the game space 215 communicates with the prize take-out space 223. The prize placed on the shutter part 513 then falls into the prize take-out space 223. Since the shutter part 513 is opened and closed by the movable part 512, the shutter part 513 is provided adjacent to the movable part 512. Such a shutter part 513 includes a plurality of elongated panels 5131 and wheels 5132 provided on the panels 5131.

[0115] The plurality of elongated panels 5131 are arranged so as to be perpendicular to the moving part 5123. Further, the plurality of elongated panels 5131 are continuously arranged in the Y-axis direction along the guide rail 5124. Thus, since there is no gap between the plurality of panels 5131, the prize can be reliably placed thereon. A width (a length in the Y-axis direction) of each panel 5131 is preferably about 3 to 10 cm. A length (a length in the X-axis direction) of each panel 5131 corresponds to the size of the opening 216 and is preferably about 30 to 100 cm. With such dimensions, the plurality of panels 5131 can move smoothly.

[0116] The number of the panels 5131 is not particularly limited, but is preferably about 5 to 15. Since the shutter part 513 flexibly bends, opening and closing of the shutter part 513 can be smoothly

performed. Further, since the shutter part 513 can be smoothly moved downward in the Z-axis direction, the space within the housing 2 can be effectively utilized, thereby enabling the housing 2 to be downsized.

[0117] The plurality of panels 5131 may be arranged so as to partially overlap with each other or may be arranged intermittently at predetermined intervals. When the plurality of panels 5131 are arranged so as to partially overlap with each other, the shutter part 513 can bend more flexibly. When the plurality of panels 5131 are arranged intermittently, the opening 216 is exposed. Thus, even if the arm portion 405 fails to hold the prize, the contact between the arm portion 405 and the prize can give the player an impression that the prize has fallen into the prize take-out space 223. The interval between adjacent panels 5131 may correspond to a width of one panel 5131 or a width corresponding to two or more panels 5131.

[0118] Since it is sufficient that the prize can be arranged on the shutter part 513, the shutter part 513 may be constituted from a small number of panels 5131, for example, three or four panels. The plurality of panels 5131 may be rod-shaped members or plate-shaped members. Further, the plurality of panels 5131 may not be provided entirely across the opening 216, and may be formed shorter than the opening 216 so that the opening 216 is partially exposed. Furthermore, the plurality of panels 5131 may include a first group arranged so as to extend over the opening 216 from a side of the movable part 512, and a second group arranged so as to extend over the opening 216 from a side opposite to the movable part 512. With this configuration, since an area of the opening 216 exposed from the shutter part 513 increases, it is possible to provide the player with an incentive

to play the game.

[0119] The wheels 5132 are provided at both end portions of the plurality of panels 5131 so as to slightly protrude in the Z-axis direction. Thus, the wheels 5132 constitute a first wheel row provided at one end of the plurality of panels 5131 and a second wheel row provided at the other end thereof. The first wheel row is arranged on the arrangement region (a first arrangement region) 225 provided on the side of the movable part 512. The second wheel row is arranged on the arrangement region (a second arrangement region) 225 provided on an opposite side to the movable part 512. The wheels 5132 are aligned along the movement direction of the moving part 5123.

[0120] Thus, the movement of the moving part 5123 allows the wheels 5132 to smoothly move on the arrangement region 225, thereby smoothly opening and closing the shutter part 513. The number of the wheels 5132 is not particularly limited. Since the moving part 5123 is connected to the one end of the shutter part 513, the number of the wheels in the first wheel row may be smaller than the number of the wheels in the second wheel row. The shutter part 513 is placed in the housing 2 such that a left side in Figs. 11 and 12 is located on a front side of the game device 1.

[0121] [Auxiliary Field]

The auxiliary field 52 functions to guide the prize toward a center of the game field 5. The auxiliary field 52 is formed into a frame shape and is provided on the shutter mechanism 51 along an outer periphery of the shutter mechanism 51. The position and a shape of the auxiliary field 52 are not limited thereto. The auxiliary field 52 may be provided above the shutter

mechanism 51 or on the lower housing 22. The auxiliary field 52 may be constituted from a simple plate member or a protruding member. The auxiliary field 52 includes a frame portion 521, an inclined portion 522, and an opening 523.

[0122] (Frame Portion)

The frame portion 521 is formed into a substantially rectangular tubular shape and erects in the Z-axis direction. A size of the frame portion 521 substantially corresponds to a size of the shutter mechanism 51.

[0123] (Inclined Portion)

The inclined portion 522 constitutes an inner peripheral surface of the auxiliary field 52 and guides the prize toward a center of the shutter part 513. The inclined portion 522 is inclined at a predetermined angle relative to the frame portion 521 (the Z-axis). The predetermined angle is preferably about 10° to 60°. With this configuration, the prize can be reliably guided toward the shutter part 513.

[0124] The inclined portion 522 is constituted of two stages, namely a steeply inclined portion 5221 and a gently inclined portion 5222 which have different inclination angles with each other. An inclination angle of the steeply inclined portion 5221 relative to the frame portion 521 is greater than that of the gently inclined portion 5222. Preferably, the inclination angle of the steeply inclined portion 5221 is about 35° to 65°, and the inclination angle of the gently inclined portion 5222 is about 5° to 35°. The steeply inclined portion 5221 is arranged below the gently inclined portion 5222. That is, the steeply inclined portion 5221 is formed into an annular shape so as to be adjacent

to the opening 523. With this shape, the opening 523 is defined.

[0125] With this multi-stage configuration of the inclined portion 522, a large prize can be guided toward the shutter part 513 by the gently inclined portion 5222, while a small prize can be guided toward the shutter part 513 by the steeply inclined portion 5221. Regardless of the size of the prize, the prize can be guided to the shutter part 513 to some extent by the gently inclined portion 5222 and reliably guided to the shutter part 513 by the steeply inclined portion 5221. Thus, the prize can be kept at the center of the shutter part 513.

[0126] The inclination angles of the steeply inclined portion 5221 and the gently inclined portion 5222 and a positional relationship between the steeply inclined portion 5221 and the gently inclined portion 5222 are not limited to the above configuration. The gently inclined portion 5222 may be arranged adjacent to the opening 523. The inclined portion 522 is not limited to the two-stage configuration and may be formed in multiple stages. In such a case, the inclination angle may gradually increase, gradually decrease, or be set randomly from the side of the opening 523.

[0127] (Opening)

When the shutter part 513 is opened, the game space 215 communicates with the prize take-out space 223 through the opening 523. Thus, the opening 523 overlaps the opening 216. Further, the opening 523 is formed at a center of the auxiliary field 52. A shape of the opening 523 is not particularly limited, and may be, for example, circular, rectangular, elliptical, or triangular. Among these, the shape of the opening 523

is preferably circular. With this configuration, the prize can be guided to the center of the shutter part 513 from an entire circumferential direction of the inclined portion 522.

[0128] The configuration of the game field 5 is not limited to the configuration described above, and may be any configuration as long as the prize can be transferred to the prize take-out space 223. For example, the shutter mechanism 51 may include the auxiliary field 52. Further, the auxiliary field 52 may be omitted.

[0129] [Sensor Devices]

The sensor devices 53 detect whether the prize is present on the shutter part 513. As shown in Fig. 13, the sensor devices 53 are provided in through-holes formed in a surface of the gently inclined portion 5222 of the auxiliary field 52. The sensor devices 53 are not particularly limited and may include various sensors such as a camera, a weight sensor, a pressure-sensitive sensor, a constant-pressure sensor, an infrared sensor, and a photoelectric sensor. In the present embodiment, the sensor devices 53 are constituted from a pair of photoelectric sensors including a light-emitting part and a light-receiving part. The pair of photoelectric sensors are provided in through-holes formed at opposing positions of the gently inclined portion 5222.

[0130] As described above, the game device 1 is configured such that the game field 5 itself opens and closes to form the opening 216. That is, since the opening 216 and the game field 5 are integrally formed or formed to overlap with each other in the Z-axis direction, downsizing of the housing 2 can be achieved, unlike the conventional crane game devices. Further, the auxiliary field 52 can always guide the prize toward

the center of the game field 5, the prize can be prevented from being scattered over the game field 5.

