Meanwhile, different values are defined for each type of gaming chips, and a technology for detecting a value of a gaming chip has also been proposed to automate a table game. For example, JP 2008-246103 A discloses a method for determining authenticity by embedding a wireless tag, in which information on a type or a value of gaming chips is recorded in a gaming chip and reading the information with a reader.

[0005]

Embodiments of the present disclosure seek to provide a new gaming chip capable of determining authenticity based on an image obtained by photographing.

[0005a]

An aspect of the present invention provides a management system of a table game using a table game, comprising:

a recording device recording an image of a gaming chip; and

an inspection device determining a type and authenticity of the gaming chip using a recorded result of the recording device,

wherein a representation of the type of the gaming chip is printed on a surface of the gaming chip, an authenticity recognition mark is printed on the surface of the gaming chip and is printed more inwardly than the printing of the representation of the type of the gaming chip by an infrared absorbing material,

the recording device is configured to be connected to a normal camera recording and discriminating the representation of the type of the gaming chip which is printed on the surface of the gaming chip, and

an infrared camera recording and discriminating the authenticity recognition mark by the infrared absorbing material printed on the surface of the gaming chip and printed more inwardly than the printing of the representation of the type of the gaming chip by irradiating infrared rays from a side printed with the representation of the type of the gaming chip printed on the surface of the gaming chip, and

the inspection device is configured to determine the type and the authenticity of the gaming chip using the normal camera and the infrared camera.

[0005b]

Another aspect of the present invention provides a gaming chip, wherein a representation of a type of the gaming chip is printed on a surface of the gaming chip, an authenticity recognition mark is printed on the surface of the gaming chip and printed more inwardly than the printing of the representation of the type of the gaming chip by an infrared absorbing material, and the authenticity recognition mark is irradiated with infrared rays from a side printed with the representation of the type of the gaming chip printed on the surface of the gaming chip by an infrared camera to allow an infrared absorbing material printed on the surface of the gaming chip and printed more inwardly than the printing of the representation of the type of the gaming chip to record and discriminate the authenticity recognition mark.

[0005c]

Another aspect of the present disclosure provides a gaming chip, wherein internal printing is performed inside a

gaming chip by an infrared absorbing material, and an infrared image is indicated by the internal printing.

[0005d]

Another aspect of the present invention provides a management system of a table game using a gaming chip as described, comprising:

an infrared camera generating an infrared image by photographing the infrared image indicated by the internal printing; and

an inspection device determining authenticity of the gaming chip based on the infrared image.

[0006]

There is also disclosed a management system of a table game using a game table, including: a recording device recording an image of a gaming chip; and an inspection device determining a type and authenticity of the gaming chip using a recorded result of the recording device, wherein the gaming chip has a multilayer structure in which a plurality of plastic layers are laminated by thermocompression bonding, an outer layer of the plurality of plastic layers is provided with a representation plastic layer, an outer side of the representation plastic layer is printed with a representation of the type of the gaming chip, a rear side of the representation plastic layer or a plastic layer on an inner side of the representation plastic layer is printed with an authenticity recognition mark by an infrared absorbing material, the recording device is configured to be connected to a normal

[0021]

By this configuration, it is possible to determine the authenticity of the gaming chip by determining whether the combination of the authenticity recognition mark with the type specified by the colored layer is correct.

[0022]

In the management system described above, the inspection device may inspect whether the authenticity recognition mark and the RF tag information are associated with each other in the database.

[0023]

By this configuration, it is possible to determine the authenticity of the gaming chip depending on whether the combination of the authenticity recognition mark with the RF tag information is correct.

[0024]

There is also disclosed a gaming chip having a multilayer structure in which a plurality of plastic layers are laminated by thermocompression bonding, an outer layer of the plurality of plastic layers is provided with a representation plastic layer, an outer side of the representation plastic layer is printed with a representation of the type of the gaming chips, a rear side of the representation plastic layer or a plastic layer on an inner side of the representation plastic layer is printed with an authenticity recognition mark by an infrared absorbing material, and the authenticity recognition mark is irradiated with infrared rays

recognition mark may be associated with at least the ID mark in a database.

[0043]

By this configuration, the authenticity recognition mark and the ID mark are associated with each other.

