the chip.

[0005]

In a card game monitoring system disclosed in WO 2015/107902 A, fraud monitoring is performed by determining through image analysis of movement of chips whether or not the chips placed on a gaming table are collected or redeemed in accordance with a win or lose result.

SUMMARY

[0006]

The present disclosure seeks to provide a new system for detecting fraud in a game in a casino or an error or fraud at the time of wagering chips or doing settlement.

[0006a]

According to an aspect of the present invention, there is provided a management system configured to manage a game using chips on a gaming table having a plurality of playing positions, comprising a bet chip recognition device configured to recognize chips placed at each of the plurality of playing positions, wherein: (1) the bet chip recognition device includes a camera configured to capture images of the chips and generate image data, and an image recognition unit configured to analyze the image data using artificial intelligence or deep learning to recognize the bet chips and determine the number of chips; or (2) the chips are embedded with RFID tags, and the bet chip recognition device includes a reader configured to read the RFID tags embedded in the chips to determine the number of chips; a camera configured to capture images of the plurality of playing positions; and a chip operator identification device

configured to analyze the images and identify a person who operated the chips based on a direction of a hand reaching toward the chips at each of the plurality of playing positions and/or a movement of a hand toward the chips at each of the plurality of playing positions.

[0007]

There is also disclosed a fraud detection system in a casino having a plurality of gaming tables, including: a game recording apparatus which records a progress of a game played in the gaming table as an image; an image analyzing apparatus which performs mage analysis on the image of the recorded progress of the game; a win/lose result determining apparatus which determines a win or lose result of each game in the gaming table; and a control device which detects fraud practiced in the gaming table by using a result of the image analysis by the image analyzing apparatus and the win or lose result determined by the win/lose result determining apparatus, wherein the control device recognizes a position, type, and number of the chips wagered by each player through

may have at least one of functions of determining as to:

1) whether or not there is movement of chips during the time interval from the start of extraction of cards or from the game start operation of the dealer before the win or lose result of the game is displayed by the card distribution device in each game;

2) whether or not there is movement of chips by a person other than the dealer during the time interval when the dealer collects chips wagered by the losers among the game participants after the end of each game;

3) whether or not a chip is added during the time interval when the dealer collects chips wagered by the losers among the game participants after the end of each game;

4) whether or not the dealer performs payment for a position of chips wagered by the winner among the game participants after the end of each game; and

5) whether or not the winner among the game participants receives wagered chips and paid chips after the end of each game.

[0020]

In the above fraud detection system, the win/lose result determining apparatus may be a card distribution device which distributes the cards in the gaming table or a control device which determines the win or lose result of each game from information of the image analyzing apparatus reading the cards distributed in the gaming table by using a camera.

[0021]

According to the fraud detection system of the present disclosure,

it is possible to detect fraud in collection and redemption of chips in accordance with a win or lose result of a game.

[0022]

In addition, according to the system of the present disclosure, although the cards are slanted by "card squeegee" frequently performed by players in a baccarat game or the like, the rank and suit of the cards can be determined by image analysis, so that the total amount of chips being overlapped or being in a blind spot together with the positions can be recognized. In addition, fraud at the time of exchanging cash and chips can be detected.

BRIEF DESCRIPTION OF DRAWINGS

[0023]

FIG. 1 is a diagram illustrating an overview of a fraud detection system in a casino having a plurality of gaming tables according to a first embodiment of the invention;

FIG. 2A is a perspective diagram of chips illustrating an example of different overlapped states of chips recognized in the first embodiment of the invention;

FIG. 2B is a perspective diagram of chips illustrating an example of different overlapped states of chips recognized in the first embodiment of the invention;

FIG. 3A is a diagram illustrating details of a chip tray in the first embodiment of the invention;

FIG. 3B is a diagram illustrating another example of a chip tray in the first embodiment of the invention;