[0131] <Input Part>

Next, referring back to Fig. 2, the input part 7 will be described. Fig. 14 is a schematic perspective view showing an input part of the game device according to the first embodiment of the present invention. The input part 7 has a function of simply receiving an input or input information from the prize holding part 46. In the case where the input part 7 simply receives the input from the prize holding part 46, the input part 7 simply comes into contact with or is pressed by the prize holding part 46. Thus, the input part 7 functions as a mere decorative member (Fig. 14). On the other hand, in the case where the input part 7 receives the input information, the input part 7 functions to receive, as the input information, information that can open the shutter part 513 (trigger information).

[0132] A shape of the input part 7 is not particularly limited, and may be, for example, a dome shape, a hemispherical shape, a cylindrical shape, an elliptical cylindrical shape, a prismatic shape, or a rod shape. In the present embodiment, the input part 7 is formed as a dome-shaped button. The input part 7 is provided on an upper surface of the housing 2 in the game space 215. More specifically, the input part 7 is provided on the upper surface of the housing 2 which intersects an extension line of a path along which the prize holding part 46 moves. Thus, the raising of the prize holding part 46 makes it possible to reliably press or contact the input part 7. A position of the input part 7 is not particularly limited, and may be provided on a side surface or a rear surface of the housing 2 depending on the configuration of the game device 1. The

number of the input parts 7 is not particularly limited, and may be two or more.

[0133] (Trigger Information)

When a predetermined trigger is activated, the game space 215 communicates with the prize take-out space 223 through the game field 5. Specifically, when the control part 9 receives the trigger information, the control part 9 controls the driving part 511 to open the shutter part 513. The trigger information is not particularly limited, but may include, for example, the input information to the input part 7, operation input information to the operation part 3, home position information from the home position sensor 472a, upper limit information from the upper limit sensor 472b, information from the sensor device of the prize holding part 46, information from the sensor devices 53 of the game field 5, and predetermined time information after the prize holding part 46 reaches the home position.

[0134] In the case where the trigger information is input information to the input part 7, the control part 9 controls the driving part 511 of the shutter mechanism 51. Activation of the trigger causes the shutter part 513 to open, thereby forming the opening 216. Further, in the case where the trigger information is the upper limit information or the home position information, the control part 9 similarly controls the driving part 511. In this case, since the input part 7 functions merely as a decorative member, the input part 7 may be omitted.

[0135] As described above, since the shutter part 513 is configured to open when the control part 9 receives predetermined trigger information, the prize can be prevented from unintentionally falling into the prize take-out space 223. Further, since the control

part 9 can change the trigger information to various kinds of information, the trigger for opening the shutter part 513 can be changed. Thus, various ways of playing can be provided to the player.

[0136] <Prize Replenishment Device>

Fig. 15 is an enlarged schematic perspective view showing a prize replenishment device of the game device according to the first embodiment of the present invention. Fig. 16 is an enlarged schematic perspective view showing a prize replenishment unit of the game device according to the first embodiment of the present invention. Figs. 17 to 20 are enlarged schematic perspective views showing an internal configuration of the prize replenishment unit of the game device according to the first embodiment of the present invention.

[0137] The prize replenishment device 6 functions to display the prize and replenish the displayed prize to the game field 5. As shown in Fig. 15, the prize replenishment device 6 is provided on a rear side of the upper housing 21 so as not to come into contact with the prize holding part 46. That is, the prize replenishment device 6 is provided in the game space 215 adjacent to the game field 5. However, as long as the prize replenishment device 6 does not interfere with the operation of the prize holding part 46, the prize replenishment device 6 may be provided on an upper surface or a side surface of the upper housing 21, or a part of the prize replenishment device 6 may be located on the game field 5. As shown in Figs. 15 and 16, the prize replenishment device 6 includes a base 60, a plurality of prize replenishment units 61, and a guide part 62.

[0138] [Base]

The base 60 functions as a part on which the prize replenishment units 61 are provided. The base 60 is provided on the rear surface of the upper housing 21. The base 60 is constituted from two support columns 601 erecting on both sides of the rear surface of the upper housing 21 and a connecting member 602 connecting the two support columns 601. With this configuration, the base 60 is formed into a substantially H-shape. Although the support columns 601 are provided over the game space 215 in the Z-axis direction, the present invention is not limited thereto. The support columns 601 may each have a height equal to half the height of the upper housing 21.

[0139] The connecting member 602 is for attaching the prize replenishment units 61. The number of the connecting members 602 is not particularly limited and may be one, or three or more. With this configuration, the prize replenishment units 61 can be provided in multiple tiers. Although the connecting member 602 is provided over the game space 215 in the X-axis direction, the present invention is not limited thereto. The connecting member 602 may have a width equal to half the width of the upper housing 21. In the present embodiment, the connecting member 602 includes two connecting members 602 spaced apart from each other in the Z-axis direction, but the present invention is not limited thereto.

[0140] [Prize Replenishment Units]

The prize replenishment units 61 display the prize and provides the prize to the game field 5. The prize replenishment units 61 are provided on the connecting members 602 of the base 60 in upper and lower tiers. Two prize replenishment units 61 are engaged with an upper connecting member (a first support member) 602, and two

prize replenishment units 61 are engaged with a lower connecting member (a second support member) 602. However, the number of the prize replenishment units 61 is not particularly limited. For example, the number of the prize replenishment units 61 provided on the upper connecting member 602 may be greater than or less than the number of the prize replenishment units 61 provided on the lower connecting member 602. If the number of the prize replenishment units 61 on the lower connecting member 602 is large, the prizes can be reliably replenished. On the other hand, if the number of the prize replenishment units 61 on the upper connecting member 602 is large, it is possible to advertise to the player what kinds of prizes can be obtained.

[0141] The plurality of prize replenishment units 61 are assigned, for example, an identification number, and the identification numbers are stored in the storage part 8. Thus, the control part 9 can identify which prize replenishment units 61 have replenished the prize in conjunction with information indicating displacement of a displacement part 616 described below. In particular, when replenishing the prize, the prize replenishment device 6 of the present embodiment operates the prize replenishment units 61 on the lower connecting member 602 before the prize replenishment units 61 on the upper connecting member 602 so as not to adversely affect the prizes on the other prize replenishment units 61. Thus, unintended dropping of the prize caused by operation of the other prize replenishment units 61 can be prevented.

[0142] As shown in Figs. 16 to 20, each of the prize replenishment units 61 includes a main body 611, a driving part 612, a power transmission part 613, a power applying part 614, a locking part 615, the displacement part 616, a manual mechanism 617, and a placement part

618. The prize replenishment unit 61 replenishes the prize on the placement part 618 to the game field 5 by changing a posture of the displacement part 616.

[0143] (Main Body)

The main body 611 is formed into a box shape. The main body 611 functions to accommodate the respective parts of the prize replenishment unit 61. The main body 611 includes a first space accommodating the driving part 612 and the power transmission part 613, a second space accommodating the power applying part 614 and the locking part 615, and a third space accommodating the displacement part 616 and the manual mechanism 617. The first space and the second space are adjacent to each other and are also adjacent to the third space. The third space is arranged at a position constituting a front surface of the prize replenishment unit 61, that is, a surface at the side of the game field 5. The first space and the second space are arranged rearward of the third space. Thus, the main body 611 can be made compact and can be easily engaged with the connecting member 602.

[0144] (Driving Part)

The driving part 612 functions to provide power for displacing the displacement part 616. The driving part 612 may be constituted from, for example, a motor. The driving part 612 is provided in a lower portion of the first space and adjacent to the third space. The driving part 612 continues to be driven in accordance with the instruction from the control part 9.

[0145] (Power Transmission Part)

The power transmission part 613 functions to transmit the power from the driving part 612 to the power applying part 614. The power transmission part 613 is

provided rearward of the first space and adjacent to the driving part 612. The power transmission part 613 includes a rotor 6131, a wheel 6132, a shaft 6133, a gear 6134, and a protruding portion 6135.

[0146] A rotor 6131 is connected to a shaft of the driving part 612 via a shaft of the rotor 6131. Thus, the rotor 6131 is configured to rotate. Grooves or ridges (not shown) are formed on a surface of the rotor 6131. The grooves or ridges are inclined at a predetermined angle relative to a rotation direction of the rotor 6131. That is, the grooves or ridges are formed obliquely relative to a circumferential direction of the rotor 6131.

