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]

According to an aspect of the present invention, there is provided a management system of table game in casino having a plurality of gaming table, comprising:

at least one 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 control device which recognizes positions, types, and numbers of chips on the gaming table wagered by the player through the image analyzing apparatus,

wherein the control device has a function that is capable of specifying individual players placed at each playing position of the gaming table, wherein the each player is

provided with identification number to be specified, the function is capable of associating the chips with the identification number of the player who bet the chips,

wherein the control device further has function that is capable of recognizing positions, types, and amount of the chips wagered by player in each game using artificial intelligence technology or machine learning technology, recognizing total amount and history of wagered chips of each game, and recognizing amount and history of wagered chips of each player at timings when each predetermined number of games have elapsed;

wherein the at least one game recording apparatus has an offset viewing angle capturing a plurality of betting areas on which can be recognized the positions, types, and numbers of wagered chips by each player.

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;

CLAIMS

1. A management system of table game in casino having a plurality of gaming table, comprising:

at least one 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 control device which recognizes positions, types, and numbers of chips on the gaming table wagered by the player through the image analyzing apparatus,

wherein the control device has a function that is capable of specifying individual players placed at each playing position of the gaming table, wherein the each player is provided with identification number to be specified, the function is capable of associating the chips with the identification number of the player who bet the chips,

wherein the control device further has function that is capable of recognizing positions, types, and amount of the chips wagered by player in each game using artificial intelligence technology or machine learning technology, recognizing total amount and history of wagered chips of each game, and recognizing amount and history of wagered chips of each player at timings when each predetermined number of games have elapsed;

wherein the at least one game recording apparatus has

an offset viewing angle capturing a plurality of betting areas on which can be recognized the positions, types, and numbers of wagered chips by each player.

2. The management system of table game according to claim 1, wherein the control device has a structure capable of recognizing amount of increase/decrease of chips of the player in a game calculated from win or lose result of the game, recognizing history within a predetermined game, and recognizing history of win or lose and amount of income/expenditure of each player at timings when each predetermined number of game have elapsed.

3. The management system of table game according to claim 2, further comprising win or lose result determining device which determines win or lose result of each game in the gaming table, wherein

the win or lose result of game is obtained by the win or lose result determining device.

4. The management system of table game according to any one of claims 1 to 3, wherein the control device has a structure capable of specifying individual player in a strange situation in which amount of betting, winning amount, and/or win and lose history is strange comparing with statistical data, and has a function of informing existence of the specified player.

5. The management system of table game according to claim 4, wherein the strange situation is at least one of:

1) a situation in which winning amount more than predetermined amount occurs;

2) a situation in which a state that the amount of betting chips at lose time is small and the amount of betting chips at the win time is large continues for several games and the state is strange compared with statistical data;

3) a situation in which an actual winning amount of each player is strange comparing with an average wining amount statistically expected based on history of the amount of betting;

4) a situation in which the position of chips wagered by each player and the amount of chips obtained by each player are strange compared with statistical data; or

5) a situation in which winning rate when the amount of betting is more than a predetermined amount is strange compared with statistical data.

6. The management system of table game according to any one of claims 1 to 5, wherein the function of specifying player of the control device has a structure that specifies and extract a face image of the player by using artificial intelligence technology or machine learning technology.

7. The management system of table game according to any one of claims 1 to 6, wherein there comprises two game recording apparatus.