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(54) **Identification document with colored personalization inside**

(57) The invention relates to an identification document comprising color personalization information (21) provided inside the document. In order to secure this document and to prevent any attempt to remove the color personalization, this identification document comprises at least one security element (22,23,24,25), which par-

tially covers the color personalization (21). Then, if an attempt is made to remove the color personalization (21), the security element (22,23,24,25) is destroyed at the same time.

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Description

BACKGROUND

[0001] This invention relates generally to identification documents and a method for making such identification documents. More particularly, this invention relates to identification documents with embedded color printed personalization information.

[0002] Identification documents are associated with secure applications, such as for example driving licenses, identity cards, membership cards, badges or passes, passports, discount cards, banking cards, money cards, multi-application cards, and other papers of value; and security documents such as bank notes. Such documents are widely used, they may comprise an electronic module or not. If they comprise an electronic module, they can function either with contact and/or without contacts depending on the application to which they are intended for. They may take the shape of card or a booklet or something else.

[0003] Such identification documents are graphically personalized. Personalized information is personal data of the card's owner, i.e for example his photo, his name, his birth date, his social security number, his biometric information such as his fingerprint for example, a validity date, an identification number allocated to him etc... This personalized information is printed onto the surface of the document, or into one or more constitution layers of the document.

[0004] Identification cards are generally made with several layers made in plastic material, such as PVC, PET, ABS or Polycarbonate. These layers are attached by means of conventional technology, such as lamination for example. Nowadays, polycarbonate is a very promising compound for such security document because after lamination step of the constitution layers of polycarbonate, these layers are fused together, so that the resulting identification document takes the form of only one piece instead of having many collated layers. Consequently, the resulting document is very secure because it cannot be delaminated.

[0005] The personalization information is then printed either onto the surface of the document and protected by a protective layer also called overlay, or into the thickness of a constitution layer. A well-known technique to print personalization information inside the document is to use laser engraving technology. For that, the layer into which data are engraved, is made with a plastic containing particles that are laser sensitive. Personalization information is then printed by means of a laser beam, and particles of the layers are burnt under the beam and blackened. This well-known technology enables to insert personalization data into the thickness of the document, so that the data are secured because impossible to remove. However, such personalization is monochrome, i.e black and white, and today, there is a strong request from the customers to have color personalization for

there identification document.

[0006] However, adhesion of inks used for color personalization on plastic material is low enough to enable the removal of the top layer. Indeed, it is quite easy for a fraudulent person to cut the protective layer (overlay) around the color personalization, then to remove the color personalization by either mechanical or chemical means, and to reprint another picture and laminate overlay again. This is not conceivable for identity documents, which are documents of value that have to be very secure.

[0007] Consequently, there is a strong request now to find solutions to be able to insert color personalization inside the identification document, so that the personalization data are not easy modified or removed and falsified.

[0008] Attempts have been made to personalize identity documents in color. For example, patent US 6, 867, 167 describes a solution, which consists in applying a lacquer onto the surface of a layer of polycarbonate. This lacquer enables to modify the molecules in the area close to the surface of the layer, so that adhesive properties of the surface of the layer are improved. Then, colored images are applied onto the surface of the layer, by thermal transfer technology and adhere well onto the surface of the document. However, in this case, the color personalization is provided onto the external surface of the document and is subjected to environmental and mechanical stresses, so that it is not compliant with the long-term life usually required for identification documents.

[0009] Another solution, described in the patent US 6, 986, 926, consists in providing at least one color pigment into a constitution layer, in irradiating this color pigment by means of a laser beam at a predetermined wavelength, in order to cause an irreversible change of color in the irradiated region, said color change resulting in a bleaching. This solution is close to the laser-engraving. However, the difficulty is to find the right pigments that will react well to laser beam for providing a colored printing of good quality. Moreover, such pigments are expensive and they contribute to the increase of costs of finished products.

[0010] Considering the above, a problem intended to be solved by the invention, is to propose an identification document comprising at least two constitution layers and printed colored personalization data inside the document, which is easy to manufacture, which cannot be easily falsified or modified, and which is of lower cost than the existing solutions of color printed identification document.

SUMMARY

[0011] The solution of the invention to this problem relates to the fact that the identification document further comprises at least one security element located partially onto said colored personalization data.

[0012] Thus, when a fraudulent person tries to cut the

top layer around the color personalization in order to remove it and to falsify it, then he destroys at the same time the security element. Consequently, the poor color personalization adhesion, identified as a drawback for personalizing identification document in color, is used to prove any falsification. Thus, the invention does not prevent the poor color personalization adhesion, but it makes immediately visible any falsification, so that even if the problem of adhesion remains, the color personalization is more secure and prevents any modification or falsification.