[0147] The wheel 6132 is provided on the rotor 6131 so as to be perpendicular to the rotational direction of the rotor 6131. Grooves or ridges (not shown) are formed on a surface of the wheel 6132. The grooves or ridges are inclined at a predetermined angle relative to a rotation direction of the wheel 6132. These grooves or ridges of the wheel 6132 engage with the grooves or ridges of the rotor 6131. With this configuration, the rotation of the rotor 6131 causes the wheel 6132 to rotate.

[0148] The shaft 6133 functions as a rotational shaft of the wheel 6132. A base end of the shaft 6133 is connected to a center of the wheel 6132, and a tip end of the shaft 6133 extends toward the second space. Thus, the rotation of the wheel 6132 causes the shaft 6133 to rotate. Grooves or ridges (not shown) are formed at the tip end of the shaft 6133. The grooves or ridges are formed along a longitudinal direction of the shaft 6133.

[0149] The gear 6134 is provided on the tip end of

the shaft 6133 so as to engage with the grooves or ridges at the tip end of the shaft 6133. Thus, rotation of the shaft 6133 causes the gear 6134 to rotate. The gear 6134 transmits the power to the power applying part 614. The gear 6134 has a protruding portion 6135 provided along a circumference on a side surface of the gear 6134. The protruding portion 6135 is provided between the gear 6134 and the wheel 6132 so as to be in contact with the shaft 6133. The protruding portion 6135 is formed into a semicircular shape.

[0150] The prize replenishment unit 61 includes a pair of sensors (not shown) in the first space of the main body 611. The sensors are provided between the gear 6134 and the wheel 6132 so as to be vertically spaced apart from each other in the first space. The sensors continuously emit light and receive light. The protruding portion 6135 interrupts the light from the sensors as the gear 6134 rotates. When the gear 6134 rotates, the protruding portion 6135 also rotates and interrupts the light from the pair of sensors. As a result, the control part 9 determines that the power from the driving part 612 has been transmitted to the power applying part 614, and controls the driving part 612 to stop.

[0151] (Power Applying Part)

The power applying part 614 applies the power to the locking part 615. The power applying part 614 is arranged in the second space of the main body 611 and is connected to the gear 6134 via a shaft. Thus, rotation of the gear 6134 causes the power applying part 614 to rotate. The power applying part 614 has a protrusion 6141 on a side surface thereof near the outer periphery. The protrusion 6141 is provided so as to be in contact with the locking part 615 due to the power applying part

614 rotates.

[0152] (Locking Part)

The locking part 615 functions to lock the displacement part 616. The locking part 615 is provided adjacent to the power applying part 614 and the displacement part 616 in the second space. The locking part 615 includes a power receiving portion 6151, a posture maintaining portion 6152, and a biasing means 6153. The power receiving portion 6151 receives the power from the power applying part 614. The power receiving portion 6151 is adjacent to the power applying part 614 and is formed into a substantially triangular shape. When the power applying part 614 rotates, the protrusion 6141 also rotates and presses an inclined surface of the power receiving portion 6151. As a result, the power receiving portion 6151 rotates about a base end thereof toward the displacement part 616.

[0153] The posture maintaining portion 6152 locks the displacement part 616 at a tip end thereof. As a result, the posture of the displacement part 616 can be maintained. A base end of the posture maintaining portion 6152 is connected to the base end of the power receiving portion 6151. Thus, the locking part 615 as a whole forms a substantially L-shape. When the power receiving portion 6151 rotates, the posture maintaining portion 6152 also rotates about the base end of the power receiving portion 6151. That is, the locking part 615 as a whole rotates toward the third space about the base end of the power receiving portion 6151. As a result, the displacement part 616 is unlocked from the posture maintaining portion 6152 and is thereby displaced.

[0154] The biasing means 6153 biases the posture maintaining portion 6152 toward a bottom surface of the

main body 611. The biasing means 6153 connects the base end of the posture maintaining portion 6152 and the bottom surface of the main body 611. Thus, even when the displacement part 616 is not locked by the locking part 615, the locking part 615 maintains a posture corresponding to a state in which the displacement part 616 is locked by the locking part 615 (a standard state).

[0155] (Displacement Part)

The displacement part 616 functions to provide the prize to the game field 5. The displacement part 616 is provided adjacent to the locking part 615 in the third space of the main body 611. As shown in Fig. 20, the displacement part 616 includes a rotating portion 6161, a contact portion 6162, and an engaging portion 6163. The rotating portion 6161 is provided in an upper portion of the third space along a front surface of the main body 611. The rotating portion 6161 is formed into an elongated cylindrical shape. Further, the rotating portion 6161 is configured to rotate toward the game field 5 about an axis extending in a longitudinal direction of the rotating portion 6161.

[0156] The contact portion 6162 extends downward from an end portion of the rotating portion 6161. The contact portion 6162 is formed into a strip shape. A tip end of the contact portion 6162 is in contact with the tip end of the posture maintaining portion 6152. Thus, the contact portion 6162 maintains a posture parallel to the Z-axis. The engaging portion 6163 functions to engage with the placement part 618. The engaging portion 6163 is provided on the rotating portion 6161 so as to protrude in a direction perpendicular to the contact portion 6162. When the posture of the contact portion 6162 is maintained, the engaging portion 6163 maintains a posture parallel to the Y-axis. Thus,

the engaging portion 6163 protrudes from the main body 611 in the Y-axis direction and can maintain the placement part 618 in a horizontal state (a posture maintaining state).

[0157] (Placement Part)

The placement part 618 is a portion on which the prize for replenishing is placed. As shown in Fig. 16, the placement part 618 engages with the engaging portion 6163 of the displacement part 616. A shape of the placement part 618 is not particularly limited and may be, for example, a rod shape, a triangular shape, an elongated shape, a rectangular shape, a flat plate shape, a plate shape, a semicircular shape, a circular shape, or any other shape. A size of the placement part 618 is also not particularly limited, but is preferably larger than an upper surface of the main body 611. Thus, in the posture maintaining state, the placement part 618 has a size such that the placement part 618 covers the upper surface of the main body 611 (Fig. 16). Thus, even a large prize can be placed on the placement part 618. The placement part 618 may be provided with a non-slip member on a surface thereof so that the prize is stably placed.

[0158] (Manual Mechanism)

The prize replenishment unit 61 may include the manual mechanism 617 for manually unlocking the displacement part 616 from the locking part 615. The manual mechanism 617 is used, for example, to release the posture maintaining state in which the displacement part 616 is locked by the locking part 615. The manual mechanism 617 includes a guide portion 6171 and a releasing portion 6172. The guide portion 6171 is fixed to the tip end of the posture maintaining portion 6152. Thus, the guide portion 6171 operates together with the

locking part 615.

[0159] The releasing portion 6172 is formed into an L-shape. A base end of the releasing portion 6172 is connected to the guide portion 6171. A tip end of the releasing portion 6172 protrudes from the front surface of the main body 611. The releasing portion 6172 is configured to rotate about a corner portion of the L-shape. For example, Fig. 19 shows the posture maintaining state. In this state, when the tip end of the releasing portion 6172 is pushed upward, the releasing portion 6172 rotates about the corner portion, and the base end of the releasing portion 6172 moves toward the front surface of the main body 611. As a result, since the guide portion 6171 is fixed to the locking part 615, the locking part 615 rotates, and thus the guide portion 6171 moves downward. As a result, the posture maintaining portion 6152 is unlocked from the contact portion 6162.

[0160] When the displacement part 616 is to be locked to the locking part 615, the engaging portion 6163 is manually brought into the posture maintaining state. Specifically, when the engaging portion 6163 is manually moved upward, the tip end of the contact portion 6162 comes into contact with an upper surface of the posture maintaining portion 6152. Then, the contact portion 6162 applies a force to the posture maintaining portion 6152 by sliding on the upper surface of the posture maintaining portion 6152 toward the tip end of posture maintaining portion 6152. At this time, the locking part 615 rotates toward the displacement part 616 about the base end of the posture maintaining portion 6152. As a result, the contact portion 6162 comes into contact with a tip end surface of the posture maintaining portion 6152. Thus, the contact portion 6162 is locked by the

locking part 615.

