When a normal playing card is viewed through an infrared camera with good performance, a printed part on a front side to which the carbon black ink is applied can be seen even from a back side of the playing card. That is, there is a possibility to identify ranks and suits on the front side when viewed from the back side.

[0009]

~~An object~~Embodiments of the present invention ~~is~~ seek to provide a playing card capable of making it difficult to see through a printed part on a front side even when the playing card is viewed through an infrared camera.

[0009a]

An aspect of the present invention provides a playing card, wherein a suit and a rank are printed on one surface of a card base sheet, and a back pattern is printed on a back surface, a substantially carbon free ink is used for printing the suit and the rank, and thus the suit and the rank printed with the substantially carbon free ink transmit infrared rays, such that it is difficult for both the visible rays and the infrared rays to distinguish the suit and the rank from the back surface, and one set or a plurality of sets of decks are constituted by individual cards cut from the card base sheet by a cutting machine.

[0009b]

Another aspect of the present invention provides a shuffled playing card, wherein predetermined sets of the playing cards as described are shuffled by a shuffle machine to form one set of shuffled playing cards.

[0010]

There is provided a playing card according to ~~an aspect of~~ the present ~~invention~~disclosure, wherein

a suit and a rank are printed on one surface of a card base sheet, and a back pattern is printed on a back surface of the card base sheet,

the card base sheet has an infrared seeing-through preventing layer containing carbon as an intermediate layer, and an ink containing no carbon is used to print the suit and the rank, and

one set or a plurality of sets of decks are formed by individual cards cut by a cutting machine from the card base sheet.

[0011]

~~According to this aspect~~As disclosed, since the card base sheet is provided with an infrared seeing-through preventing layer

containing the carbon as the intermediate layer, infrared rays radiated from the printed part on the front side of the card are absorbed by the intermediate layer, and hardly transmit the back side of the card. In addition, since the ink containing no carbon is used to print the suit and the rank, a difference between intensity of infrared rays radiated from the printed part and intensity of infrared rays radiated from an area therearound is small. Thus, it is extremely difficult to distinguish the suit and the rank from a distribution of a trace amount of transmitted infrared rays even if there are the infrared rays radiated from the printed part on the front side and the infrared rays transmitting the back side of the card without being absorbed by the intermediate layer. Therefore, it is possible to provide a playing card capable of making it difficult to see through the printed part on the front side even when the playing card is viewed through the infrared camera.

[0012]

In the playing card according to ~~the aspect of~~ the present ~~invention~~disclosure,

the back pattern on the back surface of the card base sheet may be printed with an ink containing carbon.

[0013]

~~According to the aspect~~As disclosed, since the back pattern of the card is printed with an ink containing carbon, the infrared distribution having the same pattern as the back pattern appears on the back side of the card. Therefore, even if there are the infrared rays radiated from the printed part on the front side

and the infrared rays transmitting the back side of the card without being absorbed by the intermediate layer, the distribution of the trace amount of transmitted infrared rays is buried by overlapping the distribution of the infrared rays radiated from the back pattern of the card, so it is even more difficult to distinguish the printed part on the front side of the card even when the playing card is viewed through the infrared camera.

[0014]

There is provided a playing card according to ~~an aspect of~~ the present ~~invention~~disclosure, wherein

a suit and a rank are printed on one surface of a card base sheet, and a back pattern is printed on a back surface,

the card base sheet has an infrared seeing-through preventing layer containing carbon as an intermediate layer,

the back pattern on the back side of the card base sheet may be printed with the ink containing carbon, and

one set or a plurality of sets of decks are formed by individual cards cut by a cutting machine from the card base sheet.

[0015]

~~According to this aspect~~As disclosed, since the card base sheet is provided with the infrared seeing-through preventing layer containing the carbon as the intermediate layer, infrared rays radiated from the front side of the card are absorbed by the intermediate layer, and hardly transmit the back side of the card. In addition, since the back pattern of the card is printed

with the ink containing carbon, the distribution of the infrared rays having the same pattern as the back pattern appears on the back side of the card. Therefore, even if there are the infrared rays radiated from the printed part on the front side and the infrared rays transmitting the back side of the card without being absorbed by the intermediate layer, the distribution of the trace amount of transmitted infrared rays is buried by overlapping the distribution of the infrared rays radiated from the back pattern of the card, so it is extremely difficult to distinguish the suit and the rank from the distribution of the infrared rays. Therefore, it is possible to provide a playing card capable of making it difficult to see through the printed part on the front side even when the playing card is viewed through the infrared camera.

[0016]

There is provided a playing card according to ~~an aspect of~~ the present ~~invention~~disclosure, wherein

a suit and a rank are printed on one surface of a card base sheet, and a back pattern is printed on a back surface,

an ink containing no carbon is used to print the suit and the rank,

the back pattern on the back surface of the card base sheet may be printed with the ink containing carbon, and

one set or a plurality of sets of decks are formed by individual cards cut by a cutting machine from the card base sheet.