[0013] According to another aspect, the invention relates also to a method for manufacturing an identification document comprising at least two constitution layers and printed colored personalization information inside, said method comprising the following steps :

- printing colored personalization information onto a surface of a first layer,
- providing a security element onto a surface of a second layer,
- fixing the second layer onto the first layer in such a manner that the security element is located partially onto said printed colored personalization information.

BRIEF DESCRIPTION OF DRAWINGS

[0014] The invention will be better understood with reference to the drawings, in which:

Figures 1A and 1B show respectively a cross-sectional exploded view and a front view of an identity card whose personalization information, located inside the card, has been printed in color,

Figure 2 is a cross-sectional exploded view of an identity card according to a variant of implementation.

DETAILED DESCRIPTION

[0015] Hereafter, an embodiment of the present invention will be described in the context of identity (ID) card and a method for producing it. However, it is to be understood that the invention is usable with any data carrier that includes, but is not limited to, a driving license, a badge or pass, a passport, a discount card, a membership card, a banking card, a credit card, a money card, a multi-application card, and other security documents and papers of value that are to be provided with information or data in such a way that they cannot be easily imitated by common means. Such identification documents may take indifferently the shape of card, or booklet, or something else.

[0016] Figure 1A shows a schematic exploded cross-sectional view of an identity card 10 according to a first embodiment. This card comprises at least two constitution layers. A first layer 11 for the card body, and a second

15, thinner than the first, essentially intended to protect the colored personalization information 21, which is printed onto the first layer. The second layer 15 is also called "overlay" or top layer. In the example illustrated in figure 1A, the card comprises four layers 11, 12, 13 and 15. Layers 11, 12 and 13 are intended to be fixedly attached together by means of conventional technology, such as lamination for example. In this case, layers 11 and 12 can be for example opaque or clear, and laser sensitive or not, while layers 13 and 15 can be, but not limited to, at least translucent, and laser sensitive or not. Moreover, as it will be explained below, the layer 12 can be made in a material that is laser sensitive, in order to add another information by means of a laser beam into this layer, that could be visible through the colored printed information 21.

[0017] At least one personalized information 21 linked to the card owner is then printed in color onto an area of the surface of the layer 13 intended to be covered by the overlay 15. This personalized information 21 is for example the photograph of the card owner. It can also be textual information such as his name, his birth date, his address etc... Layer above this printed color personalization information is transparent, so that the colored printed information is visible through this top layer 15, while protected against environmental and mechanical stresses.

[0018] The personalization information 21 may be printed by using a conventional printing process, such as direct transfer, or retransfer, or ink jet, or other processes, which enable to have color personalization.

[0019] The top layer 15 is for example attached to layers 11, 12, 13, by means of lamination process. The layers can be made with polycarbonate. This material is very interesting because, when they are laminated, the layers are fused and form only one piece instead of collated layers that could be delaminated. However, invention is not limited to this preferred embodiment, and layers made in other plastic material, such as PVC, ABS, PET etc;.. can also be used.

[0020] However, adhesion of inks used for color personalization on plastic material, whatever it is, is low enough to enable the removal of the top layer. Consequently, even if polycarbonate is used for the constitution layers, after lamination, it becomes possible for a fraudulent person to cut the top layer 15, located above the personalization information 21, said cutting being made just around the area of the personalization information 21, for example around the photograph, so that personalization information can be removed, and another information can then be reprint and repositioned with the removed piece of the top layer.

[0021] For avoiding such falsification, and being able to provide the color personalization inside the identification document, a security element 22 is added into the document in such a manner that it is provided onto the internal surface of the top layer 15 covering the first 13 one, and it is partially located onto the colored printed personalization information 21. In this case, any attempt

to remove the personalization information 21 will destroy the security element, so that it is impossible to reprint another information and to reposition it into the document.

[0022] The security element 22 can be, but is not limited to, a background printing, such as wavy lines for example, like guilloches pattern as it is illustrated in figure 1B, and/or an optically variable device 23, such as hologram for example as illustrated in figure 2, or a laser engraved information 24, 25 as illustrated in figure 1A, optically variable inks, embossing, or other.... The background can be printed by means of any conventional printing process.