[0161] [Guide Part]

The guide part 62 functions to guide the prize to the game field 5. The guide part 62 is provided on the base 60 between the prize replenishment unit 61 and the game field 5, adjacent to the game field 5. The guide part 62 is constituted from an inclined plate. However, the guide part 62 is not limited thereto and may be constituted from a lattice plate or may be omitted. When the guide part 62 is provided, the prize dropped from the prize replenishment unit 61 is reliably guided to the game field 5 by the guide part 62. In addition, it is possible to reliably guide the prize to the shutter part 513 with the guide part 62 and the inclined portion 522 of the auxiliary field 52.

[0162] The prize replenishment device 6 changes a state between a state in which the prize is displayed (a display state) and a state in which the prize is replenished to the game field 5 (a replenishment state). As shown in Fig. 15, when the placement part 618 of the prize replenishment unit 61 is in the posture maintaining state (the display state), the prize to be replenished is displayed. Thus, the player can play the game device 1 when the prize that the player wishes to acquire has been replenished to the game field 5. As shown in Fig. 24, when the state changes from the display state to the replenishment state shown in Fig. 24(b), the prize placed on the placement part 618 falls onto the game field 5 (Fig. 24(c)). In this case, the prize can be automatically replenished to the game field 5 without requiring an administrator of the game device 1. Thus, a burden on the administrator can be reduced, and an advertising effect resulting from the prize display can also be achieved. Furthermore, with a simple device

configuration, the prize can be reliably replenished to an intended position on the game field 5.

[0163] <Detection Part>

In addition to the above-described configuration, the game device 1 may include a detection part. The detection part functions to detect an operation of each member of the game device 1. The detection part is not particularly limited and is constituted from various sensors such as a camera, an acceleration sensor, a weight sensor, a pressure-sensitive sensor, a constant-pressure sensor, an infrared sensor, and a photoelectric sensor. In the game device 1 of the present embodiment, for example, the detection part is provided on side surfaces defining the prize take-out space 223. The detection part is constituted from a photoelectric sensor including a light-emitting part and a light-receiving part. Thus, it is possible to detect whether the prize is present in the prize take-out space 223 of the lower housing 22.

[0164] Referring back to Fig. 2, an internal configuration of the game device 1 will be described.

[0165] <Storage Part>

The storage part 8 includes a ROM that stores a game program executed by a CPU and a RAM that temporarily stores calculation results executed by the CPU. Specifically, the storage part 8 stores all data, including data indicating a speed and distance of raising and lowering of the movable part 45 of the moving mechanism 4, a rotational speed and a rotational angle of the rotating body 40, the holding force of the arm portion 405, an illuminance of the lighting device of the arm portion 405, and a moving speed and a moving distance of the movable part 512 of the shutter mechanism

51, as well as the number of game executions, the number of times when the prize has moved into the prize take-out space, rotation information indicating that the placement part 618 has rotated, and the identification number of the prize replenishment units 61.

[0166] <Control Part>

The control part 9 includes the CPU that executes the game program and controls an entirety of the game device 1. The control part 9 includes an information receiving part 91, an information processing part 92, an operation controlling part 93, and an information setting part 94. Hereinafter, configurations of respective parts of the control part 9 will be described.

[0167] (Information Receiving Part)

The information receiving part 91 receives input information from the operation part 3, input information from the input part 7, information detected by the detection part (for example, position information of the prize), and information detected by respective sensor devices and the detection devices 47. The received information is provided to the information processing part 92.

[0168] (Information Processing Part)

The information processing part 92 functions to process the entire game. In particular, the information processing part 92 functions to process the information received by the information receiving part 91 and provide instructions to the operation controlling part 93. Specifically, the information processing part 92 provides the input information from the operation part 3 to the operation controlling part 93 to cause the rotating body 40, the driving part 511, and the driving part 41 to operate. Further, the information processing

part 92 provides the information from the sensor devices 53, other sensor devices, and the detection part to the operation controlling part 93 to cause the driving part 41, the arm portion 405, the prize replenishment unit 61, and the driving part 511 to operate.

[0169] (Operation Controlling Part)

The operation controlling part 93 functions to control operations of the moving mechanism 4, the game field 5, and the prize replenishment device 6. When the player operates the operation part 3, the operation controlling part 93 controls the driving part 41 to operate. Next, when the prize holding part 46 contacts the prize and when the prize holding part 46 reaches the home position, the operation controlling part 93 controls the driving motor 4041 of the arm unit 402 of the prize holding part 46 to operate so as to open and close the arm portion 405.

[0170] When the operation controlling part 93 receives the information indicating that the prize holding part 46 has reached the home position, the operation controlling part 93 controls the driving part 511 to operate so as to open the shutter part 513. Further, when the operation controlling part 93 receives the information indicating that the prize is present in the prize take-out space 223, the operation controlling part 93 controls the driving part 612 of the prize replenishment unit 61 to operate so as to rotate the placement part 618.

[0171] The operation controlling part 93 may control the shutter mechanism 51 to cause the shutter part 513 to open and close after a predetermined period has elapsed, regardless of whether the prize holding part 46 has held the prize or not. In this case, the shutter

part 513 may be fully opened, partially opened, or opened and closed stepwise. Further, the operation controlling part 93 may also control the shutter mechanism 51 to cause the shutter part 513 to open and close when a change in weight of the shutter part 513 is detected.

[0172] (Information Setting Part)

The information setting part 94 sets setting information such as the rotational speed and the rotational angle of the rotating body 40, the holding force of the arm portion 405, and the illuminance of the lighting device of the arm portion 405, based on the information stored in the storage part 8. That is, the information setting part 94 updates the setting information based on the operation input from the operation part 3 or randomly. The updated setting information is stored in the storage part 8. Thus, the operation controlling part 93 can control respective parts based on the updated setting information.

[0173] In addition, the control part 9 may include interference means for interfering with opening and closing of the shutter mechanism 51 or holding of the prize by the prize holding part 46. For example, the interference means may instruct the operation controlling part 93 to temporarily stop the driving part 41 of the moving mechanism 4. The interference means may also instruct the operation controlling part 93 to swing the prize holding part 46 by a swinging mechanism (not shown). Further, the interference means may instruct the operation controlling part 93 to rotate the rotating body 40 while the prize holding part 46 is being raised or lowered, or to stop opening and closing of the shutter part 513 midway. By such means, it becomes more difficult to acquire the prize, and the difficulty level of the game increases.

[0174] 2. Method for Controlling Operation of Game Device

Next, a method for controlling an operation of the game device according to the present embodiment will be described in detail. Fig. 21 is a flowchart for explaining an operation of the game device according to the first embodiment of the present invention. Fig. 23 is a schematic view for explaining the operation of the game device according to the first embodiment of the present invention.

[0175] First, the player inserts a coin into a coin slot (not shown) of the prize acquisition game device 1A or 1B that the player wishes to play. Accordingly, the game is started. At this time, the prize holding part 46 is positioned at the home position as shown on the left side of Fig. 1 (an initial position). The rotating body 40 of the prize holding part 46 is rotating about the Z-axis. In this state, the player presses the operation part 3 while imagining a location at which the arm portion 405 will hold the prize. Accordingly, the operation part 3 receives an input from the player (S1). The rotation of the rotating body 40 may be operated by the joystick of the operation part 3.

[0176] When the operation part 3 receives the input, the control part 9 controls the motor 492 of the prize holding part 46 to stop. Thus, the rotation of the rotating body 40 is stopped (S2). Next, the control part 9 controls the driving part 41 of the moving mechanism 4 to cause the movable part 45 to lower. As a result, the prize holding part 46 is also lowered (S3). Next, the control part 9 determines whether the arm portion 405 has contacted the prize (S4). If the control part 9 does not receive information (contact

information) indicating that the arm portion 405 has come into contact with the prize from the sensor devices of the prize holding part 46, the control part 9 determines that the arm portion 405 has not contacted the prize. Thus, the process returns to the step S3. On the other hand, if the control part 9 receives the contact information from the sensor devices, the control part 9 stops operation of the driving part 41. Thus, the lowering of the prize holding part 46 is stopped (S5). The above-described operation is schematically shown in Fig. 23.