[0017]

~~According to the aspect~~As disclosed, since the ink containing no carbon is used to print the suit and the rank, a difference between intensity of infrared rays radiated from the printed part and intensity of infrared rays radiated from an area therearound is small. Thus, it is extremely difficult to distinguish the suit and the rank from a distribution of a trace amount of transmitted infrared rays even if there are the infrared rays radiated from the printed part on the front side of the card and the infrared rays transmitting the back side of the card. In addition, since the back pattern of the card is printed with the ink containing carbon, the distinct uneven distribution of the infrared rays having the same pattern as the back pattern appears on the back side of the card. Therefore, even if there are the infrared rays radiated from the printed part on the front side and the infrared rays transmitting the back side, the distribution of the trace amount of transmitted infrared rays is buried by overlapping the distribution of the infrared rays radiated from the back pattern of the card, so it is extremely difficult to distinguish the suit and the rank from the distribution of the infrared rays. Therefore, it is possible to provide a playing card capable of making it difficult to see through the printed part on the front side even when the playing card is viewed through the infrared camera.

[0018]

There is provided a shuffled playing card according to ~~an aspect of~~ the present ~~invention~~disclosure, wherein

a predetermined sets of playing cards having any of the

above-described characteristics are shuffled by a shuffle machine to form a set of shuffled playing cards, and the set of shuffled playing cards is individually packaged and sealed.

[0019]

~~According to the aspect~~As disclosed, it is possible to provide a shuffled playing card which need not be shuffled by a game sponsor over a long period of time prior to a game and does not provide any room to perform fraudulent acts such as inserting and removing cards and replacing cards.

[0020]

In the shuffled playing card according to ~~the aspect of~~ the present ~~invention~~disclosure,

individually different shuffled playing card IDs may be assigned to the shuffled playing card individually packaged and sealed as ID codes.

[0021]

~~According to the aspect~~As disclosed, for example, if the shuffled playing card ID is associated with information that can specify the shuffle machine or a shuffle machine group shuffling the shuffled playing card, the shuffled playing card ID is assigned to the shuffled playing card individually packaged and sealed, and thus when it is conceived that there is any defect in the playing card and the shuffle machine is a cause of the defect, it is possible for a manufacturer to easily specify in which shuffle machine or shuffle machine group the defect occurs, thereby making it possible to take countermeasures as soon as possible.

[0022]

In the playing card according to ~~the aspect of~~ the present ~~invention~~disclosure,

the different sheet IDs for one card base sheet or each of the plurality of card base sheets may be printed on the card base sheet, and

the sheet ID may be printed on a print surface of the card constituting the set of decks.

[0023]

~~According to this aspect~~As disclosed, since the card base sheet on which the different sheet IDs are printed for one card base sheet or each of the plurality of card base sheets is cut to produce the playing card of one deck or a plurality of decks, it is possible to confirm, on the database, the information on when the card is printed and also when the card is inspected by tracing back through the distribution history of the playing card. As a result, it is possible to confirm whether the playing card is a genuine product correctly manufactured and distributed by reading the sheet ID from the contents of the card to confirm the history on the database even if the contents of the packaged shuffled playing card are replaced with a set of cards whose arrangement is known by malicious fraudulent players.

[0024]

In the playing card according to ~~the aspect of~~ the present ~~invention~~disclosure,

the different sheet IDs for one card base sheet or each of the plurality of card base sheets may be printed on the card

base sheet, and

the sheet ID may be printed on a card other than the card constituting the set of decks.

[0025]

In a shuffled playing card according to ~~the aspect of~~ the present ~~invention~~disclosure,

the different sheet IDs for one card base sheet or each of the plurality of card base sheets may be printed on the card base sheet,

the sheet ID may be printed on a print surface of the card constituting the set of decks,

individually different shuffled playing card IDs are assigned to the shuffled playing card individually packaged and sealed as ID codes, and

the sheet IDs of the predetermined sets of cards constituting the shuffled playing cards and the shuffled playing card IDs assigned to the shuffled playing cards may be associated with each other in database.

[0026]

There is provided a playing card according to ~~an aspect of~~ the present ~~invention~~disclosure, wherein

a suit and a rank are printed on one surface of a card base sheet, a back pattern is printed on a back surface,

an intermediate layer having a black layer or a color layer similar to black is provided on the card base sheet to make transmission of visible rays difficult, and an ink containing no carbon is used for printing the suit and the rank printing,

and thus the intermediate layer prevents the transmission of the visible rays from the back surface and the suit and the rank printed with the ink containing no carbon transmit infrared rays, such that it is difficult for both the visible rays and the infrared rays to distinguish the suit and the rank from the back surface, and

one set or a plurality of sets of decks are constituted by individual cards cut from the card base sheet by a cutting machine.