[0023] In the case illustrated in figures 1A and 1B, if the security element 22 is a background made by means of wavy lines, any attempt to cut the top layer 15 just around the area of the color personalization 21 will destroy the background. Indeed, the background will be divided: a part of the background will remain on the internal surface of the top layer 15, and another part will be on the layer 13. Then, in case of counterfeiting, an infringer will cut the top layer 15 just around the picture area. Then, it is easy for him to remove top layer as adhesion on personalization is low. Fine wavy lines constituting the background are printed on top layer 15, so when removing the top layer on perso area, fine wavy lines remain on top layer. Then it is quite difficult for the infringer to reposition top layer because repositioning with perfect line matching is tricky. On the rest of the surface of the card, the overlay 15 stick very well onto the lower layer 13, because lines of the background are very fine and between them there is only plastic material that adheres strongly after lamination step.

[0024] Then, after having made a new color personalization on the layer 13 and new fine lines onto the internal surface of the overlay, it will be very difficult for the infringer to reposition the lines of the background 22, so that the lines of the repositioned piece of overlay match with the lines remained on the other part of the overlay, which is remained stucked onto the layer 13.

[0025] Another variant schematized in figure 2 consists in adding an optically variable device, also called "OVD" 23, such as a hologram for example, directly onto the internal surface of the top layer 15. The top layer is then attached to the layer 13, which holds the color personalization 21, in such a manner that when the layers are laminated together, the OVD 23 covers partially the color personalization 21 on a width W. Moreover, the OVD 23 and the remaining area of the internal surface of the top layer 15 may also be printed with a background 22 comprising wavy fine lines, by any conventional printing process.

[0026] Then, if an infringer wants to cut the top layer just around the area of the personalization 21, in order to remove and replace it, he will irreversibly destroy not only the background 22, but also the OVD 23, which partially covers the color personalization 21.

[0027] In a further embodiment, another security ele-

ment provided so as to cover partially the color personalization 21 can be a laser engraving personalization 24, 25. For that, either the top layer 15 (see figure 1A) is laser sensitive and/or a layer 12 or 11 below the layer 13 holding the color personalization is laser sensitive, or the layer 13 itself. In the first case, where the top layer 15 is laser sensitive, the identification document is laser personalized 24, onto the internal surface of the top layer 15, in order to overlap partially the color personalization 21 area. If top layer 15 is cut just around color personalization and removed, laser personalization remains on overlay, so that this overlay can not be reused because it is personalized. Consequently, it is quite difficult for a counterfeiter to reposition another piece of overlay 15 holding another laser personalization that will match the other part of the official laser personalization that remains on the other part of the overlay, which is remained stucked onto the underneath layer 13. This laser - engraved security element can also be provided on an underneath layer 12, or 11 located below the color-personalized layer 13. Laser sensitive layer 12 is therefore under color personalization layer 13. In this case, layers 15, 13 and 12 have to be clear, i.e. at least translucent, and laser sensitive layer 12 reacts when laser engraved, and the obtained laser personalization 25 is visible from the external surface of the document, through color personalization 21.

[0028] Then, if an attempt is made to cut the top layer 15 just around color personalization and to remove color personalization 21, since laser personalization 25 is visible through the color personalization 21, counterfeiter has also to counterfeit the underneath laser personalization 25 so that it becomes compliant and matches with the new counterfeited color personalization. Such additional falsification of laser engraved personalization is much more difficult to do.

[0029] Consequently, with this embodiment, the weakness of the adhesion of color inks onto the plastic material is used for proving an infringement.

[0030] All the embodiments that have been described have in common that the security element(s) partially cover(s) the color personalization, so that if an attempt is made to remove the color personalization, the security element is destroyed and difficult to reproduce. Consequently, any infringement appears immediately visible to naked eyes, and the weak point of poor adhesion of color personalization on plastic materials is used to make an evidence of counterfeiting if any.

[0031] More than one type of security element can be used simultaneously in order to enhance the security of the color personalization.

Claims

1. Identification document comprising at least two constitution layers (11, 12, 13, 15) and printed colored personalization information (21) inside, **character-**

ized in that it further comprises at least one security element (22, 23, 24, 25) provided onto an internal surface of a layer (15) covering the colored personalization information (21), said security element (22, 23, 24, 25) being located partially onto said colored personalization information (21). 5

