MANAGEMENT SYSTEM FOR SUBSTITUTE CURRENCY FOR GAMING

Cross-reference of related applications

[0001]

This application claims the benefit of Patent Application No. 2018-182857 filed in Japan on September 6, 2018, the contents of which application are hereby incorporated by reference.

Technical field

[0002]

The present invention relates to substitute currency for gaming for use in casinos and other gaming facilities that use substitute currency for gaming, and to a system for managing substitute currency for gaming.

[0003]

Among the many live table games played in casinos and gaming facilities are baccarat and blackjack. In casinos and gaming facilities, substitute currency for gaming is used for those games. In casinos and gaming facilities, game substitutes are exchanged for cash at designated exchange counters in casinos and gaming facilities, or at the game tables by exchange staff or dealers in charge of the game tables.

[0004]

The use of counterfeit substitute currency for gaming should not occur in casinos. In order to prevent the use of counterfeit substitute currency for gaming in casinos, the management system for substitute currency for gaming described in International Application Publication No. WO2017/135103 registers the IDs of substitute currency for gaming to be used in a database in advance. If there is a situation where there is a new ID that did not exist in the database, or two or more identical IDs exist, the system determines the possibility of counterfeit.

Summary

[0005]

Embodiments of the present invention provide a management system or

substitute currency for gaming used in casinos and gaming facilities to prevent the use of counterfeit substitute currency for gaming. ~~One of the purpose~~Embodiments of the present invention ~~is~~ seek to prevent the use of counterfeit or fraudulent exchange of substitute currency for gaming in casinos and gaming facilities. In the conventional technology, it is possible to determine that at least one of the substitute currency for gaming is a fake when two or more substitute currency for gaming with the same ID are found by registering the individually identifiable unique ID attached to the substitute currency for gaming in a database in advance. However, it is not possible to directly distinguish between genuine and fake substitute currency for gaming. Therefore, if only counterfeit substitute currency for gaming is used and genuine substitute currency for gaming is not used, it cannot be determined that it is a counterfeit, and the conventional technology cannot be a direct solution to prevent the use of counterfeit substitute currency for gaming.

[0005a]

An aspect of the present invention provides a management system for a plurality of substitute currency for gaming, wherein

each of the plurality of the substitute currency for gaming has an appearance consisting of a pattern that is determined by chance in a manufacturing process, and a unique ID that can be individually identified is assigned to each of the plurality of the substitute currency for gaming,

the management system comprises:

a database that, for a plurality of the substitute currency for gaming that is registered, associates the appearance of the substitute currency for gaming and the ID of the substitute currency for gaming and stores them;

an image acquisition device configured to acquire an image by capturing the appearance of the substitute currency for gaming;

an ID reading device that reads the ID of the substitute currency for gaming;

a pattern recognizing device that recognizes the pattern from the image acquired by the image acquisition device using a deep learning structure; and

a management control device that determines whether an appearance associated in the database with the ID read by the ID reading device corresponds to the pattern that is recognized by the pattern recognizing device, thereby to determine authenticity of the substitute currency for gaming.

[0005b]

Another aspect of the present invention provides a management system for a plurality of substitute currency for gaming, wherein

each of the plurality of the substitute currency for gaming consists of a pattern that is determined by chance in a manufacturing process,

the management system comprises:

an image acquisition device configured to acquire an image by capturing the appearance of the substitute currency for gaming;

a management control device that uses an artificially intelligent device having a deep learning structure to identify which of a plurality of registered substitute currency for gaming the substitute currency for gaming in the image correspond to, wherein the deep learning structure inputs the image and outputs information, for respective appearance of the plurality of registered substitute currency for gaming, indicating whether or not it corresponds to the image.

