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(54) **SECURE IDENTIFICATION DOCUMENT AND METHOD FOR SECURING SUCH A DOCUMENT**

SICHERES IDENTIFIKATIONSDOKUMENT UND VERFAHREN ZUR SICHERUNG EINES DERARTIGEN DOKUMENTS

DOCUMENT D'IDENTIFICATION SÉCURISÉ ET PROCÉDÉ DE SÉCURISATION D'UN TEL DOCUMENT

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(73) Proprietor: **Gemalto SA**
92190 Meudon (FR)

(72) Inventor: **HAUBER, Françis**
F-92190 Meudon (FR)

(74) Representative: **Cassagne, Philippe M.J. et al**
Gemalto SA
Intellectual Property Department
6, rue de la Verrerie
92197 Meudon Cedex (FR)

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Description

[0001] This invention concerns the security of information or data carriers. More particularly, the invention relates to the securing of information carriers so that the identification data in particular are not altered or modified and that the carriers cannot thus be reused fraudulently.

[0002] The invention relates to the field of identification documents with or without chips, such as driving licences, identity cards, membership cards, access control cards, passports, bankcards, electronic purses, multi-application cards and other security documents. Because of the value and importance of all these documents, they are often copied without permission, altered, modified and forged.

[0003] Thus for instance, printing with a laser does not prevent the addition of information. Such addition of information could for instance make it possible to completely change a photograph, by adding more hair, or a moustache or glasses etc: An example of photograph forgery by adding darkened areas with a laser beam is illustrated in figure 1. On the original card 10, data about the identity of the holder are entered in a text area 11 and a photograph 12 of the holder is printed, for instance by laser engraving on the surface of the card. The photograph is printed in the thickness of the card by laser engraving and is thus indelible and the darkened areas cannot be removed. On the other hand, it is possible to add darkened areas, for instance in the text area 11 to modify the identity of the holder, but also on photograph 12 to alter the features of the holder. In the example in figure 1, the original photograph 12 of the card 10 has been modified. Hair has been added with a laser beam and dark areas have been added to raise the cheekbones and change the colour of the skin, so that there is a new forged photograph 12A on the card 10A.

[0004] To prevent such forgeries of identification documents, different means of securing are used. One solution consists in superimposing lines or guilloches on an identification picture such as a photograph. In that way, if any material is printed subsequently, the guilloches appear in white on added black background. Other solutions consist in adding security elements such as holograms, information printed with ink that reacts to ultraviolet radiation, micro-letters concealed in an image or text etc.

[0005] These solutions make it possible to secure information media adequately, but they require additional equipment and/or material, leading to higher production costs. WO 03/02081 shows the state of the art.

[0006] That is why the technical issue concerned by this invention is addressed by offering a secure identification document with a first set of identification information, which provides an alternative solution to the existing solutions that is simple to implement and makes it possible to reduce production costs.

[0007] The solution to the technical problem posed is obtained according to this invention by a secure identification document according to Claim 1.

[0008] As a result, having the information in the form of a positive image and also in the form of a reverse image, i.e. in the form of a negative image on the same identification document, makes it possible to compare the two and see very rapidly if there has been a forgery. That is because while it is very easy to add darkened areas to a picture printed in positive to modify that picture, it is on the other hand much more difficult to do so with the reverse image, as that would require adding areas in a complementary colour. To take the example of the laser engraving illustrated on figure 1, which is a destructive technique, whilst the positive can be engraved to add dark hair, these same parts cannot be added on the negative as that would mean adding white, the complementary colour. Adding white to the negative is impossible, because as the negative is printed by laser engraving, that would require erasing the already engraved areas that appear black.

[0009] In another mode of embodiment where printing is achieved by means of the transfer to the body of the document of a metal medium obtained by engraving a metal plate or spraying metallic ink, it is also very difficult to add information to the first picture and remove that same information to the second picture.

[0010] The invention also relates to a method for securing a secure identification document. The method according to the invention is claimed in claim 9.

[0011] In that way, the two sets of identification data are printed simultaneously in the form of reverse images of each other. To make the document secure, only one single printing step is required, which is easy to carry out, does not need the use of additional special machines and does not add to the cost.

[0012] Other particularities and benefits of the invention will be clarified in the description below provided as an illustrative and non-limitative example, by reference to the enclosed following figures:

- figure 1, already described, shows an identification card with an original photograph and a forged card with a modified photograph,
- figure 2 shows a schematic top view of an identification document secured according to the invention,
- figure 3 shows a schematic top view of another identification document secured according to the invention,
- figure 4 shows a schematic sectional view of an identification document according to a variant of embodiment.

