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(54) **MULTILAYERED PROTECTED COMPOSITION (VARIANTS) AND ARTICLE CONSISTING OF SAID COMPOSITION**

MEHRSCICHTIGE GESCHÜTZTE ZUSAMMENSETZUNG (VARIANTEN) UND ARTIKEL AUS
DIESER ZUSAMMENSETZUNG

COMPOSITION DE PROTECTION À COUCHES MULTIPLES (ET VARIANTES) ET ARTICLE
FABRIQUÉ À PARTIR DE CETTE COMPOSITION

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WO-A1-02/17283 WO-A1-2010/022952
RU-C1- 2 379 194 RU-C2- 2 199 446
RU-C2- 2 264 296 US-A- 6 155 168
US-B1- 6 210 777

- **None**

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Description

Field of the Invention

[0001] The invention relates to the manufacture of compositions, in particular, to the manufacture of multilayered composite products and protective combinations of layers having special properties, which protect, in particular, paper against counterfeiting.

[0002] A counterfeit-protected composition is used in the production of securities and documents requiring a high level of protection against counterfeit, such as banknotes, passports, driving licenses, etc.

Prior art

[0003] Technical solutions are known in the field of multilayered products, which use multiple layers of ink (paint), phosphors, pigments applied alternately on a paper layer in various embodiments in RU 2 264 296 C2, RU 2 199 446 C2.

[0004] Their disadvantage is that they are poorly designed for visual verification of the authenticity of the protected paper and products made of it, such as banknotes and forms of securities and also excise and postage stamps.

[0005] The proposed invention is based on the use of multicolor solutions made by a printing method.

[0006] As already mentioned, the state of the art comprises technical solutions for producing multilayered compositions and using layers of inks, whose color lies outside of the color coverage of the CMYK (CMYK = Cyan Magenta Yellow Black) color reproduction system for protection of printed products against counterfeit.

[0007] For example, RU 2 199 446 C2 describes a protective pattern for securities, consisting of two or more areas adjoining to each other and having different color densities, where the area with a greater color density forms a theme. An overprint of geometric figures is applied over the areas, and the color and shape of the figures are chosen such that at visual observation the overall pattern looks uniform, while at photocopying the theme is clearly manifested.

[0008] RU 2 264 296 C2 describes a paper having two areas, one of which is made by a pigment paint and the other by a paint having a daylight luminescence and having a color lying outside of the color coverage of the four-color printing.

[0009] However, this prior art does not provide for using combinations of chemical solutions that give, at visual observation of a document, a cumulative color close to achromatic which creates the illusion that it lies within the color coverage of the conventional four-color printing.

[0010] In addition, a common drawback of methods for manufacturing multilayered compositions, that use layers and areas made with inks having a daylight luminescence without additional protective measures, is that they use bright colors striking the eye, which are not always

appropriate on papers, such as securities, IDs, bills or banknotes. As a result, on one hand, a potential counterfeiter sees the presence of a bright color and will take measures to circumvent the problem (as he becomes "warned"), and on the other hand, it is impossible to print over these elements on a significant portion of ID or banknote because of the above drawback (very bright "poisonous" colors).

[0011] US 6 210 777 B1 discloses a security document which contains at least one layer and a transparent or translucent support and at least one image or pattern serving for identification purposes. The document contains at least one light interference pigment distributed uniformly or patternwise in or on at least one layer of the document and/or contains the pigment in the support.

[0012] WO 02/17283 A1 relates to a flat neon sign device capable of displaying a desired picture as a surface unit. Electric discharge is caused to be generated within an electric discharge space by using two electrodes formed on an upper and a lower glass substrate, and a fluorescent layer comprising a pattern to be displayed is formed by using a halftone dot printing.

[0013] US 6 155 168 A teaches an information recording method, in which a photo-portrait image is recorded with ultraviolet ink or infrared ink which emits fluorescence by irradiating ultraviolet rays or infrared rays on a portion other than a recording portion of the photo-portrait image, which is made with coloring ink on the surface of a substrate.

[0014] RU 2 379 194 C1 teaches a counterfeit-protected valuable document with a protective element applied by printing method as an achromatic or slightly painted with dye, having selective spectrum of diffused reflection in visible and/or near infrared area of optical spectrum.

[0015] WO 2010/022952 A1 discloses a security element for a data carrier, comprising a color layer and an effect layer, which is substantially transparent when observed at a first angle and shows a color shade when observed at at least a second, so-called effect angle. The color shade of the effect layer produces a complementary contrast to the color shade of the color layer at least in a first section.