[0006]

~~In order to solve the above-mentioned conventional problems~~According to the disclosure, the management system of the substitute currency for gaming ~~of the present invention~~ is as follows:

the substitute currency for gaming has a ground pattern formed in the manufacturing process or material production process, and a unique ID that can be individually identified,

the ground patterns have a pattern that is difficult to distinguish from each other at first glance, but is not completely identical,

the substitute currency for gaming further has a multi-layered structure consisting of multiple layers of plastic including:

a layer with the ground pattern;

an indication plastic layer on which an indication of

an amount of money, etc., of the substitute currency for gaming is printed,

the layer with the ground pattern is located inside of the indication plastic layer, and the ground pattern can be visually recognized through the indication plastic layer,

the management system comprises:

Claims:

~~1. A management system for substitute currency for gaming, wherein~~

~~the substitute currency for gaming has a ground pattern formed in the manufacturing process or material production process, and a unique ID that can be individually identified,~~

~~the ground patterns have a pattern that is difficult to distinguish from each other at first glance, but is not completely identical,~~

~~the substitute currency for gaming further has a multi-layered structure consisting of multiple layers of plastic including:~~

~~a layer with the ground pattern;~~

~~an indication plastic layer on which an indication of an amount of money, etc., of the substitute currency for gaming is printed,~~

~~the layer with the ground pattern is located inside of the indication plastic layer, and the ground pattern can be visually recognized through the indication plastic layer,~~

~~the management system comprises:~~

~~a ground pattern acquisition device that acquires an image of the ground pattern via a camera;~~

~~an ID reading device that reads the unique ID; and~~

~~a management control device that associates the pattern of the ground pattern and the unique ID and stores them in a database, wherein~~

~~the management control device identifies the pattern by analyzing the image of the ground pattern acquired by the ground pattern acquisition device,~~

~~the management control device determines whether the identified pattern of the ground pattern of the substitute currency for gaming to be judged matches the pattern of the ground pattern associated with the unique ID of the substitute currency for gaming to be judged obtained from the ID reading device by searching the database, thereby to determine authenticity of the substitute currency for gaming.~~

~~2. The management system for substitute currency for gaming according to claim 1, wherein~~

~~the substitute currency for gaming has an opaque layer in the middle and a layer with a ground pattern on both sides across the opaque layer, wherein the layer with the ground pattern has patterns that are difficult to distinguish from each other at a glance but do not completely match each other, on a front surface and back surface,~~

~~the management control device is configured to be able to associate in the database and manage at least three of the pattern of the ground pattern on the front surface of the substitute currency for gaming, the pattern of the ground pattern on the back surface of the substitute currency for gaming, and the unique ID.~~

~~3. The management system for substitute currency for gaming according to claim 2, wherein~~

~~the management control device determines whether the pattern of the ground pattern on the front and/or back surface of the substitute currency for gaming to be judged matches the pattern of the ground pattern on the front and/or back surface associated with the ID information of the substitute currency for gaming to be judged obtained from the ID reading device by searching the database, thereby to determine authenticity of the substitute currency for gaming.~~

~~4. The management system for substitute currency for gaming according to any of claims 1 to 3, wherein~~

~~the management control device is configured to use an artificial intelligence-type device to identify the pattern of the ground pattern of the substitute currency for gaming by analyzing an image of the ground pattern of the substitute currency for gaming acquired by the ground pattern acquisition device.~~

~~5. The management system for managing substitute currency for gaming according to any of claims 2 to 4, wherein~~

~~the management control device is provided with a function of determining the pattern of the ground pattern of the substitute currency for gaming by using the relative positional relationship~~

~~with the indication printed on the indication plastic layer.~~

~~6. The management system for substitute currency for gaming purposes according to any of claims 1 to 5, wherein~~
~~the ground pattern is a pearl pattern.~~

~~7. The management system for substitute currency for gaming purposes according to any of claims 1 to 5, wherein~~
~~the ground pattern is a lace pattern formed by a lace being crimped by the indication plastic layer.~~

~~8. The management system for substitute currency for gaming according to any of claims 2 to 7, wherein~~
~~the ground pattern is formed by the printing dot pattern in the indication of the substitute currency for gaming.~~

~~9. The management system for substitute currency for gaming according to any of claims 1 to 8, wherein~~
~~the unique ID is alphanumeric affixed to the surface of the substitute currency for gaming.~~

~~10. The management system for substitute currency for gaming according to any of claims 1 to 9, wherein~~
~~the unique ID is an RFID.~~

