Description

[Title of Invention] Card Shoe Apparatus and Game System

[Technical Field]

[0001]

The present invention relates to a card shoe apparatus having a function of preventing cheating in card games such as baccarat that are played using playing cards (hereinafter simply referred to as "cards"), a table game system and a method.

[Background Art]

[0002]

Conventional card shoe apparatuses that are suitable for use in card games played in casinos or the like have been proposed. For example, a card shoe apparatus is disclosed in Patent Literature 1. In the card shoe apparatus of Patent Literature 1, a CCD image sensor and the related optical system components are incorporated in the card shoe. Also, a card reading window is provided in the exit of the card shoe. When a card passes through the exit of the shoe, the suit (type) and the rank (number) of the card are read through the card reading window.

[Citation List]

[0003]

Patent Literature 1: JP 1998-508236A (page 12, Fig.1)

[Summary of Invention]

[Technical Problem]

[0004]

However, such a conventional apparatus could not prevent a fraudulent act such as the insertion of false cards from the exit of the card shoe.

[0005]

Embodiments of t~~T~~he present invention seek~~has been made in view of the above problem, and aims~~ to provide a card shoe and a table game system with which it is possible to prevent the fraudulent insertion of cards into a card shoe used in the card game or the fraudulent dealing of cards, as well as the dealing of any card that should not be dealt onto the game table.

[0006]

[Solution to Problem]

~~To solve the above conventional problems, the present invention~~

~~provides a card shoe apparatus including:~~

~~a card housing unit for housing a plurality of cards;~~

~~an opening unit for manually taking out cards one by one from the card housing unit;~~

~~a card reading unit that reads information of a card that is manually drawn out from the card housing unit onto a game table from that card;~~

~~a control unit that stores rules of a card game and determines the winning/losing of the card game according to the rules of the card game based on the information of a card read by the card reading unit;~~

~~a display unit that outputs a winning/losing result as determined by the control unit; and~~

~~a card entry/exit restriction means that is provided in the opening unit and restricts the entry/exit of a card from the card housing unit,~~

~~the card housing unit, the card reading unit, the control unit, the display unit and the card entry/exit restriction means being configured as a single unit,~~

~~wherein the card entry/exit restriction means includes:~~

~~1) a function of prohibiting the insertion of a card that is inserted from the exterior toward the card housing unit via the opening unit in an opposite direction ; and~~

~~2) a function of prohibiting, based on the information of a card read by the card reading unit, the drawing out of any additional card in a case where no additional card needs to be drawn out from the card housing unit.~~

A first aspect of the present invention provides a method of delivering cards from a card housing unit during a card game, the card housing unit having (i) a guide unit in which the cards are manually moved, (ii) an opening from which the cards are manually drawn one by one and (iii) a lock member selectively restricting the manual movement of the cards in the guide unit near the opening, the method comprising: automatically detecting a card which is located at the opening for a period of time longer than a predetermined period of time, or a manual attempt drawing of a card from the opening after the card game ends; and based on the automatic detection, actuating the lock member to restrict the manual movement of the card near the opening.

A second aspect of the present invention provides a table game system using a plurality of playing cards, each of the cards having an invisible code representing at least a number of the card, the table game system comprising: a card shooter apparatus including: a card housing containing the cards, a card guide unit in which each of the

cards is manually moved; an opening from which the cards are manually drawn one by one from the card guide unit; a card sensor detecting a direction of movement of the cards in the card guide unit; a card reader reading the invisible code on each of the cards manually moved in the card guide unit; a lock member selectively restricting the manual movement of each of the cards in the card guide unit near the opening; and a control unit actuating the lock member based on a result of the card detecting sensor and/or a result of the card reader.

A third aspect of the present invention provides a method of delivering cards from a card housing unit during a card game, the card housing unit having (i) a guide unit in which the cards are manually moved, (ii) an opening from which the cards are manually drawn one by one and (iii) a lock member selectively restricting the manual movement of the cards near the opening, the method comprising: automatically detecting an attempt at manually drawing a card from the opening at an inappropriate time during the card game; and actuating the lock member to restrict the manual movement of the card in the card housing unit near the opening based on detection of the manual attempt drawing at the inappropriate time.

A fourth aspect of the present invention provides a method of delivering cards from a card housing unit during a card game, the card housing unit having (i) a guide unit in which the cards are manually moved, (ii) an opening from which are the cards manually drawn one by one and (iii) a lock member selectively restricting the manual movement of the cards in the guide unit near the opening, the method comprising: obtaining, card information related to each of the cards manually drawn from the opening; and automatically judging whether there is an improper shuffling of the cards based on the obtained card information; and based on the automatic detection, actuating the lock member to restrict the manual movement of the cards near the opening.