[0013] The examples described below concern identification cards that are more or less rigid, such as identity cards, for instance. However, the invention is not limited to cards but extends to all sorts of identification objects with our without chips, such as passports or other flexible security documents.

[0014] Figures 1 to 3 contain representations of cards 10, 20, 30 bearing personalisation data 11. The person-

alisation data 11 are marked on the card or in the thickness of the card. The data identify the holder and are thus personal to the individual who is the regular holder of the card. A photograph 12 of the holder of the card may also be printed on the surface of the card.

[0015] The card 20, 30 thus personalised and comprising a text area 11 and/or a photograph area 12 may thus be made from the body of a relatively rigid card, on the two opposite sides of which upper and lower protective film have been placed. Typically, these three elements are put together by means of hot lamination. The two pieces of protective film mainly offer protection to the body of the card from outside mechanical attacks. They are typically transparent, flexible and made of plastic material such as polyvinyl chloride (PVC) or polycarbonate (PC). The card body is opaque.

[0016] Prior to that, personalisation marking 11 and 12 is applied on at least one of the sides of the card body, for example by engraving with a laser beam. The marking may also be applied in the material that makes up the body of the card. In that case, the constituting layer may for instance be polycarbonate comprising carbon particles to enable the creation of an image in black and white with a laser beam.

[0017] Typically, the body of the card may be in PVC, polycarbonate (PC) or polyethylene terephthalate (PET).

[0018] To secure the identification document and prevent any modification and/or alteration of the personalisation data, at least one of the sets of personalisation data, e.g. photograph 12 in figure 2, is duplicated in a reverse image 12'. In that way, the card bears not only the positive photograph 12 of the card holder, but also the negative photograph 12' of the card holder. The two images 12, 12' are reversed and placed side by side, so that they can easily be compared with the naked eye or with a reading device, comprising for instance optical reading means for scanning the images, means to process the images read and means to compare the two images read and processed.

[0019] In the example illustrated in figure 2, only the photograph 12 has been duplicated in a reverse image, but the invention does of course allow the duplication of any information area in a reverse image, whether it is a picture area 12 or a text area 11.

[0020] Thus, the presence of the negative image 12' makes it possible to immediately see, by a simple comparison, if the positive image 12 has been modified by adding elements to it. That is because, while it is possible to add hair, for instance, by laser engraving the surface of the card in the picture 12, it is on the other hand not possible to add the complementary white colour in the reverse image 12' as that would require erasing the black obtained earlier by engraving the surface of the card.

[0021] In a variant of embodiment, it is also possible for the reverse image 12" to be smaller in size than the positive. It is further possible to inlay it in a predefined corner of the positive image 12 as has been represented in figure 3.

[0022] In this case, it is preferable to have a reading device to compare the two images because if the changes are minor, they will not necessarily be visible to the naked eye in the smaller negative 12". Optical reading means such as a scanner read the two images, processing means processes them digitally and comparing means compares them. If the comparing means finds a difference between the two analysed pictures, it may for instance send a visual and/or audio alert signal.

[0023] The method for securing the identification document is carried out in a single printing step with the same printing equipment. Such printing equipment comprises for instance a device for entering information such as for example a device to record a photograph or a keypad to enter text etc. Image processing means then create an additional reverse image, to supplement the first information entered, and control means make it possible to control at least one printing means to print the positive image 12 and the reverse image 12', 12" on the surface of the card and/or in a layer making up the card. Such printing means may be a laser beam, for example. When the printing is carried out on the surface of the card, it is engraved with a laser beam. When the printing is carried out in a layer making up the card body with a laser beam, the layer making up the card body may for example be polycarbonate comprising carbon particles that react when they are illuminated by a laser beam, so that a black and white image is created.

[0024] In a variant of embodiment, at least one of the sets of identification data 12, 12' or 12" is put on the card by transferring an engraved or sprayed metal medium. In that case, another type of printing means consists in a means to transfer a metal medium obtained by engraving or spraying metal or metallic ink.

[0025] In this case, the reading device must further comprise reading means of the capacitive or inductive type.