[0016] Thus, the object of improving the protection of multilayered compositions as compared to the inventive method is not solved to a complete extent, as the prior art does not provide possibility for the use, for counterfeit protection of documents, of graphic elements made by a raster of inks having a daylight luminescence and giving at visual observation of a document a cumulative color close to achromatic which creates the illusion that it lies within the color coverage of the conventional four-color printing.

Summary of the Invention

[0017] The object and the technical result of the proposed invention is to provide a composition with layers that provide an increased level of protection against

counterfeit due to the use of a new protection feature.

[0018] The technical result is achieved by a multilayered protected composition according to a first embodiment which is made with an additional multilayered element, which is formed on the surface of paper and comprises a multicolor coating in the form of a periodic raster made by at least two inks of different colors which have a contrast relative to the surface of the paper, and which lies outside of the range of the color coverage of the CMYK system, characterized in that the inks comprise luminescent compounds having daytime luminescence in the visible spectrum of light under the natural light, and wherein the additional multilayered protection element forms a graphical figure or is part of the graphical figure which changes its visual image by virtue of changing its color gamut, and/or optical density and/or saturation when a document is copied on a printer operating using CMYK color system.

[0019] Furthermore, the multilayered protection element may comprise:

- an additional layer of a carrier of paper and/or plastic and/or composite material is provided beneath the multilayered protection element;
- the graphic elements forming the periodic raster of the multicolor coating are made such that a color moire appears in an area of the multicolor coating when the observation angle changes;
- the multicolor raster is made by a printing method;
- the additional multilayered protection element forms image sections in the form of geometric figures, guilloche elements, graphical and alphanumeric characters, encoding, or any combination thereof;
- the multicolor coating is formed by materials having different absorption in the IR range of optical spectrum;
- the additional multilayered protection element comprises an image representing information for personal identification and/or photograph for personal identification;
- a transparent section is formed beneath the multilayered protection element;
- the multilayered protection element is formed with a latent image, which is visible against the light or when inclined.

[0020] The technical result is also achieved by a multilayered product of a multilayered protected composition, as set forth in any embodiment above, made in the form of a banknote, excise stamp, postage stamp, passport, travel document, driving license, identity card, security, valuable document, plastic card, label, packaging, payment document.

[0021] The essence of the invention is that the protection effect on this composition appears such that when a valuable document is observed an additional multilayered element is visible, which after copying at a color copying device changes its color gamut and/or optical

density and/or saturation in such a way that visual perception of the document as a whole significantly changes.

[0022] The multilayered composition is suitable for producing from it a product in the form of valuable document, such as a banknote, excise or postage stamp, passport, travel document, driving license, identity card, security, plastic card, label, payment document or a similar counterfeit-protected document.

10 Brief Description of the Drawings

[0023]

Fig. 1 shows a valuable document or paper in the form of a banknote comprising a graphic element in the form of an alternating raster, which is made by an offset printing method in three different colors: bright yellow, orange and bright blue (numeral 1), lying outside of the range of the color coverage of the CMYK color system.

Fig. 2 depicts a document or paper in the form of a label, comprising a graphic element in the form of different sections of an alternating raster with a different pitch, made by an offset printing method in two different colors, bright yellow and bright blue, lying outside of the range of the color coverage of the CMYK color system. Stripes of vertical sections of the raster seem to be curved inwards. After copying the valuable document on a copying device, the cumulative color of different sections of the graphic element is distorted and visual perception of the geometric figure and size of its sections is disturbed such that the lines will appear vertical, which is indicative that the document is false.

Fig. 3 shows a document or paper in the form of a label comprising a graphic element formed by different sections of an alternating raster with a different pitch, made by an offset printing method in two different colors, bright yellow and bright blue, lying outside of the range of the color coverage of the CMYK color system.

Fig. 4 shows a document in the form of a plastic card (numeral 2) comprising a multilayered protection element formed by a graphic element in the form of an alternating raster made by an offset printing method in two different colors, bright yellow and bright blue (numeral 3), lying outside of the range of the color coverage of the CMYK color system, at least partially applied over an additional layer in the form of a transparent portion (numeral 4) on the surface of the card ("transparent window").

Fig. 5 shows a valuable document or paper comprising an additional layer applied over graphic elements in the form of an embossed raster and forming a latent element in the form of a letter.

Fig. 6 illustrates observation of a valuable document or paper at inclination, at which a moire pattern in the form of a letter appears in a region of the addi-

tional layer. When the valuable document or paper is observed at the right angle, the latent element formed by the additional layer is invisible.

Fig. 7 shows a valuable document in the form of a plastic card (numeral 5) comprising a multilayered protection element formed by a graphic element in the form of an alternating raster with a variable pitch made by an offset printing method in two different colors, bright yellow and bright blue (numeral 6), lying outside of the range of the color coverage of the CMYK color system. The protection element contains personal identification information and the photograph of the holder (numeral 7).