[0177] Next, the control part 9 controls the driving motor 4041 of the arm unit 402 to operate. Thus, the arm portion 405 rotates about the base end of the arm portion 405 and closes (S6). Then, the control part 9 drives the driving part 41 of the moving mechanism 4 again. Thus, the movable part 45 is raised, and the prize holding part 46 is also raised (S7). The prize holding part 46 may be raised in response to continuous input to the operation part 3 by the player. Next, the control part 9 determines whether the prize holding part 46 (the movable part 45) is positioned at the home position based on detection by the second detection device group 472 of the moving mechanism 4 (S8). If the control part 9 does not receive information from the second detection device group 472 (the home position information), the control part 9 determines that the prize holding part 46 has not reached the home position. Accordingly, the process returns to the step S7, and the prize holding part 46 continues to be raised. The above-described operation is schematically shown in Fig. 23.

[0178] On the other hand, at the step S8, if the control part 9 receives the home position information from the second detection device group 472, the control

part 9 determines that the prize holding part 46 has reached the home position. Thus, the process proceeds to the step S9. At the step S9, the control part 9 determines whether the arm portion 405 is holding the prize based on the information from the sensor devices of the prize holding part 46 (holding information) and the information from the sensor devices 53 of the game field 5 (prize information) (S9). If the control part 9 determines that the arm portion 405 is holding the prize, the control part 9 determines that the prize holding part 46 has reached a goal position (S10). Thus, the control part 9 stops the operation of the driving part 41 and stops raising of the prize holding part 46 (S11).

[0179] If the control part 9 receives the holding information and/or does not receive the prize information, the control part 9 determines that the arm portion 405 is holding the prize. The control part 9 then controls the driving part 511 of the shutter mechanism 51 to operate. Thus, the moving part 5123 moves, and as a result, the shutter part 513 opens (S12). Thus, the opening 216 is formed as shown in Fig. 12, thereby allowing the game space 215 to communicate with the prize take-out space 223. The control part 9 then controls the driving motor 4011 of the arm unit 402 to operate. Thus, the arm portion 405 rotates about the base end thereof (S13).

[0180] Thereafter, the prize passes through the opening 216 from the prize holding part 46 and falls into the prize take-out space 223 (S14). The control part 9 then controls the driving part 511 of the shutter mechanism 51 to operate. Thus, the movement of the moving part 5123 causes the shutter part 513 to close (S15). Thus, the game ends.

[0181] On the other hand, at the step S9, if the control part 9 does not receive the holding information and/or receives the prize information, the control part 9 determines that the arm portion 405 is not holding the prize. Thus, the control part 9 stops the operation of the driving part 41 and stops raising of the prize holding part 46 (S16). The control part 9 then controls the driving motor 4011 of the arm unit 402 to operate. Thus, the arm portion 405 rotates about the base end thereof (S17). Thus, the game ends.

[0182] 3. Method for Operating Prize Replenishment Device

Next, a method for operating the prize replenishment device of the game device according to the present embodiment will be described in detail. Fig. 22 is a flowchart for explaining an operation of the prize replenishment device of the game device according to the first embodiment of the present invention. Fig. 24 is a view for explaining the operation of the prize replenishment device of the game device according to the first embodiment of the present invention. The prize replenishment device 6 operates after the play by the player has ended. That is, the prize replenishment device 6 operates after the operation of the game device 1 described with reference to Fig. 21 has ended.

[0183] First, the sensor devices 53 of the game field 5 detect the prize on the shutter part 513. The control part 9 determines whether the prize information has been received from the sensor devices 53 (S21). Thus, the control part 9 determines whether the prize is present on the shutter part 513. If the control part 9 receives the prize information, the control part 9 determines that the prize is present on the shutter part 513, and the process ends. On the other hand, at the step S21, if

the control part 9 does not receive the prize information, the control part 9 determines that no prize is present on the shutter part 513. Thereafter, the process proceeds to the step S22. The control part 9 may determine presence of the prize based on not only the prize information but also information indicating whether the detection part of the lower housing 22 has detected the prize in the prize take-out space 223.

[0184] At the step S22, the control part 9 determines whether the prize is present in the lower prize replenishment unit 61 of the prize replenishment device 6 (S22). Since the information indicating that the placement part 618 of the lower prize replenishment unit 61 has rotated (the rotation information) is stored in the storage part 8, the control part 9 refers to the storage part 8 and determines whether the rotation information is present. If the control part 9 determines that the rotation information is not present, the control part 9 determines that the prize is present in the lower prize replenishment unit 61. The process then proceeds to the step S23.

[0185] At the step S23, the control part 9 controls the driving part 612 of the lower prize replenishment unit 61 to operate, thereby rotating the placement part 618. As a result, the prize falls from the placement part 618, thereby being replenished to the game field 5 (S24). The above-described operation is shown in Figs. 24(a) to 24(c). Through such operation, the prize replenishment operation ends.

[0186] On the other hand, at the step S22, if the control part 9 determines that the rotation information is present, the control part 9 determines that no prize is present on the lower prize replenishment unit 61. The

process then proceeds to the step S25. Next, the control part 9 determines whether the prize is present on the upper prize replenishment unit 61 of the prize replenishment device 6 (S25). Since the information indicating that the placement part 618 of the upper prize replenishment unit 61 has rotated (the rotation information) is stored in the storage part 8, the control part 9 refers to the storage part 8 and determines whether the rotation information is present. If the control part 9 determines that the rotation information is not present, the control part 9 determines that the prize is present on the upper prize replenishment unit 61. The process then proceeds to the step S26.

[0187] The control part 9 controls the driving part 612 of the upper prize replenishment unit 61 to operate, thereby rotating the placement part 618 (S26). Thus, the prize falls from the placement part 618, thereby being replenished to the game field 5 (S24). The above-described operation is shown in Figs. 24(a) to 24(c). Through such operation, the prize replenishment operation ends. On the other hand, at the step S25, if the control part 9 determines that the rotation information is present, the control part 9 determines that no prize is present on the upper prize replenishment unit 61. Accordingly, the process ends. The above-described operation is repeated until no prize remains on the prize replenishment device 6.

[0188] As described above, the above-described processing method may be implemented by a program executed by a computer. The program may be realized by hardware such as a CPU (Central Processing Unit), a microprocessor, a GPU (Graphics Processing Unit), a RAM (Random Access Memory), and a ROM (Read Only Memory).

[0189] <<Second Embodiment>>

Next, a second embodiment of the game device according to the present invention will be described with reference to the accompanying drawings.

[0190] Hereinafter, descriptions for the second embodiment will be made by focusing on different points from the first embodiment described above, and descriptions of similar features will be omitted.

[0191] The game device 1 of the present embodiment is the same as the game device 1 of the first embodiment except that the moving mechanism 4 rotates about the Z-axis. Specifically, the game device 1 according to the present embodiment includes a rotation mechanism (not shown) below or around the moving mechanism 4 shown in Fig. 3. The rotation mechanism rotates the entire moving mechanism 4 about a central axis of the moving mechanism 4. The configuration of the rotation mechanism is not particularly limited as long as the moving mechanism 4 can be rotated.

[0192] The moving mechanism 4 rotates 360° clockwise or counterclockwise about the central axis of the moving mechanism 4. As a result, the prize holding part 46 of the prize acquisition game device 1A can move to the game space 215 of the prize acquisition game device 1B. Thus, the prize holding part 46 of the prize acquisition game device 1A can be used as the prize holding part 46 of the prize acquisition game device 1B.

[0193] Thus, in the game device 1 according to the present embodiment, since the moving mechanism 4 rotates, the second set of the moving mechanism 4 can be omitted, thereby making it possible to further downsize the game device 1. In addition, even when no prize

remains in the prize acquisition game device 1A, the prize holding part 46 can be moved to the prize acquisition game device 1B, thereby reducing a frequency of prize replenishment.

[0194] Although the present embodiment has been described with reference to a case in which the first set and the second set of the moving mechanism 4 are provided, either one of the first set and the second set may be omitted. In addition, since the moving mechanism 4 rotates in the game device 1 according to the present embodiment, the game device 1 may be configured to include a plurality of prize acquisition game devices.