[0026] When the two sets of reverse identification data are made out according to this variant, they may both be printed either on the surface of the card or on the surface of one of the layers that make up the card, or on the surface of two different layers as shown in figure 4. Thus, for example, when they are printed on the surface of the card, the eye of the checker can carry out a first visual check before inserting the document in a reader with capacitive or inductive reading means for a more detailed check.

[0027] When they are printed on the surface of a layer that makes up the card and are covered by an opaque layer, they are no longer visible to the naked eye and only the capacitive or inductive reading means can scan them before processing them and comparing them.

[0028] In the other case, such as that illustrated in figure 4, the first set of information data 48 is printed on the surface of the card 40 and the second set of information data 49 is printed on the surface of one 43 of the layers 41, 42, 43, 44, 45 that make up card 40. In this case, the first set of data 48 remains visible, whilst the second one

is invisible so that a forger attempting to modify the first will not be able to modify the second one. Capacitive or inductive reading means are used to read each set of data before processing the two and comparing them.

[0029] In another variant of embodiment, the first set of information data 48 may be printed with a laser beam on the surface of the card 40, whilst the second set of data 49 is entered by transferring or spraying metal on the surface of a layer 43 making up the card. In this case, the printing equipment includes laser printing means and means to transfer an engraved metal medium or medium sprayed with metal or metallic ink. Similarly, the reading device comprises optical reading means of a scanner type, and capacitive or inductive reading means. Once each information data has been read with the appropriate reading means, they are processed digitally and then compared with comparing means. When the comparing means detect differences between the two sets of data, it sends an sound and/or visual alert message so that the checking agent is alerted of the forgery.

Claims

1. Secure identification document comprising a first set of identification data (12; 48), **characterized in that** it comprises a second set of identification data (12', 12"; 49), obtained by duplicating the first set of identification data, which takes the form of a reverse image of the first set of identification data and wherein the first set of identification data and the second set of identification data are printed with same equipment during a single printing step.

2. Secure identification document according to claim 1, wherein the first (12) and second (12') sets of identification data are printed side by side on the surface of the secure identification document (20).

3. Secure identification document according to claim 1, wherein the first (12) and second (12') sets of identification data are printed side by side in a layer that makes up the document and is sensitive to laser radiation.

4. Document according to claim 3, wherein the layer that makes up the document is in polycarbonate comprising carbon particles.

5. Document according to any of claims 1 to 4, wherein the second (12") set of identification data is inlaid in a predetermined area of the first set (12) of identification data.

6. Identification document according to any of claims 1 to 5, wherein the first (12) and the second (12', 12") sets of identification data are made with a laser beam.

7. Identification document according to claim 1, wherein at least one (49) of the sets of identification data is made by transferring an engraved or sprayed metal medium.

8. Identification document according to claim 7, wherein the first (48) and the second (49) set of identification data are made on the internal surface of a layer making up the document, so that the said identification data are invisible to the eye.

9. Method for securing an identification document comprising a step of printing a first set of identification data (12, 48), **characterized in that** during the printing step, the first set of identification data is duplicated into a second set of identification data (12', 12", 49), which takes the form of a reverse image of the first set of identification data and wherein the first set of identification data and the second set of identification data are printed with same equipment during a single printing step.

10. Method according to claim 9, wherein the identification data (12, 48 ; 12', 12", 49) are printed on the surface of the document and/or of a layer making up the document.

11. Method according to claim 9 or 10, wherein the printing is made by means of a laser beam.

12. Method according to claim 9 or 10, wherein the printing is achieved by transferring an engraved or sprayed metal medium.

Patentansprüche

1. Sicheres Identifikationsdokument, das einen ersten Satz Identifikationsdaten enthält (12; 48), **dadurch gekennzeichnet, dass** es einen zweiten Satz Identifikationsdaten (12', 12"; 49) enthält, der durch Duplizieren des ersten Satzes Identifikationsdaten erzielt wird, der die Form eines Umkehrbildes des ersten Satzes Identifikationsdaten annimmt, und wobei der erste Satz Identifikationsdaten und der zweite Satz Identifikationsdaten mit der gleichen Ausrüstung gedruckt werden während eines einzelnen Druckschritts.

2. Sicheres Identifikationsdokument nach Anspruch 1, bei dem der erste (12) und der zweite (12') Satz Identifikationsdaten nebeneinander auf der Oberfläche des sicheren Identifikationsdokuments (20) gedruckt werden.

3. Sicheres Identifikationsdokument nach Anspruch 1, bei dem der erste (12) und der zweite (12') Satz Identifikationsdaten nebeneinander in einer Schicht ge-

druckt werden, die das Dokument bildet und empfindlich für Laserstrahlen ist.