Fig. 8 shows a valuable document in the form of a plastic card observed at inclination, at which color moire patterns are observed over the identification information. When the document is observed at the right angle the identification information is visible on the colored background whose color is close to achromatic.

Best Embodiment of the Invention

Example 1

(According to claim 1 with features of dependent claims 5 and 11)

[0024] A valuable document or paper in the form of a banknote comprises a graphic element in the form of an alternating raster made by an offset printing method in three different colors: bright yellow, orange and bright blue (numeral 1 in Fig.1), lying outside of the range of the color coverage of the CMYK color system.

[0025] The bright yellow ink contains 3-methoxybenzanthrone as a fluorescent compound having a daylight luminescence in the visible spectrum of light under the natural light; the orange ink contains a mixture of 3-methoxybenzanthrone with rhodamines C and 6G, and the bright blue ink comprises arylethylene substituted 2,5-diaryloxazole.

[0026] The combinations and saturation of colors and the raster pitch are such that the cumulative color of the graphic protection element is visually perceived as being unsaturated and close to achromatic.

[0027] After copying the valuable document on a copying device, the cumulative color of the graphic element is distorted and changes the color gamut of the valuable document, which is indicative of its counterfeit.

[0028] Therefore, it is obvious that the technical result is achieved according to the first embodiment of the invention by the use, in order to protect a valuable document, of a graphic protection element comprising a raster and made of colors that lie outside of the color coverage of the CMYK system.

Example 2

(According to claim 2 with features of dependent claims 5, 6, 11)

[0029] A document or paper in the form of a label comprises a graphic element in the form of various sections of an alternating raster having a different pitch, made by an offset printing method in two different colors, bright yellow and bright blue (Figs. 2,3), lying outside of the range of the color coverage of the CMYK color system.

[0030] The bright yellow ink contains 3-methoxybenzanthrone as a fluorescent compound having a daylight luminescence in the visible spectrum of light under the natural light, and the bright blue ink contains arylethylene substituted 2,5-diaryloxazole.

[0031] The color combinations and the density of colors and the raster pitch of various sections of the graphic element are chosen to form a predetermined visual perception of the geometric shape and size of the graphic element. In Fig. 2, stripes of vertical sections of the raster should appear curved inward.

[0032] After copying the valuable document on a copying device, the cumulative color of various sections of the graphic element is distorted, and the visual perception of the geometric shape and size of its sections are disturbed such that vertical lines in Fig. 2 will appear vertical, which is indicative of counterfeit of the document.

[0033] Therefore, it is obvious that the technical result is achieved according to the second embodiment of the invention by the use, in order to protect a valuable document, of a graphic protection element containing various sections with different raster pitch, and made of colors that lie outside of the color coverage of the CMYK system.

Example 3

(According to claim 1 with features of dependent claims 3, 9, 11)

[0034] A document in the form of a plastic card (numeral 2 in Fig.4) comprises a multilayered protection element formed by a graphic element in the form of an alternating raster made by an offset printing method in two different colors, bright yellow and bright blue (numeral 3 in Fig.4), lying outside of the range of the color coverage of the CMYK color system, which is at least partially applied over an additional layer in the form of a transparent section (numeral 4 in Fig. 4) on the surface of the card ("transparent window").

[0035] The bright yellow ink contains 3-methoxybenzanthrone as a fluorescent compound having a daylight luminescence in the visible spectrum of light under the natural light, and the bright blue ink contains arylethylene substituted 2,5-diaryloxazole.

[0036] The color combinations and the density of colors and the raster pitch are such that the cumulative color of the graphic protection element is visually per-

ceived as being unsaturated and close to achromatic.

[0037] After copying the plastic card on a copying device, the cumulative color of the graphic element is distorted and changes the color gamut of the valuable document, and the degree of its change in the transparent window area and outside of this area is different, thereby indicating the counterfeit thereof.

[0038] Thus, it is obvious that the technical result is achieved according to the first embodiment of the invention by the use, in order to protect the valuable document, a graphic protection element comprising a raster and made of colors that lie outside of the color coverage of the CMYK system, and, according to dependent claims 3 and 9, by the use of an additional layer in the form of a transparent window.

Example 4

(According to claim 1 with features of dependent claims 3, 4, 5, 6, 10, 11)

[0039] A valuable document or paper in the form of a banknote comprises a graphic element in the form of an alternating raster made by an offset printing method in two different colors, bright yellow and bright blue (numeral 3 in Fig.4), lying outside of the range of the color coverage of the CMYK color system.