2. Identification document according to claim 1, wherein said security element is chosen amongst the followings: a background pattern, and/or an optically variable device, and/or laser engraved information, and/or optically variable inks, and/or embossing. 10
3. Identification document according to anyone of preceding claims, wherein constitution layers are of polycarbonate. 15
4. Method for manufacturing an identification document comprising at least two constitution layers (11, 12, 13, 15) and printed colored personalization information (21) inside, **characterized in that** it comprises the following steps: 20
 - printing colored personalization information (21) onto a surface of a first layer (13), 25
 - providing a security element (22, 23, 24, 25) onto a surface of a second layer (15),
 - fixing the second layer (15) onto the first layer (13) in such a manner that the security element (22, 23, 24, 25) is located partially onto said printed colored personalization information (21). 30
5. Method according to claim 4, wherein the security step consisting in providing a security element comprises the step of printing, or laser engraving or sticking the security element onto an internal surface of the second layer (15). 35
6. Method according to anyone of claims 4 and 5, wherein the security step comprises an additional step, according to which a laser sensitive layer (12) located below the first layer (13) holding the color personalization information (21) is laser-engraved, in such a manner that the obtained laser-engraved personalization (25) overlaps partially color personalization (21) and is visible from the external surface of the document through the color personalization (21). 40 45

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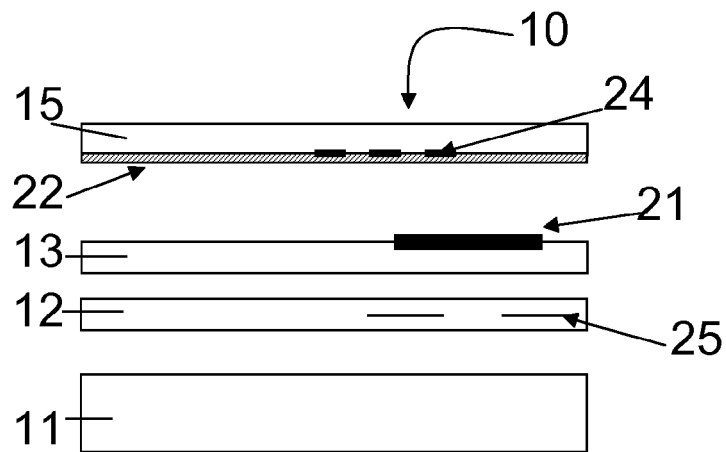


Figure 1A

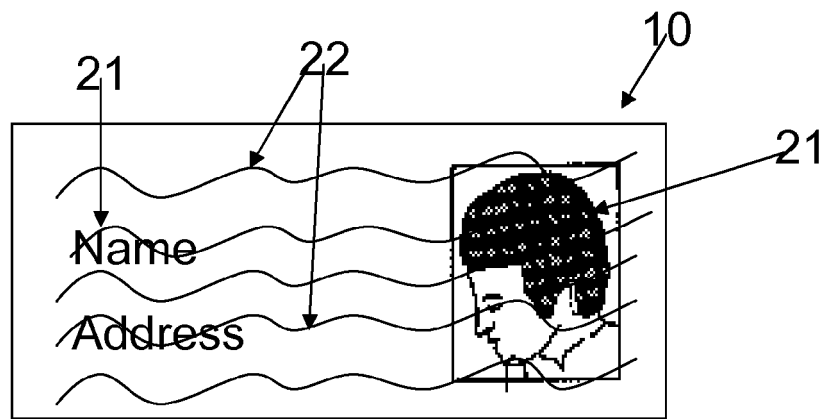


Figure 1B

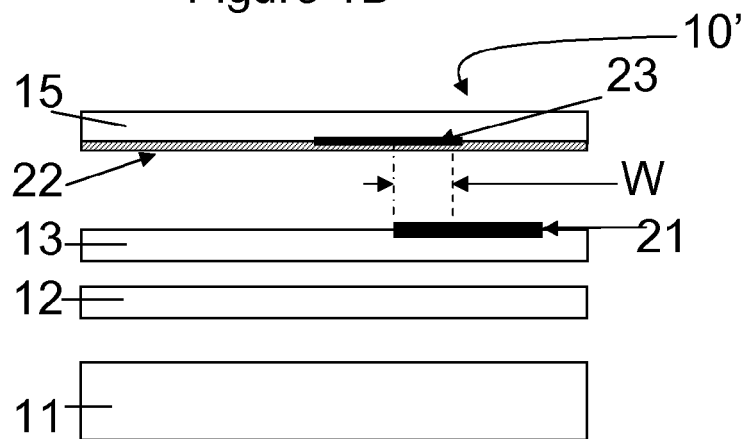


Figure 2



EUROPEAN SEARCH REPORT

Application Number
EP 08 16 6728

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Place of search The Hague		Date of completion of the search 11 March 2009	Examiner Duquénoy, Alain
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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