[0195] <<Third Embodiment>>

Next, a third embodiment of the game device according to the present invention will be described with reference to the accompanying drawings. Fig. 25 is an enlarged schematic perspective view showing a game field of a game device according to a third embodiment of the present invention.

[0196] Hereinafter, descriptions for the third embodiment will be made by focusing on different points from the first embodiment described above, and descriptions of similar features will be omitted. Components similar to those of the first embodiment described above are denoted by the same reference numerals.

[0197] The game device 1 of the present embodiment is the same as the game device 1 of the first embodiment except that the game field 5 has a different configuration. Specifically, the game field 5 according to the third embodiment is configured to rotate clockwise or counterclockwise about the Z-axis. The game field 5

includes a shutter mechanism 55 and partition walls 56.

[0198] <Shutter Mechanism>

The shutter mechanism 55 includes a driving part (not shown), a movable part 552, and shutter parts 553.

(Driving Part)

The driving part functions to rotationally move the movable part 552 and is constituted from, for example, a rotary motor. The driving part is provided below the movable part 552 in the lower housing 22.

[0199] (Movable Part)

The movable part 552 functions to rotate the shutter parts 553. Thus, the movable part 552 is formed into a cylindrical shape at a center of the shutter parts 553. The movable part 552 is connected to the driving part provided at a lower portion thereof. Accordingly, the movable part 552 rotates by rotational driving of the driving part. Further, the movable part 552 has openings (not shown) on a side surface thereof for receiving the shutter parts 553.

[0200] (Shutter Part)

The shutter parts 553 are constituted from the prize replenishment units 61 of the prize replenishment device 6 according to the first embodiment. In each prize replenishment unit 61, the main body 611 is engaged with the opening of the movable part 552, and only the placement part 618 is illustrated. The placement part 618 (also referred to as a "support member") supports the prize and is formed into a rod-like shape or an elongated shape. The number of the prize replenishment units 61 is not particularly limited and may be one or two or more. If the number of the prize replenishment units 61 is reduced, the placement part 618 may be formed into a flat plate shape or a fan shape in order to reduce

the exposed area of the opening 216. As a result, an area of the placement part 618 can be increased.

[0201] A base end of the placement part 618 is connected to the engaging portion 6163. The placement part 618 is horizontally provided along a radial direction of the opening 216 so as to protrude from the main body 611. When the displacement part 616 of each of the prize replenishment units 61 is unlocked from the locking part 615, the placement part 618 rotates about the base end thereof and is displaced vertically downward. As a result, the game space 215 communicates with the prize take-out space 223. Then, the prize placed on the placement part 618 falls into the prize take-out space 223.

[0202] <Partition Wall>

The partition walls 56 are provided between a plurality of support members 554 across the opening 216 so as to protrude from the side surface of the movable part 552. Thus, the partition walls 56 function to divide the opening 216 into a plurality of regions. In the present embodiment, as shown in Fig. 25, the partition walls 56 divide the opening 216 into a first region, a second region, a third region, and a fourth region at equal intervals. As a result, the plurality of prize replenishment units 61 are divided into the first to fourth regions. In addition, the prizes can be arranged in the first to fourth regions according to types or sizes of the prizes. The number of the partition walls 56 is not particularly limited and may be zero, one, or two or more.

[0203] In the game device 1 of the present embodiment, when the prize holding part 46 holds the prize and returns to the home position, for example, a

plurality of placement parts 618a in the first region 216a are displaced. At this time, all of the placement parts 618a may be displaced at once, or may be displaced sequentially. In addition, one placement part 618a may be displaced for each play, or one placement part 618a may be displaced when the prize holding part 46 returns to the home position while holding the prize. These displacements are controlled by the control part 9.

[0204] In the present embodiment, since the movable part 552 rotates, even if the placement part 618 is displaced, the prize that falls from the home position does not necessarily move to the prize take-out space 223. Specifically, if the plurality of placement parts 618a in the first region 216a are displaced and a position at which the prize falls coincides with the first region 216a, the prize falls into the prize take-out space 223 through the first region 216a. However, if the position at which the prize falls does not coincide with the first region 216a, the prize falls into one of the second to fourth regions. In this case, the prize is supported by the plurality of placement parts 618 in the second to fourth regions. In addition, the prize may bounce on the plurality of placement parts 618 in the second to fourth regions, thereby falling from the first region 216a. With this configuration, the game device 1 of the present embodiment can increase difficulty of prize acquisition and can give the player a sense of excitement.

[0205] Since the game field 5 of the present embodiment rotates, the game field 5 may be used as a single game field 5 for the prize acquisition game devices 1A and 1B. In this case, for example, the moving mechanism 4 shown in Fig. 1 is provided on the movable part 552 shown in Fig. 25. As a result, a wide variety

of prizes can be acquired with a single game device 1. Further, since a position of the prize resulting from rotation of the game field 5 must be aligned with a lowering position of the prize holding part 46, it is possible to give the difficulty of prize acquisition to the player.

[0206] <<Fourth Embodiment>>

Next, a fourth embodiment of the game device according to the present invention will be described with reference to the accompanying drawings. Fig. 26 is an enlarged schematic perspective view showing a moving mechanism of a game device according to a fourth embodiment of the present invention.

[0207] Hereinafter, descriptions for the fourth embodiment will be made by focusing on different points from the first embodiment described above, and descriptions of similar features will be omitted. Components similar to those of the first embodiment described above are denoted by the same reference numerals.

[0208] The game device 1 of the present embodiment is the same as the game device 1 of the first embodiment except that the movable part 45 of the moving mechanism 4 has a different configuration. Specifically, the movable part 45 of the moving mechanism 4 according to the fourth embodiment includes a coupling portion (a rotating portion) 454 between the receiving portion 452 and the connecting portion 453. The coupling portion 454 functions to rotate the prize holding part 46 about the X-axis perpendicular to the shaft 42. The coupling portion 454 is rotated by a rotary motor (not shown), for example, the rotary motor of the prize holding part 46.

[0209] As a result, the arm portion 405 of the prize holding part 46 can be directed toward the prize replenishment device 6. Thus, the arm portion 405 can hold the prize placed on the placement part 618 of the prize replenishment device 6. As a result, even if the prize replenishment device 6 does not work, the prize can be dropped onto the game field 5 by the prize holding part 46. Thus, since the game device 1 of the present embodiment can replenish the prize to the game field 5 by the prize holding part 46, a special mechanism for the prize replenishment device 6 is not required. That is, the prize replenishment device 6 can function merely as a prize shelf.

[0210] After the arm portion 405 holds the prize, the coupling portion 454 moves again to return the prize holding part 46 to an original state. In addition, the coupling portion 454 may be moved depending on an arrangement state of the prize on the game field 5 so that the prize holding part 46 itself is inclined with respect to the Z-axis. As a result, depending on the arrangement state of the prize, the likelihood of holding the prize can be increased.

[0211] <<Fifth Embodiment>>

Next, a fifth embodiment of the game device according to the present invention will be described with reference to the accompanying drawings. Fig. 27 is an enlarged schematic perspective view showing a moving mechanism of a game device according to a fifth embodiment of the present invention.

[0212] Hereinafter, descriptions for the fifth embodiment will be made by focusing on different points from the first and fourth embodiments described above,

and descriptions of similar features will be omitted. Components similar to those of the first embodiment described above are denoted by the same reference numerals.

[0213] The game device 1 of the present embodiment is the same as the game devices 1 of the first and fourth embodiments except that the movable part 45 of the moving mechanism 4 has a different configuration. Specifically, the movable part 45 of the present embodiment is configured such that the coupling portion (an extending portion) 454 extends in the X-axis direction. For example, when the input information from the operation part 3 is received, the operation controlling part 93 controls the driving part 41 so that the coupling portion 454 extends in the X-axis direction. As a result, the prize holding part 46 provided at the tip end of the movable part 45 moves in the X-axis direction.

