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]

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 disclosure, there is provided a game management system for managing a game in which gaming chips are bet on any of a plurality of betting areas of a game table for a game determined by a combination of numbers of a plurality of game items, wherein each of the gaming chips is capable of determining value, at least by the side appearance, and is equipped with an RFID tag that stores information identifying the value, the game management system comprising: a bet recognition system configured to recognize an betting area where gaming chips are bet and an amount of the gaming chips bet; a tray recognition system configured to recognize an amount of gaming chips stored in a chip tray configured to store

dealer's chips at the gaming table; a game result obtaining system configured to obtain a game result based on a combination of numbers of a plurality of gaming items; a management device configured to calculate a settlement amount in settlement for each betting area based on the betting area and the amount recognized by the bet recognition system and the game result obtained by the game result obtaining device, and determine whether the amount recognized by the tray recognition system has been correctly increased or decreased by the settlement according to the settlement amount, wherein the bet recognition system comprises an image recognition system and/or a first RFID reading system, wherein the image recognition system comprises: a first camera configured to capture a first image of gaming chips placed in a betting area of the game table such that at least the sides of the gaming chips appear in the first image; and the first image recognition system configured to recognize the amount of the gaming chips bet on the betting area of the gaming table by performing image recognition using a neural network on the first image, the first RFID reading system is configured to recognize the amount of the gaming chips bet on the betting area of the game table by reading the information from the RFID tags of the gaming chips bet on the betting area of the game table, the tray recognition system comprises a second RFID reading system configured to recognize the amount of gaming chips stored in the chip tray by reading the information from the RFID tags of the gaming chips stored in the chip tray.

[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
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]

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;