[0007]

[Advantageous Effects of Invention]

According to embodiments of~~With~~ the present invention, it is possible to provide a card shoe apparatus and a table game system capable of preventing, on site, any fraudulent act such as the fraudulent insertion of cards into a card shoe apparatus, false or inappropriate dealing of cards, or the like.

[0008]

[Brief Description of Drawings]

[Fig. 1]Fig. 1 is a block diagram illustrating the entirety of a card shoe apparatus according to an embodiment of the present invention.

[Fig. 2]Fig. 2 shows an example of a card according to the embodiment of the present invention.

[Fig. 3]Fig. 3 is a plan view of a main portion of a card guide of the card shoe apparatus, with the card guide partially broken.

Claims

1. A method of delivering cards from a card housing unit during a card game, comprising:

automatically detecting, using one or more processors, at least one of a card being held within an opening in the card housing unit for a period of time longer than a predetermined period of time or an attempt to manually draw a card from the opening after the card game ends; and

based on the automatic detection, controlling, using one or more processors, operation of a lock member to restrict movement of the card relative to the opening in the card housing unit.

2. The method of claim 1, further comprising:

automatically detecting, using one or more processors, an attempt to insert a card into the opening in the card housing unit; and

based on the automatic detection of an attempt to insert a card, controlling, using one or more processors, operation of the lock member to restrict movement of the card relative to the opening in the card housing unit.

3. The method of claim 1, further comprising:

detecting, using one or more processors, information related to a card manually drawn from the opening in the card housing unit; and

based on the detected information, controlling, using one or more processors, operation of the lock member to restrict movement of the card relative to the opening in the card housing unit.

4. The method of claim 3, wherein the step of detecting comprises reading a code on the card that indicates at least one of a number or a suit of the card.

5. The method of claim 4, wherein the step of detecting comprises comparing the code with a predetermined code stored in memory.

6. The method of claim 3, wherein the step of detecting comprises reading an authenticity determination code on the card.

7. The method of claim 6, wherein the step of detecting comprises comparing the authenticity determination code with a predetermined authenticity determination code stored in memory.

8. The method of claim 1, wherein the step of controlling operation of the lock member comprises activating the lock member to prevent manual drawing of a card along a card guide unit.

9. A table game system comprising:

a plurality of playing cards, each of the cards including an invisible code representing at least a number of the card; and

a card shooter apparatus comprising:

a card housing for containing the cards;

a card guide unit that guides the cards one by one from out of the card housing;

one or more card detecting sensors arranged along a guiding direction of the card guide unit for detecting backward and forward movement of a card passed along the card guide unit;

one or more readers that read the invisible code from each card guided by the card guide unit; and

a lock member controlled to prohibit movement of a card along the guiding direction of the card guide unit.

10. The table game system according to claim 9, wherein the card shooter apparatus further comprises:

a win/lose determining means for determining a result of a casino-style card game on the basis of the reading of the invisible code on the cards by the one or more readers.

11. A method of delivering cards from a card housing unit during a card game, comprising:

automatically detecting, using one or more processors, an attempt to manually draw a card from an opening in the housing at an inappropriate time during the card game; and

controlling, using one or more processors, operation of a lock member to restrict movement of the card relative to the opening in the card housing unit

based on automatic detection of a drawing of a card at an inappropriate time.

12. The method of claim 11, wherein the inappropriate time is after the card game ends.

13. A method of delivering cards from a card housing unit during a card game, comprising:

determining, using one or more processors, relative arrangement of a predetermined number of cards drawn from the card housing unit;

automatically detecting, using one or more processors, an improper shuffling of a set of cards comprising the predetermined number of cards based on the determined relative arrangement; and

based on the automatic detection, controlling, using one or more processors, operation of a lock member to restrict movement of cards from the set of cards relative to the opening in the card housing unit.

14. The method of claim 13, wherein the step of determining relative arrangement comprises determining at least one of rank or suit of each of the predetermined number of cards drawn in sequence from the card housing unit.

15. The method of claim 14, wherein the step of automatically detecting comprises determining whether the ranks of cards increase or decrease in order.

16. The method of claim 14, wherein the step of automatically detecting comprises determining whether each of the predetermined number of cards have the same rank.

17. The method of claim 14, wherein the step of automatically detecting comprises determining whether each of the predetermined number of cards are of the same suit.

18. The method of claim 14, wherein the step of automatically detecting comprises determining whether a repeating sequence of rank or suit is present within the predetermined number of cards.

19. The method of claim 13, wherein the step of automatically detecting

comprises determining whether the determined relative arrangement matches a pre-stored relative arrangement.

20. The method of claim 14, wherein the step of automatically detecting comprises determining whether each of the predetermined number of cards have the same rank and are of the same suit as compared to a corresponding card in a preceding deck of cards in the set.

