wireless IC (RFID) tag to each chip to recognize the amount of 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]

Embodiments of the present disclosure seek 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.

[0007]

An aspect of the present invention provides a fraud detection system in a casino having a plurality of gaming tables, comprising:

a game recording apparatus which records a progress of a game played in the gaming table as an image of camera;

an image analyzing apparatus which performs image 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 the type and number of the chips at each position of the banker area, the player area, and the tie area wagered by each player through the image analyzing apparatus and recognizes the type and number of chips in the pair area, which is a side bet, and a total amount of chips in a chip tray of a dealer of the gaming table,

the control device recognizes the position, type and number of chips wagered by the players in the banker area and player area of the gaming table in the game from the total amount of the chips in the chip tray before settlement of each game, and recognizes whether or not the chip to be collected for each banker area and player area according to the rules of baccarat game is to be collected from the result of the win or loss of the game obtained by the win/loss result determining apparatus, and for the chips that need to be repaid, the repayment amount is calculated separately according to the rules of baccarat game, in addition, the chips wagered on each tie area and fair area according to the rules of baccarat game from the position, type and number of chips wagered by the player in the tie area and the fair area, and according to the result of the game, determines whether the chip should be

recovered, and for chips should be repaid, the repayment amount is separately calculated using different repayment rates of the rules of baccarat games, and the results of each separate calculation are combined and according to the result of the game, the total amount of the increased/decreased amount of the chip is calculated to calculate the total amount of chips in the chip tray at the end of the game, and the total amount of the amount of chips and the chips in the chip tray at the end of the game obtained through the image analyzing apparatus, and comparing the correct total amount and the actual total amount and determining whether there is difference between the correct total amount and the actual total amount.

Another aspect of the present invention provides a fraud detection system in a casino having a plurality of gaming tables, comprising:

a game recording apparatus which records a progress of a game played in the gaming table as an image of camera including a dealer and a player;

an card distributing device for determining and displaying a result of winning or losing each game in the gaming table;

an image analyzing apparatus for performing image analysis on an image of a progress state of the recorded game; and

an intelligent control device capable of detecting banknotes and chips in the gaming table using the image analysis result by the image analyzing apparatus;

wherein the image analyzing apparatus or the intelligent control device can detects that the exchange of banknotes and chips is performed on the gaming table in a situation other than the dealer's dealing, based on the information obtained from the card distributing device or the dealer, and recognizes the total amount of the true banknotes in which the banknotes are verified by the black light, in addition, the image analyzing apparatus or the intelligent control device can recognize the total amount of chips even if a plurality of chips appearing on the gaming table as a replacement object are partially or entirely hidden by the blind spots of the camera, and the image analyzing apparatus or intelligent control device compares the total amount of banknotes from the player with the total amount of chips from the dealer on the gaming table, and has an artificial intelligence utilization type or deep learning structure that can determines whether there is difference between them.

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 image 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,

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]

As disclosed, 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 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;