~~11. The management system for substitute currency for gaming according to any of claims 1 to 10, wherein~~
~~the substitute currency for gaming has a unique alphanumeric ID attached to its surface and an RFID embedded in it,~~
~~the management control device is provided with a function of allowing the ID information on the surface to be associated with the ID information of the RFID and managed in a database.~~

~~12. A substitute currency for gaming comprising:~~
~~a ground pattern formed in a manufacturing process or a material manufacturing process; and~~
~~a unique ID for individual identification, wherein~~

~~the ground pattern has a pattern that is difficult to distinguish from each other at a glance but is not completely identical, and the substitute currency for gaming can be individually identified by determining the pattern and by reading the ID, and~~

~~the substitute currency for gaming has a structure that allows information of the pattern in an image of the ground pattern and information of the ID to be associated and managed in a database.~~

~~13. A management system for managing substitute currency for gaming with a ground pattern that has a sense of unity but has a pattern that is formed unintentionally, the management system comprising:~~

~~a ground pattern acquisition device that acquires an image of the ground pattern via a camera; and~~

~~a management control device that stores the pattern of the ground pattern of a genuine substitute currency for gaming in a database, wherein~~

~~the management control device determines the pattern by analyzing the image of the ground pattern acquired by the ground pattern acquisition device,~~

~~the management control device determines whether the pattern of the ground pattern obtained by the ground pattern acquisition device is stored in the database by analyzing an image of the ground pattern, and based on the determination, determines authenticity of the substitute currency for gaming.~~

1. A management system for a plurality of substitute currency for gaming, wherein

each of the plurality of the substitute currency for gaming has an appearance consisting of a pattern that is determined by chance in a manufacturing process, and a unique ID that can be individually identified is assigned to each of the plurality of the substitute currency for gaming,

the management system comprises:

a database that, for a plurality of the substitute currency for gaming that is registered, associates the appearance of the substitute currency for gaming and the ID of the substitute currency for gaming and stores them;

an image acquisition device configured to acquire an image by capturing the appearance of the substitute currency for gaming;

an ID reading device that reads the ID of the substitute currency for gaming;

a pattern recognizing device that recognizes the pattern from the image acquired by the image acquisition device using a deep learning structure; and

a management control device that determines whether an appearance associated in the database with the ID read by the ID reading device corresponds to the pattern that is recognized by the pattern recognizing device, thereby to determine authenticity of the substitute currency for gaming.

2. The management system according to claim 1, wherein

the substitute currency for gaming is provided with an RFID that stores the ID assigned to the substitute currency for gaming,

the ID reading device is a RFID reader configured to read the RFID.

3. The management system according to claim 1, wherein

the pattern that is determined by chance in the manufacturing process is given due at least in part to the manufacturing process or material of the substitute currency for gaming.

4. The management system according to claim 1, wherein

the pattern that is determined by chance in the manufacturing process is a lace pattern.

5. The management system according to claim 1, wherein

the pattern that is determined by chance in the manufacturing process is given due to printing.

6. The management system according to claim 1, wherein

the pattern that is determined by chance in the manufacturing process is a ground pattern.

7. The management system according to claim 6, wherein

the substitute currency for gaming has a multi-layered structure consisting of a plurality of layers that are laminated to each other and includes a layer having the ground pattern and an indication plastic layer on which an indication indicating denomination or the like of the substitute currency for gaming,

the layer having the ground pattern is arranged inside the indication plastic layer, and the ground pattern is visible through the indication plastic layer.

8. A management system for a plurality of substitute currency for gaming, wherein

each of the plurality of the substitute currency for gaming consists of a pattern that is determined by chance in a manufacturing process,

the management system comprises:

an image acquisition device configured to acquire an image by capturing the appearance of the substitute currency for gaming;

a management control device that uses an artificially intelligent device having a deep learning structure to identify which of a plurality of registered substitute currency for gaming the substitute currency for gaming in the image correspond to, wherein the deep learning structure inputs the image and outputs information, for respective appearance of the plurality of registered substitute currency for gaming, indicating whether or not it corresponds to the image.