[0027]

In the playing card according to ~~the aspect of~~ the present ~~invention~~disclosure,

the back pattern of the card base sheet may be printed with an ink containing carbon to allow the ink containing carbon of the back pattern to prevent the transmission of the infrared rays from the back surface.

[0028]

In the playing card according to ~~the aspect of~~ the present ~~invention~~disclosure,

the intermediate layer may prevent the infrared rays including the carbon from seeing-through.

[0029]

There is provided a shuffled playing card according to ~~an aspect of~~ the present ~~invention~~disclosure, wherein

predetermined sets of the playing cards having any one of the above characteristics may be shuffled by a shuffle machine to form a set of shuffled playing cards.

[0030]

In the shuffled playing card according to ~~an aspect of~~ the present ~~invention~~disclosure,

individually different shuffled playing card IDs may be assigned to the shuffled playing cards as ID codes.

[0031]

A table game system according to ~~an aspect of~~ the present ~~invention~~ disclosure includes:

a playing card having one surface on which a suit and a rank are printed;

a game table which performs a game using the playing card; and

a card distribution device which withdraws the playing card in the game table sheet by sheet,

wherein the playing card is printed with the suit and the rank with an ink containing no carbon, and codes indicating the suit and the rank are printed with an invisible ink, and

the card distribution device has a function of allowing the code printed with the invisible ink to read the rank and determining and displaying win or loss results of each game based on the information of the rank.

BRIEF DESCRIPTION OF DRAWINGS

[0032]

FIG. 1 is an exploded view of a playing card according to one embodiment;

FIG. 2 is an enlarged view of a part of a cross section

~~What is claimed is:~~CLAIMS

~~1. A playing card, wherein~~

~~a suit and a rank are printed on one surface of a card base sheet, and a back pattern is printed on a back surface,~~

~~an intermediate layer having a black layer or a color layer similar to black is provided on the card base sheet to make transmission of visible rays difficult, and an ink containing no carbon is used for printing the suit and the rank,~~

~~and thus the intermediate layer prevents the transmission of the visible rays from the back surface and the suit and the rank printed with the ink containing no carbon transmit infrared rays, such that it is difficult for both the visible rays and the infrared rays to distinguish the suit and the rank from the back surface, and~~

~~one set or a plurality of sets of decks are constituted by individual cards cut from the card base sheet by a cutting machine.~~

~~2. The playing card according to claim 1, wherein the back pattern of the card base sheet is printed by an ink containing carbon to allow the ink containing carbon of the back pattern to prevent the transmission of the infrared rays from the back surface.~~

~~3. The playing card according to claim 1 or 2, wherein the intermediate layer prevents the infrared rays including the carbon from seeing-through.~~

~~4. A shuffled playing card, wherein predetermined sets of the playing cards according to any one of claims 1 to 3 are shuffled by a shuffle machine to form one set of shuffled playing cards.~~

~~5. The shuffled playing card according to claim 4, wherein individually different shuffled playing card IDs are assigned to the shuffled playing cards as ID codes.~~

~~6. A table game system, comprising:~~

~~a playing card having one surface on which a suit and a rank are printed;~~

~~a game table for performing a game using the playing card; and~~

~~a card distribution device for withdrawing the playing card in the game table sheet by sheet,~~

~~wherein the playing card is printed with a suit and a rank with an ink containing no carbon, and codes indicating the suit and the rank are printed with an invisible ink, and~~

~~the card distribution device has a function of reading the rank from the code printed with the invisible~~

~~ink and determining and displaying win or loss results of each game based on information of the rank.~~

1. A playing card, wherein

a suit and a rank are printed on one surface of a card base sheet, and a back pattern is printed on a back surface,

a substantially carbon free ink is used for printing the suit and the rank,

and thus the suit and the rank printed with the substantially carbon free ink transmit infrared rays, such that it is difficult for both the visible rays and the infrared rays to distinguish the suit and the rank from the back surface, and

one set or a plurality of sets of decks are constituted by individual cards cut from the card base sheet by a cutting machine.

2. The playing card according to claim 1, wherein the back pattern of the card base sheet is printed by an ink containing carbon to allow the ink containing carbon of the back pattern to prevent the transmission of the infrared rays from the back surface.

3. The playing card according to claim 1 or 2, wherein

an intermediate layer having a black layer or a color layer similar to black is provided on the card base sheet to make transmission of visible rays difficult,

the intermediate layer substantially prevents the

transmission of the visible rays from the back surface, and the intermediate layer is substantially carbon free.

4. A shuffled playing card, wherein predetermined sets of the playing cards according to any one of claims 1 to 3 are shuffled by a shuffle machine to form one set of shuffled playing cards.

5. The shuffled playing card according to claim 4, wherein individually different shuffled playing card IDs are assigned to the shuffled playing cards as ID codes.