[0214] Such extension may be performed in a single step or in two or more steps. In the present embodiment, as shown in Fig. 27, the extension is performed in two steps. Specifically, the coupling portion 454 includes a first extending portion having a diameter smaller than that of the connecting portion 453 and a second extending portion having a diameter smaller than that of the first extending portion. The second extending portion is accommodated in the first extending portion, and the first extending portion is accommodated in the connecting portion 453. Thus, the first extending portion can extend from the connecting portion 453, and the second extending portion can further extend from the first extending portion. As a result, even if the prize is arranged in any positions on the game field 5, the prize holding part 46 can be arranged directly above the

prize.

[0215] In the game device 1 of the present embodiment, since the prize holding part 46 moves in the X-axis direction by the extension of the coupling portion 454, the moving mechanism 4 can be arranged at a position away from the game field 5. Thus, unlike the first embodiment, the moving mechanism 4 can be arranged on the side of the side surface of the upper housing 21. As a result, a space between the prize acquisition game devices 1A and 1B can be effectively utilized for other purposes.

[0216] Further, since the prize holding part 46 can move in the horizontal direction, the prize can be moved from the prize acquisition game device 1A to the game field 5 of the prize acquisition game device 1B while the arm portion 405 holds the prize. As a result, the prize can be transferred to the prize take-out space 223 of the prize acquisition game device 1B without dropping the prize from the home position. Thus, even the prize that is vulnerable to impact can be transferred to the prize take-out space 223 without being damaged. Further, the prize holding part 46 may be suspended from the receiving portion 452 by a hanging member.

[0217] <<Sixth Embodiment>>

Next, a sixth embodiment of the game device according to the present invention will be described with reference to the accompanying drawings. Fig. 28 is an enlarged schematic perspective view showing a game field of a game device according to a sixth embodiment of the present invention.

[0218] Hereinafter, descriptions for the sixth embodiment will be made by focusing on different points

from the first embodiment described above, and descriptions of similar features will be omitted. Components similar to those of the first embodiment described above are denoted by the same reference numerals.

[0219] The game device 1 of the present embodiment is the same as the game device 1 of the first embodiment except that the shutter mechanism 51 and the sensor devices 53 have different configurations. Specifically, the shutter part 513 of the shutter mechanism 51 is constituted from two doors and functions as a pair of hinged doors. The shutter part 513 may have, for example, a mortar shape, a convex shape, a hemispherical shape, or a curved concave shape. In the present embodiment, the shutter part 513 preferably has the mortar shape or the curved concave shape. Thus, the prize can be reliably held on the shutter part 513. The moving part 5123 of the shutter mechanism 51 is connected to the two doors of the shutter part 513 directly or via a member (not shown) indirectly. As a result, the shutter part 513 is opened and closed by the movement of the moving part 5123.

[0220] One end of each of the two doors of the shutter part 513 is hinge-connected, for example, to the arrangement region 225 of the lower housing 22. The other ends of the two doors face each other. That is, the shutter part 513 rotates substantially 90° about one end (the Y-axis) of each of the two doors between a horizontal position and a vertically downward position. Further, the two doors of the shutter part 513 are provided with notches such that a pair of through-holes 5132 is formed when the other ends of the two doors face each other. Since the shutter part 513 is formed into the mortar shape, when the shutter part 513 is viewed in

the Y-axis direction in the state that the shutter part 513 is closed, the pair of through-holes 5132 overlap each other. As a result, light from sensor devices 53a described later can pass through the through-holes 5132.

[0221] The sensor devices 53 include the sensor devices 53a provided in the lower housing 22. The sensor devices 53a are constituted from a pair of photoelectric sensors provided spaced apart from each other in a direction (the Y-axis direction) perpendicular to a direction in which the shutter part 513 opens and closes. Light emitted from the light-emitting part of the pair of photoelectric sensors passes through the pair of through-holes 5132 and reaches the light-receiving part. As a result, the control part 9 can determine whether the prize is present on the shutter part 513.

[0222] <<Seventh Embodiment>>

Next, a seventh embodiment of the game device of the present invention will be described with reference to the accompanying drawings. Fig. 29 is an enlarged schematic perspective view showing a game field of a game device according to a seventh embodiment of the present invention.

[0223] Hereinafter, descriptions for the seventh embodiment will be made by focusing on different points from the first and third embodiments described above, and descriptions of similar features will be omitted. Components similar to those of the first and third embodiments described above are denoted by the same reference numerals.

[0224] The game device 1 of the present embodiment is the same as the game devices 1 of the first and third embodiments except that the game field 5 has a different

configuration and does not rotate. Specifically, the shutter mechanism 51 is constituted from only the shutter part 513. Such a shutter part 513 is constituted from the prize replenishment unit 61, similarly to the third embodiment. The engaging portion 6163 of the prize replenishment unit 61 is engaged with and connected to an opening (not shown) of the lower housing 22. Thus, as shown in Fig. 29, the plurality of placement parts 618 extend toward a center of the opening 216 so as to protrude from the side of the lower housing 22.

[0225] In the game device 1 of the present embodiment, when the prize holding part 46 holds the prize and returns to the home position, for example, all of the plurality of placement parts 618 may be displaced, or a part of the plurality of placement parts 618 may be displaced. These displacements are controlled by the control part 9. When the control part 9 displaces only the part of the plurality of placement parts 618, even if the prize falls onto the placement parts 618, the prize may not transfer to the prize take-out space 223. Thus, it is possible to increase the difficulty of prize acquisition and give the player a sense of excitement. In such a case, the prize is supported by the placement parts 618 that have not been displaced. Thus, in the next gameplay, the posture of the prize may change due to the displacement of the placement parts 618, and the prize may fall into the prize take-out space 223. As a result, it is possible to give the player an impression that the prize can be acquired.

[0226] The game field 5 of the present embodiment may rotate similarly to that of the third embodiment. As a result, the same effects as those of the game device 1 of the third embodiment can be achieved. Further, light-emitting devices may be provided on an outer

peripheral side of the plurality of placement parts 618 so as to respectively correspond to the plurality of placement parts 618. Thus, a decorative effect of the game device 1 can be achieved. Further, the control part 9 may control, based on the input information received from the operation part 3, only the placement part 618 corresponding to a lit light-emitting device to be displaced.

[0227] <<Eighth Embodiment>>

Next, an eighth embodiment of the game device of the present invention will be described with reference to the accompanying drawings. Fig. 30 is a schematic perspective view showing a game device according to an eighth embodiment of the present invention. Hereinafter, descriptions for the eighth embodiment will be made by focusing on different points from the first embodiment described above, and descriptions of similar features will be omitted. Components similar to those of the first embodiment described above are denoted by the same reference numerals.

[0228] The game device 1 of the present embodiment is the same as the game device 1 of the first embodiment except that the prize holding part 46 and the input part 7 have different configurations. First, the prize holding part 46 has a pressing part 494 on the upper portion of the main body 49. A shape of the pressing part 494 is not particularly limited, but the pressing part 494 is formed into a rod shape. The pressing part 494 is arranged at a position spaced apart by a predetermined distance in a radial direction from a central axis of the main body 49. The predetermined distance is not particularly limited and is provided such that the pressing part 494 overlaps switching means 71 of the input part 7 described later.

[0229] The input part 7 has the switching means 71 at a lower portion thereof. The switching means 71 functions as a trigger for opening the shutter part 513. The number of the switching means 71 may be one or two or more. The switching means 71 are arranged at predetermined intervals around a central axis (the Z-axis) of the input part 7. The switching means 71 may be formed into a concave shape, a button shape, or a hole shape. A plurality of switching means 71 are arranged in an annular manner along a circumferential direction of the input part 7. The switching means 71 rotates clockwise or counterclockwise about the central axis of the input part 7.

[0230] As the prize holding part 46 is raised, the pressing part 494 reaches the switching means 71. At this time, since the switching means 71 is rotating, if the pressing part 494 is aligned with the switching means 71, the switching means 71 is pressed by the pressing part 494. Thus, the control part 9 receives the input information from the input part 7 and drives the driving part 511 of the shutter mechanism 51. As a result, the shutter part 513 opens, and the prize falls into the prize take-out space 223 through the opening 216.