[0040] The valuable document or paper comprises an additional layer applied over the graphic element in the form of an embossed raster (Fig. 5) forming a latent element in the form of a letter.

[0041] The bright yellow ink contains 3-methoxybenzanthrone as a fluorescent compound having a daylight luminescence in the visible spectrum of light under the natural light, and the bright blue ink comprises arylethylene substituted 2,5-diaryloxazole.

[0042] The color combinations and the saturation of colors and the raster pitch are such that the cumulative color of the graphic protection element is visually perceived as being unsaturated and close to achromatic.

[0043] When the valuable document or paper is observed at the right angle the latent element formed by the additional layer is invisible. When the valuable document or paper is inclined a moire pattern in the form of a letter appears in the area of the additional layer (Fig. 6).

[0044] After copying the valuable document or paper on a copying device, the cumulative color of the graphic element is distorted and changes the color gamut of the valuable document, thereby indicating the counterfeit thereof.

[0045] Therefore, it is obvious that the technical result is achieved according to the first embodiment of the invention by the use, in order to protect a valuable document, of a graphic protection element comprising a raster and made of colors that are outside of the color coverage of the CMYK system, and according to dependent claims 3, 4, 5 and 6, by the use of an additional layer in the form of an embossed raster.

Example 5

(According to claim 2 with features of dependent claims 5, 11)

[0046] A valuable document comprises a multilayered protection element formed by a graphic element in the form of an alternating raster with a variable pitch, made by an offset printing method in two different colors, bright yellow and bright blue (Fig.7), lying outside of the range of the color coverage of the CMYK color system.

[0047] The bright yellow ink contains 3-methoxybenzanthrone as a fluorescent compound having a daylight luminescence in the visible spectrum of light under the natural light, and the bright blue ink contains arylethylene substituted 2,5-diaryloxazole.

[0048] The color combinations and the density of colors are such that the cumulative color of the graphic protection element is visually perceived as being unsaturated and close to achromatic.

[0049] After copying the valuable document, such as a plastic card, on a copying device, the cumulative color of the graphic element is distorted and changes the color gamut, and the degree of its change within the raster with a variable pitch will be different and form two areas, a first area where the raster remains unchanged, and a second area where the raster is converted to a solid background. Therefore, the color gamut and the geometric shape of the graphic element will be distorted, which is indicative of the counterfeit of the document.

[0050] Therefore, it is obvious that the technical result is achieved according to the first embodiment of the invention by the use, in order to protect a valuable document, of a graphic protection element comprising a raster with a variable pitch and made of colors that lie outside of the color coverage of the CMYK system.

Example 6

(According to claim 1 with features of dependent claims 5, 8, 11)

[0051] A valuable document in the form of a plastic card (numeral 5 in Fig. 7) comprises a multilayered protection element formed by a graphic element in the form of an alternating raster made by an offset printing method in two different colors, bright yellow and bright blue (numeral 6 in Fig.7), lying outside of the range of the color coverage of the CMYK color system.

[0052] The bright yellow ink contains 3-methoxybenzanthrone as a fluorescent compound having a daylight luminescence in the visible spectrum of light under the natural light, and the bright blue ink contains arylethylene substituted 2,5-diaryloxazole.

[0053] The color combinations and the density of colors are such that the cumulative color of the graphic protection element is visually perceived as being unsaturated and close to achromatic.

[0054] The protection element comprises information for personal identification and the photograph of the holder (numeral 7 in Fig. 7).

[0055] An additional layer in the form of an embossed three-dimensional raster, the strokes of which are rotated at an angle of 5° relative to the printed raster, is applied over the protection element.

[0056] When the document is observed at the right angle, the personal identification information is visible on the colored background, whose color is close to achromatic, while when the document is observed inclined, colored moire stripes are seen over the identification information (Fig. 8).

[0057] After copying the plastic card on a copying device, the cumulative color of the graphic element is distorted and changes the color gamut of the valuable document, thereby indicating the counterfeit thereof.

[0058] The colored moire stripes, which appear when observing the document inclined, are also missing on the copy, which is indicative of the counterfeit.

[0059] Therefore, it is obvious that the technical result is achieved according to the first embodiment of the invention by the use, in order to protect a valuable document, of a graphic protection element comprising a raster and made of colors that lie outside of the color coverage of the CMYK system, and according to dependent claims 5 and 8, by the use of personal identification information and photograph of the holder.

Industrial Applicability

[0060] The claimed invention is applicable in the manufacture of securities and valuable documents that require a high level of counterfeit protection, such as banknotes, passports, driving licenses, etc.