4. Dokument nach Anspruch 3, bei dem die das Dokument bildende Schicht aus Polycarbonat besteht, das Carbonpartikel enthält.

5. Dokument nach einem beliebigen der vorstehenden Ansprüche 1 bis 4, bei dem der zweite (12') Satz Identifikationsdaten in einem vorbestimmten Bereich des ersten Satzes (12) Identifikationsdaten eingebettet ist.

6. Identifikationsdokument nach einem beliebigen der vorstehenden Ansprüche 1 bis 5, bei dem der erste (12) und der zweite (12') Satz Identifikationsdaten mit einem Laserstrahl hergestellt werden.

7. Identifikationsdokument nach Anspruch 1, bei dem zumindest einer (49) der Sätze Identifikationsdaten durch Übertragung eines gravierten oder gespritzten Metallmediums hergestellt wird.

8. Identifikationsdokument nach Anspruch 7, bei dem der erste (48) und der zweite (49) Satz Identifikationsdaten auf der Innenfläche einer das Dokument bildenden Schicht aufgebracht werden, so dass die besagten Identifikationsdaten für das Auge unsichtbar sind.

9. Verfahren zur Sicherung eines Identifikationsdokuments, das einen Schritt mit dem Druck eines ersten Satzes Identifikationsdaten (12, 48) umfasst, **dadurch gekennzeichnet, dass** während der Drucketappe der erste Satz Identifikationsdaten in einen zweiten Satz Identifikationsdaten (12', 12", 49) dupliziert wird, der die Form eines Umkehrbildes des ersten Satzes Identifikationsdaten annimmt, und wobei der erste Satz Identifikationsdaten und der zweite Satz Identifikationsdaten mit der gleichen Ausrüstung gedruckt werden während eines einzelnen Druckschritts.

10. Verfahren nach Anspruch 9, bei dem die Identifikationsdaten (12, 48; 12', 12'', 49) auf der Oberfläche des Dokuments und/oder einer das Dokument bildenden Schicht gedruckt werden.

11. Verfahren nach Anspruch 9 oder 10, bei dem der Druck vermittels eines Laserstrahls durchgeführt wird.

12. Verfahren nach Anspruch 9 oder 10, bei dem der Druck durch Übertragung eines gravierten oder gespritzten Metallmediums erfolgt.

Revendications

1. Document d'identification sécurisé comprenant un premier ensemble de données d'identification (12 ; 48), **caractérisé en ce qu'**il comprend un deuxième ensemble de données d'identification (12', 12" ; 49), obtenu en dupliquant le premier ensemble de données d'identification, qui prend la forme d'une image inverse du premier ensemble de données d'identification et dans lequel le premier ensemble de données d'identification et le deuxième ensemble de données d'identification sont imprimés par un même équipement durant une unique étape d'impression.

2. Document d'identification sécurisé selon la revendication 1, dans lequel les premier (12) et deuxième (12') ensembles de données d'identification sont imprimés côte à côte sur la surface du document d'identification sécurisé (20).

3. Document d'identification sécurisé selon la revendication 1, dans lequel les premier (12) et deuxième (12') ensembles de données d'identification sont imprimés côte à côte dans une couche qui constitue le document et qui est sensible à un rayonnement laser.

4. Document selon la revendication 3, dans lequel la couche qui constitue le document est en polycarbonate comprenant des particules de carbone.

5. Document selon l'une quelconque des revendications 1 à 4, dans lequel le deuxième (12") ensemble de données d'identification est incrusté dans une zone prédéterminée du premier ensemble (12) de données d'identification.

6. Document d'identification selon l'une quelconque des revendications 1 à 5, dans lequel le premier (12) et les deuxièmes (12', 12") ensembles de données d'identification sont réalisés par un faisceau laser.

7. Document d'identification selon la revendication 1, dans lequel au moins l'un (49) des ensembles de données d'identification est réalisé en transférant un milieu métallique gravé ou pulvérisé.

8. Document d'identification selon la revendication 7, dans lequel le premier (48) et le deuxième (49) ensemble de données d'identification sont réalisés sur la surface interne d'une couche constituant le document, de sorte que lesdites données d'identification sont invisibles à l'oeil.