[0231] In the game device 1 of the present embodiment, the shutter part 513 does not open unless the pressing part 494 presses the switching means 71. Thus, further entertainment property of the game device 1 can be provided. Further, the switching means 71 may also be stopped in response to the operation input to the operation part 3. That is, when the information receiving part 91 receives the input information from the operation part 3, the operation controlling part 93 may stop the rotation of the switching means 71. In

this case, since the switching means 71 is stopped by the player's operation, a game with enhanced amusement property can be provided to the player.

[0232] The switching means 71 may be stopped. The switching means 71 may not also, similarly to the game device 1 of the first embodiment, function as the trigger but merely as a decoration. Further, instead of the switching means 71 rotating, the main body 49 of the prize holding part 46 may rotate.

[0233] <<Ninth Embodiment>>

Next, a ninth embodiment of the game device of the present invention will be described with reference to the accompanying drawings. Fig. 31 is a schematic perspective view showing a moving mechanism of a game device according to a ninth embodiment of the present invention. Hereinafter, descriptions for the ninth embodiment will be made by focusing on different points from the first embodiment described above, and descriptions of similar features will be omitted. Components similar to those of the first embodiment described above are denoted by the same reference numerals.

[0234] The game device 1 of the present embodiment is the same as the game device 1 of the first embodiment except that the movable part 45 of the moving mechanism 4 has a different configuration. Specifically, similarly to the second embodiment, the game device 1 of the present embodiment includes a rotation mechanism (not shown) below or around the moving mechanism 4 shown in Fig. 31. The rotation mechanism rotates the base portion 451 of the movable part 45 about the shaft 42. The movable part 45 of the present embodiment is configured to rotate about the shaft 42 as a central

axis in parallel to the game field 5.

[0235] The base portion 451 rotates 360° clockwise or counterclockwise about the shaft 42. As a result, the prize holding part 46 connected to the receiving portion 452 also rotates about the shaft 42. Thus, the prize holding part 46 of the prize acquisition game device 1A can be used as the prize holding part 46 of the prize acquisition game device 1B.

[0236] In this manner, in the game device 1 of the present embodiment, since the base portion 451 rotates, the second set of the moving mechanism 4 can be omitted, thereby allowing the game device 1 to be further downsized. In addition, even when no prize remains in the prize acquisition game device 1A, the prize holding part 46 can be moved to the prize acquisition game device 1B, thereby reducing the frequency of prize replenishment. Further, since the prize holding part 46 rotates about the shaft 42, the game device 1 can be used in a game device having a plurality of game fields 5.

[0237] In the present embodiment, since the second set of the moving mechanism 4 is provided, the base portion 451 may rotate within a range of 300° to 340° so as not to contact the shaft 42 of the second set. Further, a driving mechanism for rotating the base portion 451 may be provided in the base portion 451. In this case, electric power is supplied to the driving mechanism via the wiring 48. The present embodiment may also be used in combination with the second embodiment.

[0238] <<Tenth Embodiment>>

Next, a tenth embodiment of the game device of the present invention will be described with reference to

the accompanying drawings. Fig. 32 is a schematic perspective view showing a game field of a game device according to a tenth embodiment of the present invention. Hereinafter, descriptions for the tenth embodiment will be made by focusing on different points from the first embodiment described above, and descriptions of similar features will be omitted. Components similar to those of the first embodiment described above are denoted by the same reference numerals.

[0239] The game device 1 of the present embodiment is the same as the game device 1 of the first embodiment except that the moving mechanism 4 and the game field 5 have different configurations. Specifically, the game device 1 of the present embodiment includes only the first set of the moving mechanism 4 and four game fields 5. In other words, the game device 1 of the present embodiment is configured such that prize acquisition game devices 1A to 1D include a single set of the moving mechanism 4. The plurality of game fields 5 rotate about the shaft 42 as the central axis by a rotation mechanism (not shown), similarly to the second and third embodiments.

[0240] Accordingly, the second set of the moving mechanism 4 can be omitted, thereby allowing the game device 1 to be further downsized. In addition, even when no prize remains in the game field 5 of the prize acquisition game device 1A, since the game field 5 of the prize acquisition game device 1B rotates, the prize can be arranged directly below the prize holding part 46. Further, since the plurality of game fields 5 are provided, the frequency of prize replenishment can be reduced, thereby reducing the burden on the game administrator.

[0241] In the present embodiment, the game field 5 may be fixed and the prize holding part 46 may rotate as in the ninth embodiment. The present embodiment may also be used in combination with the second and third embodiments.

[0242] <<Other Variations>>

In the first embodiment, the single prize acquisition game device 1A has been described as including the single game field 5 and the first set of the moving mechanism 4. However, the single prize acquisition game device 1A may include a plurality of game fields 5. In this case, the movable part 45 of the second set of the moving mechanism 4 may be arranged at an angle with respect to the movable part 45 of the first set. The game field 5 may also be configured to be raised when the prize holding part 46 is positioned at the home position.

[0243] Although the game device of the present invention has been described above based on preferred embodiments, the present invention is not limited thereto. Each component may be replaced with any component having a similar function. Further, other elements or components may be added to the present invention. Further, the present invention may be implemented by combining any two or more configurations (features) of the above embodiments. Further, the prize holding part of the present invention may be a shovel type or a rod type.

INDUSTRIAL APPLICABILITY

[0244] The present invention provides the game device that transfers the prize located in the game space to the prize take-out space. The game device includes the operation part for receiving the operation input from

the player, the game field for placing the prize, and the moving mechanism including the prize holding part for holding the prize and the moving mechanism for moving the prize holding part based on the operation input. When the predetermined trigger is activated, the game field allows the game space to communicate with the prize take-out space, so that the prize is transferred to the prize take-out space. As a result, it is possible to downsize the game device and to provide the player with a sense of excitement. Accordingly, the present invention has industrial applicability.

What is claimed is:

1. A game device that transfers a prize located in a game space to a prize take-out space, the game device comprising:

an operation part for receiving an operation input from a player;

a game field for placing the prize; and

a moving mechanism including a prize holding part for holding the prize and the moving mechanism for moving the prize holding part based on the operation input,

wherein when a predetermined trigger is activated, the game field allows the game space to communicate with the prize take-out space, so that the prize is transferred to the prize take-out space.

2. The game device as claimed in claim 1, wherein the moving mechanism is provided in a vicinity of the game field.

3. The game device as claimed in claim 1, wherein the moving mechanism includes:

a driving part provided in a vicinity of the game field;

a support part connected to the driving part and provided along a vertical direction; and

a movable part moving along the support part and provided so as to protrude from the support part.

4. The game device as claimed in claim 3, wherein the movable part extends in a horizontal direction perpendicular to the vertical direction and is provided so as to face the game field.

5. The game device as claimed in claim 1, wherein the prize holding part is configured to rotate about an axis

parallel to a vertical direction.

6. The game device as claimed in claim 3, wherein the prize holding part is provided at a tip end of the movable part.

7. The game device as claimed in claim 1, wherein the game field is configured to form an opening by sliding movement.

8. The game device as claimed in claim 1, wherein the game field includes an auxiliary field provided along an outer periphery of the game field.

9. The game device as claimed in claim 8, wherein the auxiliary field is inclined toward the game field.

10. The game device as claimed in claim 1 further comprising:

- a housing defining the game space and the prize take-out space; and

- an input part that is provided on an upper surface of the housing in the game space and receives an input from the prize holding part.

11. The game device as claimed in claim 1, wherein the predetermined trigger is the operation input to the operation part, a time when the prize holding part reaches a predetermined position, or an input to an input part by the prize holding part.

12. A method for controlling an operation of a game device that transfers a prize located in a game space to a prize take-out space, the method comprising:

- receiving an operation input from a player;

- lowering a prize holding part based on the

operation input;
 holding the prize by the prize holding part;
 raising the prize holding part;
 allowing the game space to communicate with the
prize take-out space when a predetermined trigger is
activated; and
 releasing the prize held by the prize holding part.

13. A game program for causing a computer of a game device for transferring a prize located in a game space to a prize take-out space to function as:

 operation input means for receiving an operation input from a player;
 lowering means for lowering a prize holding part based on the operation input;
 holding means for holding the prize by the prize holding part;
 raising means for raising the prize holding part;
 means for allowing the game space to communicate with the prize take-out space when a predetermined trigger is activated; and
 releasing means for releasing the prize held by the prize holding part.