Claims

1. A multilayered protected composition having an additional multilayered element, which is formed on the surface of paper and comprises a multicolor coating in the form of a periodic raster made by at least two inks of different colors which have a contrast relative to the surface of the paper, and which lies outside of the range of the color coverage of the CMYK system, **characterized in that** the inks comprise luminescent compounds having daytime luminescence in the visible spectrum of light under the natural light, and wherein the additional multilayered protection element forms a graphical figure or is part of a graphical figure which changes its visual image by virtue of changing its color gamut and/or optical density and/or saturation when a document is copied on a printer operating using CMYK color system.
2. A multilayered protected composition according to claim 1, **characterized in that** an additional layer of

a carrier of paper and/or plastic and/or composite material is provided beneath the multilayered protection element.

3. A multilayered protected composition according to claim 1, **characterized in that** the graphic elements forming the periodic raster of the multicolor coating are made such that the colored moire appears in an area of the multicolor coating when the observation angle changes.
4. A multilayered protected composition according to claim 1, **characterized in that** the multicolor raster is made by a printing method.
5. A multilayered protected composition according to claim 1, **characterized in that** the additional multilayered protection element forms image sections in the form of geometric figures, guilloche elements, graphical and alphanumeric characters, a coding, or any combination thereof.
6. A multilayered protected composition according to claim 1, **characterized in that** the multicolor coating is formed by materials having different absorption in the IR range of optical spectrum.
7. A multilayered protected composition according to claim 1, **characterized in that** the additional multilayered protection element comprises an image representing information for personal identification and/or photograph for personal identification.
8. A multilayered protected composition according to claim 1, **characterized in that** a transparent section is formed beneath the multilayered protection element.
9. A multilayered protected composition according to claim 1, **characterized in that** the multilayered protection element is formed with a latent image, which is visible against the light or when inclined.
10. A multilayered product of a multilayered protected composition as set forth in any one of claims 1 to 8, **characterized in that** the product is made in the form of a banknote, excise stamp, postage stamp, passport, travel document, driving license, identity card, security, plastic card, label, packaging, payment document.

Patentansprüche

1. Eine mehrschichtige geschützte Zusammensetzung mit einem zusätzlichen mehrschichtigen Element, welche auf der Oberfläche von Papier gebildet ist und eine mehrfarbige Beschichtung in der Form ei-

- nes periodischen Rasters aufweist, das aus zumindest zwei Tinten unterschiedlicher Farben besteht, die einen Kontrast relativ zu der Oberfläche des Papiers aufweisen, und außerhalb des Bereichs der Farbabdeckung des CMYK-Systems liegt, **dadurch gekennzeichnet, dass** die Tinten lumineszierende Verbindungen mit einer Tageslumineszenz in dem sichtbaren Lichtspektrum unter dem natürlichen Licht aufweisen, und wobei das zusätzliche mehrschichtige Schutzelement eine graphische Figur ausbildet oder Teil einer graphischen Figur ist, die ihr Erscheinungsbild dadurch ändert, dass sich ihre Farbskala und/oder ihre optische Dichte und/oder ihre Sättigung dann ändert, wenn ein Dokument auf einem unter Verwendung des CMYK-Farbsystems arbeitenden Drucker kopiert wird.
2. Eine mehrschichtige geschützte Zusammensetzung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** eine zusätzliche Schicht eines Trägers aus Papier und/oder Kunststoff und/oder einem Kompositmaterial unter dem mehrschichtigen Schutzelement bereitgestellt ist.
 3. Eine mehrschichtige geschützte Zusammensetzung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die graphischen Elemente, die das periodische Raster der mehrfarbigen Beschichtung bilden, derart gefertigt sind, dass ein farbiges Moire in einem Bereich der mehrfarbigen Beschichtung erscheint, wenn sich der Beobachtungswinkel ändert.
 4. Eine mehrschichtige geschützte Zusammensetzung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das mehrfarbige Raster durch ein Druckverfahren gefertigt wird.
 5. Eine mehrschichtige geschützte Zusammensetzung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das zusätzliche mehrschichtige Schutzelement Bildabschnitte in der Form von geometrischen Figuren, Guilloche-Elementen, graphischen und alphanumerischen Zeichen, einer Codierung oder einer Kombination daraus ausbildet.
 6. Eine mehrschichtige geschützte Zusammensetzung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die mehrfarbige Beschichtung durch Materialien mit einer unterschiedlichen Absorption in dem IR-Bereich des optischen Spektrums gebildet wird.
 7. Eine mehrschichtige geschützte Zusammensetzung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das zusätzliche mehrschichtige Schutzelement ein Bild, das Informationen zur persönlichen Identifizierung darstellt, und/oder ein Foto zur persönlichen Identifizierung aufweist.
 8. Eine mehrschichtige geschützte Zusammensetzung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** ein transparenter Abschnitt unter dem mehrschichtigen Schutzelement gebildet ist.
 9. Eine mehrschichtige geschützte Zusammensetzung gemäß Anspruch 1, **dadurch gekennzeichnet, dass** das mehrschichtige Schutzelement mit einem latenten Bild gebildet wird, welches gegen das Licht oder bei Neigung sichtbar ist.
 10. Ein mehrschichtiges Produkt einer mehrschichtigen geschützten Zusammensetzung gemäß einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet, dass** das Produkt in der Form eines Geldscheins, einer Banderole, einer Briefmarke, einem Reisepass, einem Reisedokument, einem Führerschein, einem Ausweisdokument, einem Sicherheitsdokument, einer Plastikkarte, einem Label, einem Etikett, einem Zahlungsdokument gebildet ist.

Revendications

1. Composition protégée multicouche présentant un élément multicouche additionnel qui est formé sur la surface du papier et comprend un revêtement multicolore sous forme d'une trame périodique réalisée par au moins deux encres de couleurs différentes qui présentent un contraste par rapport à la surface du papier, et qui se situe en dehors de la plage de couverture de couleur du système CMJN, **caractérisée par le fait que** les encres comprennent des composés luminescents présentant une luminescence de jour dans le spectre visible de la lumière sous la lumière naturelle, et dans laquelle l'élément de protection multicouche additionnel forme un figure graphique ou fait partie d'une figure graphique qui change son image visuelle en changeant sa gamme de couleurs et/ou sa densité optique et/ou sa saturation lorsqu'un document est copié sur une imprimante fonctionnant à l'aide du système de couleurs CMJN.
2. Composition protégée multicouche selon la revendication 1, **caractérisée par le fait qu'**une couche additionnelle d'un support en papier et/ou en matière plastique et/ou en matériau composite est prévue sous l'élément de protection multicouche.
3. Composition protégée multicouche selon la revendication 1, **caractérisée par le fait que** les éléments graphiques formant la trame périodique du revêtement multicolore sont réalisés de sorte que le moiré coloré apparaisse dans une zone du revêtement multicolore lorsque l'angle d'observation change.
4. Composition protégée multicouche selon la reven-

dication 1, **caractérisée par le fait que** la trame multicolore est réalisée par un procédé d'impression.

5. Composition protégée multicouche selon la revendication 1, **caractérisée par le fait que** l'élément de protection multicouche additionnel forme des segments d'image sous forme de figures géométriques, d'éléments guillochés, de caractères graphiques et alphanumériques, d'un codage, ou de toute combinaison de ces derniers. 5
10
6. Composition protégée multicouche selon la revendication 1, **caractérisée par le fait que** le revêtement multicolore est formé de matériaux présentant une absorption différente dans la gamme IR du spectre optique. 15
7. Composition protégée multicouche selon la revendication 1, **caractérisée par le fait que** l'élément de protection multicouche additionnel comprend une image représentant des informations pour une identification personnelle et/ou une photographie pour une identification personnelle. 20
8. Composition protégée multicouche selon la revendication 1, **caractérisée par le fait qu'un** segment transparent est formé sous l'élément de protection multicouche. 25
9. Composition protégée multicouche selon la revendication 1, **caractérisée par le fait que** l'élément de protection multicouche est formé avec une image latente qui est visible à contre-jour ou lorsqu'elle est inclinée. 30
35
10. Produit multicouche d'une composition multicouche protégée selon l'une quelconque des revendications 1 à 8, **caractérisé par le fait que** le produit est réalisé sous forme de billet de banque, de timbre d'accise, de timbre-poste, de passeport, de document de voyage, de permis de conduire, de carte d'identité, de titre, de carte en plastique, d'étiquette, d'emballage, de document de paiement. 40
45
50
55

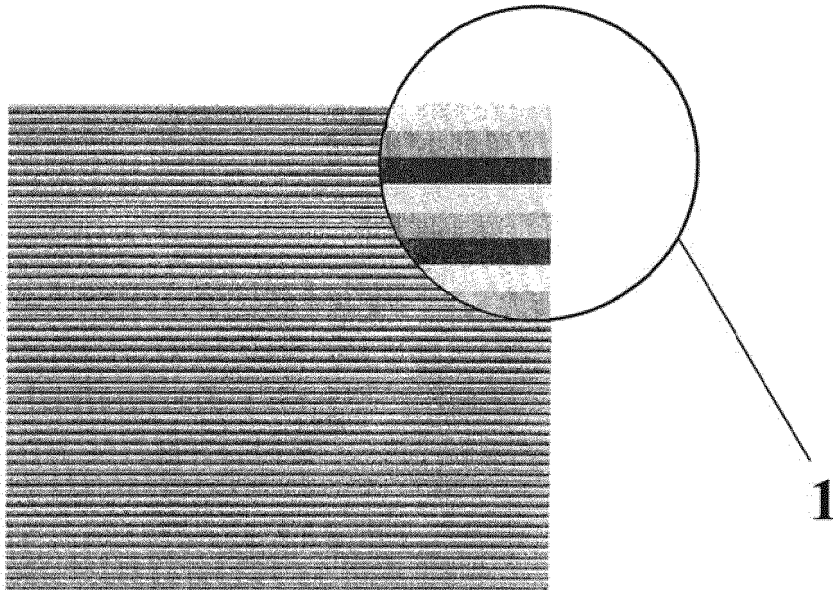


FIG.1

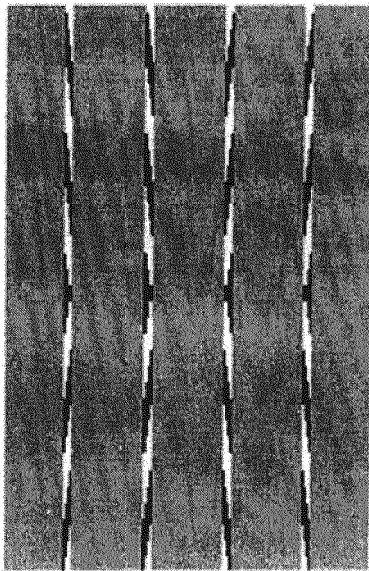


FIG.2

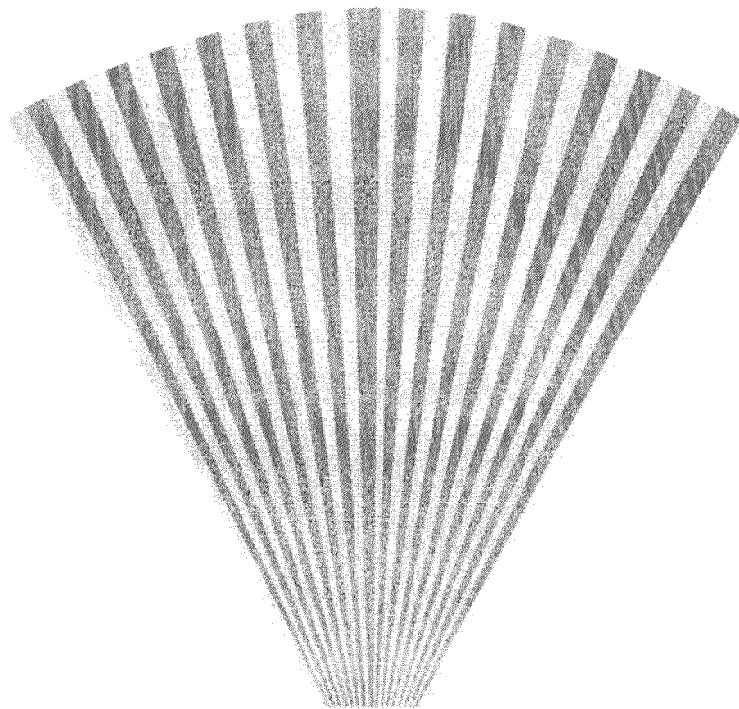


FIG.3

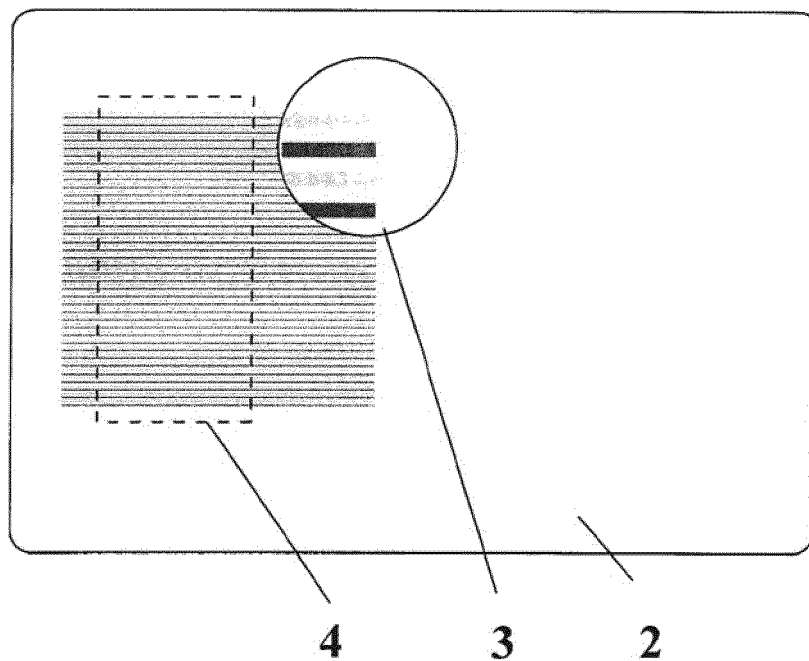


FIG.4

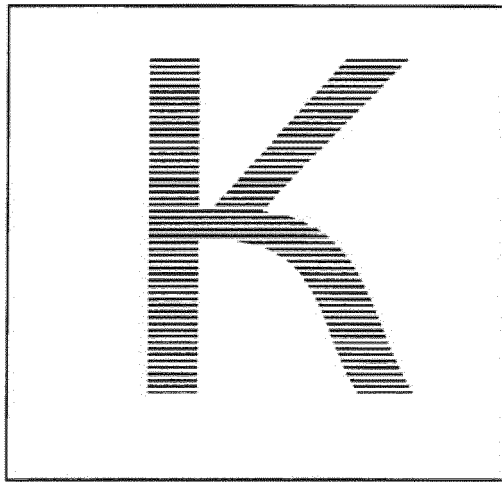


FIG. 5

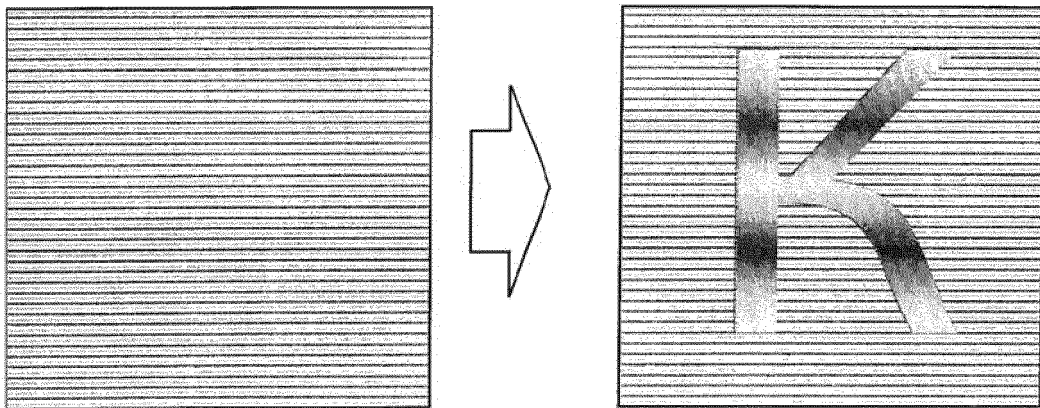


FIG. 6

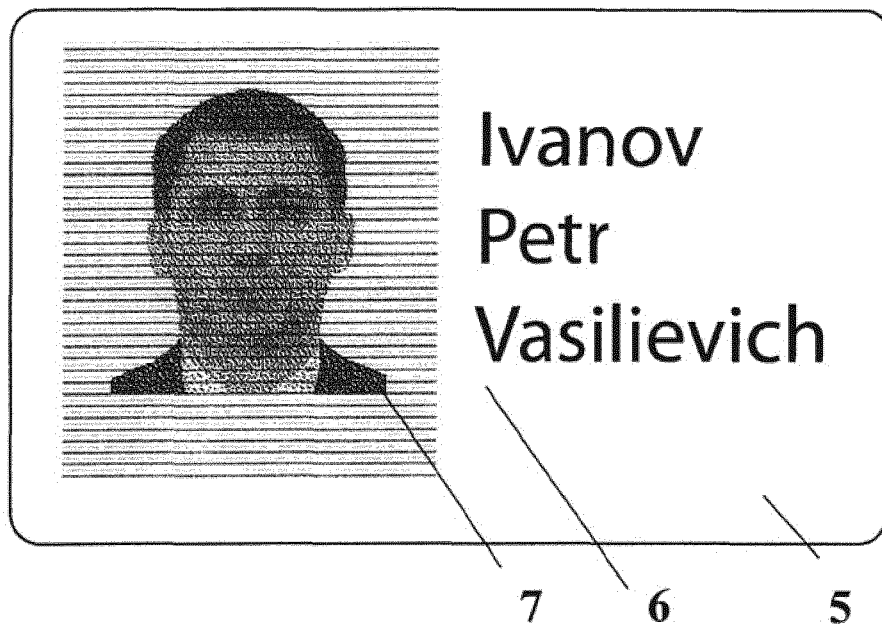


FIG.7



FIG.8

REFERENCES CITED IN THE DESCRIPTION

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