9. Procédé pour sécuriser un document d'identification comprenant une étape d'impression d'un premier ensemble de données d'identification (12, 48), **caractérisé en ce que**, pendant l'étape d'impression,

le premier ensemble de données d'identification est dupliqué en un deuxième ensemble de données d'identification (12', 12", 49), qui prend la forme d'une image inverse du premier ensemble de données d'identification et dans lequel le premier ensemble de données d'identification et le deuxième ensemble de données d'identification sont imprimés par un même équipement durant une unique étape d'impression.

10. Procédé selon la revendication 9, dans lequel les données d'identification (12, 48 ; 12', 12", 49) sont imprimées sur la surface du document et/ou d'une couche constituant le document.

11. Procédé selon la revendication 9 ou 10, dans lequel l'impression est effectuée au moyen d'un faisceau laser.

12. Procédé selon la revendication 9 ou 10, dans lequel l'impression est effectuée en transférant un milieu métallique gravé ou pulvérisé.

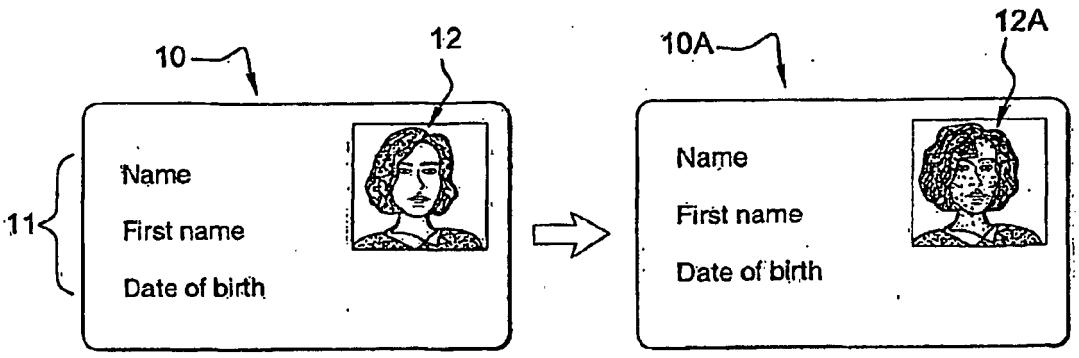

Fig. 1

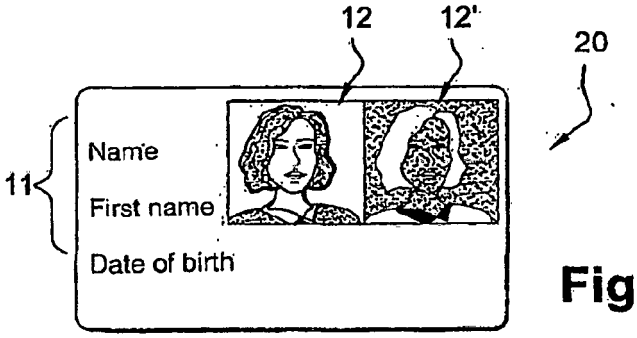

Fig. 2

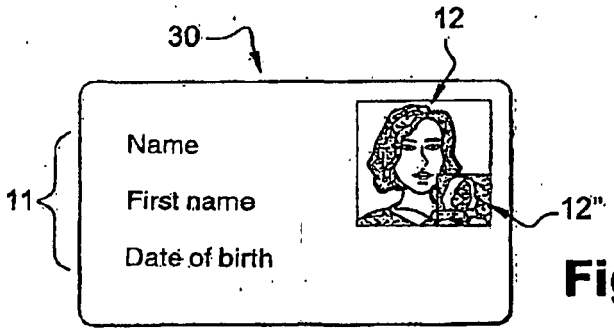

Fig. 3

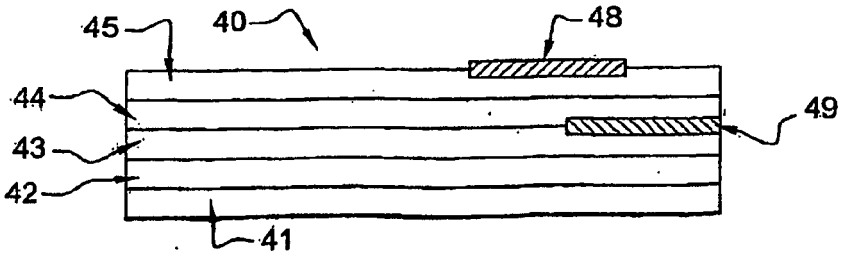

Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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