21. The method of claim 14, wherein the step of automatically detecting comprises determining whether each of the predetermined number of cards have the same rank and are of the same suit as compared to a corresponding card in a preceding set of cards used in a previous card game.

22. The method of claim 13, wherein the step of automatically detecting further at least one of a card being held near an opening in the card housing unit for a period of time longer than a predetermined period of time or an attempt to manually draw a card from the opening.

201320330 7 04 May 2015

Claims

1. A method of delivering cards from a card housing unit during a card game, the card housing unit having (i) a guide unit in which the cards are manually moved, (ii) an opening from which the cards are manually drawn one by one and (iii) a lock member selectively restricting the manual movement of the cards in the guide unit near the opening, the method comprising:

automatically detecting

a card which is located at the opening for a period of time longer than a predetermined period of time, or

a manual attempt drawing of a card from the opening after the card game ends; and

based on the automatic detection, actuating the lock member to restrict the manual movement of the card near the opening.

2. The method of claim 1, further comprising:

automatically detecting a card which is inserted through the opening; and

based on the automatic detection, actuating the lock member to restrict manual movement of the card near the opening.

3. The method of claim 1, further comprising:

obtaining card information related to each of the cards manually drawn from the opening; and

based on the detected information, controlling the lock member to restrict the manual movement of the card.

4. The method of claim 3, wherein

the card information includes a code on each of the cards that indicates at least one of a number and a suit of the card.

5. The method of claim 4, further comprising:

comparing the code read in the obtained step with a predetermined code stored in a memory.

6. The method of claim 3, wherein

the card information includes an authenticity determination code on each of the cards.

7. The method of claim 6, further comprising:

comparing the authenticity determination code read in the obtained step with a predetermined authenticity determination code stored in a memory.

8. A table game system using a plurality of playing cards, each of the cards having an invisible code representing at least a number of the card, the table game system comprising:

a card shooter apparatus including;

a card housing containing the cards,

a card guide unit in which each of the cards is manually moved;

an opening from which the cards are manually drawn one by one from the card guide unit;

a card sensor detecting a direction of movement of the cards in the card guide unit;

a card reader reading the invisible code on each of the cards manually moved in the card guide unit;

a lock member selectively restricting the manual movement of each of the cards in the card guide unit near the opening; and

a control unit actuating the lock member based on a result of the card detecting sensor and/or a result of the card reader.

9. The table game system according to claim 8, wherein the card shooter apparatus further includes:

win/lose determining means judging win or loss of a casino-style card game on the basis of the result of the invisible code on the cards by the reader.

10. A method of delivering cards from a card housing unit during a card game, the card housing unit having (i) a guide unit in which the cards are manually moved, (ii) an opening from which the cards are manually drawn one by one and (iii) a lock member selectively restricting the manual movement of the cards near the opening, the method comprising:

automatically detecting an attempt at manually drawing a card from the

opening at an inappropriate time during the card game; and

actuating the lock member to restrict the manual movement of the card in the card housing unit near the opening based on detection of the manual attempt drawing at the inappropriate time.

11. The method of claim 10, wherein

the inappropriate time is after the card game ends.

12. A method of delivering cards from a card housing unit during a card game, the card housing unit having (i) a guide unit in which the cards are manually moved, (ii) an opening from which are the cards manually drawn one by one and (iii) a lock member selectively restricting the manual movement of the cards in the guide unit near the opening, the method comprising:

obtaining, card information related to each of the cards manually drawn from the opening; and

automatically judging whether there is an improper shuffling of the cards based on the obtained card information; and

based on the automatic detection, actuating the lock member to restrict the manual movement of the cards near the opening.

13. The method of claim 12, wherein

the judgement is based on whether at least one of rank and suit of each of a predetermined number of the cards drawn in sequence through the opening from the card housing unit.

14. The method of claim 13, wherein

the judgement is based on whether the rank of each of the cards increase or decrease in order.

15. The method of claim 13, wherein

the judgement is based on whether each of the predetermined number of the cards has the same rank.

16. The method of claim 13, wherein

the judgement is based on whether each of the predetermined number of the cards is of the same suit.

17. The method of claim 13, wherein

the judgement is based on whether there is a repeating sequence of a rank or a suit within the predetermined number of the cards.

18. The method of claim 12, wherein

the judgement is based on whether the obtained card information matches a pre-stored relative arrangement.

19. The method of claim 13, wherein

the judgement is based on whether each of the predetermined number of the cards has the same rank and the same suit as compared to a corresponding card in a preceding deck set of the cards.

20. The method of claim 13, wherein

the judgement is based on whether each of the predetermined number of the cards has the same rank and the same suit as compared to a corresponding card in a preceding set of the cards used in a previous card game.

21. The method of claim 12, wherein

the judgement is based on whether a card is located at the opening for a period of time longer than a predetermined period of time or a card inserted through the opening.