[0044]

There is also disclosed a management system of a table game using a table game, including: a recording device recording an image of a gaming chip; and an inspection device determining a type and authenticity of the gaming chip using a recorded result of the recording device, wherein a representation of the type of the gaming chip is printed on a surface of the gaming chip, an authenticity recognition mark is printed on the surface of the gaming chip and is printed more inwardly than the printing of the representation of the type of the gaming chip by an infrared absorbing material, the recording device is configured to be connected to a normal camera recording and discriminating the representation of the type of the gaming chip which is printed on the surface of the gaming chip, and an infrared camera recording and discriminating the authenticity recognition mark by the infrared absorbing material printed on the surface of the gaming chip and printed more inwardly than the printing of the representation of the type of the gaming chip by irradiating infrared rays from a side printed with the representation of the type of the gaming chip printed on the surface of the gaming chip, and the inspection device is configured to determine the

authenticity of the gaming chip depending on whether the combination of the authenticity recognition mark with the RF tag information is correct.

[0062]

There is also disclosed a gaming chip, wherein a representation of a type of the gaming chip is printed on a surface of the gaming chip, an authenticity recognition mark is printed on the surface of the gaming chip and printed more inwardly than the printing of the representation of the type of the gaming chip by an infrared absorbing material, and the authenticity recognition mark is irradiated with infrared rays from a side printed with the representation of the type of the gaming chip printed on the surface of the gaming chip by an infrared camera to allow an infrared absorbing material printed on the surface of the gaming chip and printed more inwardly than the printing of the representation of the type of the gaming chip to record and discriminate the authenticity recognition mark.

[0063]

By this configuration, it is possible to determine the authenticity of the gaming chip based not only on the print contents on the surface of the gaming chip but also on the contents which are printed inside the gaming chip by the infrared absorbing material. Since the print by the infrared absorbing material is inside the gaming chip, the print is neither visually confirmed from the outside with human eyes, nor peeled out or faded by the use of the gaming chip.

[0077]

By this configuration, the authenticity recognition mark and the RF tag information are associated with each other.

[0078]

An ID mark may be provided on an outer circumferential surface of the light color layer in UV ink or carbon black ink.

[0079]

By this configuration, it is possible to attach the ID mark on the side surface.

[0080]

In the gaming chip described above, the authenticity recognition mark may be associated with at least the ID mark in the database.

[0081]

By this configuration, the authenticity recognition mark and the ID mark are associated with each other.

[0082]

There is also disclosed a gaming chip, wherein internal printing is performed inside a gaming chip by an infrared absorbing material, and an infrared image is indicated by the internal printing.

[0083]

By this configuration, since the inside of the gaming chip is applied with the internal printing representing the infrared image by the infrared absorbing material, it is possible to determine the authenticity of the gaming chip depending on at least the presence or absence of the infrared image.

[0084]

In the gaming chip described above, surface printing indicating a visible light image may be performed on an outer surface of the gaming chip.

[0085]

By this configuration, it is possible to determine the authenticity of the gaming chip based on the infrared image represented by the internal printing and the visible light image represented by the surface printing.

[0086]

In the gaming chip described above, the internal printing may be performed under the surface printing.

[0087]

By this configuration, since the internal printing is covered with the surface printing, the internal printing can hardly be visually recognized.

[0088]

The gaming chip described above may be configured of the plurality of layers, and the internal printing may be performed on the surface of any of the plurality of layers.

[0089]

By this configuration, the internal printing is performed on the surface of any of the layers.

[0090]

There is also disclosed a management system of a table game using a gaming chip, including: an infrared camera generating an infrared image by photographing

[0095]

By this configuration, it is possible to recognize the contents of the surface printing from the visible light image and recognize the contents of the internal printing from the infrared image.

[0096]

In the management system described above, the inspection device may determine that the gaming chip is a forgery when the recognized contents of the internal printing do not correspond to the contents of the surface printing.

[0097]

By this configuration, it is possible to determine the authenticity of the gaming chip by comparing the contents of the internal printing with the contents of the surface printing.

[0098]

According to the present disclosure, it is possible to determine the authenticity of the gaming chip based on the contents printed on the inside of the gaming chip by the infrared absorbing material.

[0099]

The foregoing and other objects, features, aspects and advantages of the exemplary embodiments will become more apparent from the following detailed description of the exemplary embodiments when taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS