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(54) IDENTIFICATION MARKERS AND METHODS FOR FORMING THE SAME

IDENTIFIKATIONSMARKIERUNGEN UND HERSTELLUNGSVERFAHREN DAZU

ETIQUETTES D'IDENTIFICATION ET LEURS PROCEDES DE FABRICATION

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Description

[0001] This invention relates to identification markers and their application, and particularly to such markers for products.

[0002] It is to be understood that the expression "products" as used herein is to be widely interpreted to include any product usefully susceptible to marking such personal property items owned by individuals and corporately, and items capable of removal as widely varied as automobiles and watches, for example, and to products comprising toxic and/or hazardous materials, for example.

[0003] The identification of products can be important particularly to prove ownership in the event of loss of that product through theft or accidental misplacement, for example. The subsequent recovery of the product requires accurate identification of the product so that the correct product is returned to the owner. This problem is significant even where the particular item is visibly marked with a serial number or such other device since there is rarely a properly recorded serial number of individual personal property.

[0004] The problem is of course made much worse where the item is subject to criminal activity such as theft, particularly where commonly this will involve removal of serial number plates and even their replacement with counterfeit or even legitimate serial numbers taken from other articles. The primary purpose of this activity is to enable the thief to sell or otherwise dispose of the item. The altered serial number conceals the origin and ownership of the property.

[0005] While the use of a Serial number plate is of limited value for indicating ownership, another method for marking a product involves physically marking a serial number on the item with an indelible ink or by engraving the serial number on the item for example. Each of the foregoing techniques for property identification can be circumvented, for example, by the simple removal of the serial number or replacement of the serial number plate with another plate. The ease by which these marking systems are circumvented has created a significant problem in product recovery.

[0006] Another problem with the foregoing techniques for property identification is that the certain marking tag systems are inappropriate in that they may interfere with the function or even aesthetic appearance of the product. For example, an item of jewellery such as a valuable gem stone mounted in a ring setting is difficult, if not impossible, to mark with an identification system that cannot be easily circumvented.

[0007] EP-A-160504 discloses a method of numbering documents such as bank notes which are produced and used in large numbers and which, for a given series, are identical one with another except for a unique multi-digit number upon each individual document, the number thus uniquely identifying that document within the series. The document suggests rendering unauthorised reproduction of the document more difficult by ensuring that at least two characters in the identifying number differ from another (in addition to any differences in the letters or digits which they represent) in one or more visible characteristics. Suggested characteristics are different heights or widths or different type styles.

[0008] Document US-A-4,390,452 discloses microparticles encoded for retrospective identification of substances into which they are incorporated. The novel microparticles have flat surfaces bearing repetitive identifying indicia such as alphanumerics which can be visually interpreted under magnification. The microparticles are generally below lmm in size.

[0009] Document GB 1095286 discloses a security device used in security papers in which fine security ribbons having a width of substantially 0.75mm include printed characters of a height of substantially 0.4mm. Alternative inks for the characters are disclosed, together with the insertion of mutilated portions of the design in regions between the printed design.

[0010] Document EP 310707 discloses a document with magnetically detectable anti-forgery means including a plate-like element embedded in a strip of plastic or aluminium film. This strip supports mutually spaced regions obtained with a deposition of magnetic material. The regions of magnetic material are readable with a magnetic reading head applicable externally to the plate-like element.

[0011] Satisfactory marking of products comprising toxic and/or hazardous materials is of great importance for security and/or safety reasons, for example.

[0012] To overcome or at least reduce these problems it has been proposed to provide identification of products by means of a plurality of marker or tag particles each of which carrying an identical indicia. These tag particles are of a small miniature size and may be generally circular of no more than 1 or 2mm in diameter or strip or thread-like of no more than 1 or 2mm width, for example, and carry microscopic identification indicia. The tags may be produced by any convenient method from any suitable material and may be, for example, punched, essentially as miniature particles, from a microfiche film having an identical plurality of indicia printed, or slit from an elongate film.

[0013] Such tags are referred to herein as "marker tags of the kind described". The tag particles may be loosely spread over and throughout the product concerned, and/or may be adhered to the product, and indeed may be applied to one or more surfaces of the item of property by being suspended in a liquid adhesive such as a lacquer for example which is then sprayed upon the relevant surface or surfaces, adhering the tag particle to those surfaces under the dried adhesive or lacquer layer.

[0014] Where the tag marker is strip or thread-like it may be used specifically in this form with the product concerned, such as, for example, tear strips on wrapped products, woven into hems of cloth, and security threads

in banknotes, these being formed of plastics film, for example, which may be metallised.

[0015] A weaknesses of any form of security labelling system is that exact copies can be made of the labels and these copies can then be used to mark items for which they were not intended in an attempt to alter or mask genuine identity of those items. Similarly, labels can be made in the style of legitimate labels but with different indicia and these counterfeit labels can be used in an attempt to alter or mask the identity of items. These weaknesses make it difficult to rely on any labelling system as a secure item identification system.

[0016] It is an object of the present invention to overcome or at least significantly reduce the above-mentioned problems.

[0017] In accordance with the invention there is provided a method of forming an identification marker tag as set out in claim 1.

[0018] The invention also provides an identification marker tag as set out in claim 12.

[0019] By means of the invention it is possible to ensure that every particular batch of tag particles is sufficiently different from any other batch of tag particles, in a known way, so that, by microscopic examination all batches can be differentiated between those produced by a counterfeiter, so that counterfeit tagging particles can clearly be identified in a manner readily provable in a court of law.

[0020] In addition to varying the printing of the appropriate indicia on the tag particles, it is also possible within the scope of the invention to provide a printed background, spread, in formation of the tag particles, across a number of similar particles so that no two tagging particles will be identical even within a single batch because of variation in background printing. Where the tagging particles are punched from a prepared sheet carrying a plurality of the appropriate identifying indicia of microscopic size, such background printing can extend across the total microfiche with random variation in direction, curve, and in any other way desired.

[0021] In one manner of formation of a film from which the tagging particles are punched, the appropriate plurality of identifying indicia are produced on a computer screen which is then photographed and reduced in size to form the microfiche. Since the printing is computer generated, it is possible to impose encryption features on any or all of the characters for any particular indicia identification text, and also to produce a highly varying pattern of background printing, such as a series of rectilinear and curvilinear lines of the kind frequently used on bank notes as referred to above. It is clear that by recording the nature of the encryption and the nature of the background printing employed on every batch, it would be a relatively simple task to differentiate between counterfeit labels and legitimately produced ones. For simplicity, this recording can be held on a computer which is programmed to store a log of all labels produced with the associated encryption data.

[0022] Variations that are possible include the following:-

a) the script size of all characters can be very slightly atypical;
b) the script style of all characters can be very slightly atypical;
c) the overall script can be slightly rotated from its true angle;
d) a specific character may appear slightly "out of position";
e) a specific character may have a slightly atypical shape;
f) a specific character may be slightly larger or smaller than usual;
g) a specific character may be slightly rotated from its true angle;
h) a specific character may be formed with one or more lines of a different thickness to the usual;
i) a character (not necessarily alpha-numeric) may be added to the text which is generated by a random generator or by a complex algorithm so it would not be possible to anticipate which character would appear after any given string of text.
j) a sub-character, such as a dot, may be added to the text in relation to one or more alpha-numeric characters, the disposition of such sub-character being made variable with respect to its related character.

[0023] It will be appreciated that with one or all of the above features varied between batches, and with the certainty of being able to identify which features were varied in which way with any particular batch, counterfeit tagging particles can clearly be identified from this.

[0024] In addition computer or alternatively generated background printing of the kind herein described, leads to every single tagging particles produced, even within the same batch, being unique and different from all others, so that any exact copy by a counterfeiter of any one genuine tagging particle would clearly be shown to be counterfeit since no two legitimate particles could be identical. Similarly any attempt by a counterfeiter to provide background printing would inevitably show differences from all genuine tagging particles.

[0025] It will be appreciated that changes to the configuration of the text and printing, and background printing can be made from one batch of tagging particles to the next, whilst always the legitimate tagging particles can, batch by batch, clearly be identified by the legitimate producers.

[0026] The invention includes within its scope tagging particles made using the method hereinabove specified.

[0027] One example of the invention will now be described by way of example with reference to the accompanying drawing in which:-

Figure 1 is a schematic view of a marker tag accord-

ing to the invention; and
Figure 2 shows schematically printed matter variations in accordance with the invention.

[0028] In Figure 1 there is shown schematically a marker tag 1, grossly enlarged, punched out from a film including microscopic identification characters 2.
[0029] Figure 2 illustrates character variations for the tag of Figure 1.
[0030] In Figure 2 the top line shows the characters as "normally" produced.
[0031] The lower line shows encryption where:-

the "A" is slightly smaller than normal
the "C" is a slightly atypical shape
the "*" is a non-standard character and is slightly "bolder" than normal.
The "*" character can in any event either be:-

derived from the other characters in the indicia by a complex algorithm, or selected as a random (non-anticipatable) character.
[0032] It is to be understood that the foregoing is merely exemplary of tagging devices and methods of forming the same in accordance with the invention. Many modifications can readily be made thereto without departing from the present invention. Thus, the invention may be applied generally to multiple labelling systems where a plurality of similar or identical labels are produced which contain the same code or indicia whether or not the labels are miniature and the code or indicia are microscopic.

Claims

1. A method of forming an identification marker tag (1) of generally planar construction with one in-plane dimension being less than 2mm and carrying identification indicia (2) including the steps of varying the visible physical characteristics of printed matter (2) applied to the marker tag during production of same, characterised by recording the nature of the variation, thereby to provide identification of products.

2. The method as claimed in Claim 1 wherein the physical characteristics of printed matter (2) are applied to the marker tag (1) between, or within and between, batches of the same or groups of batches of such tags.

3. A method as claimed in Claim 1 or 2 wherein the tags (1) are in the form of strips or threads.

4. A method of forming a plurality of identification marker tags, each tag being formed by the method claimed in any one of the preceding Claims, including applying a printed background on the tag marker to the printed matter (2) applied thereto, the printed background being spread, in formation of the marker tags, across a number of similar tags (1) whereby no tags will be identical.

5. The method as claimed in any on of the preceding Claims wherein the marker tags (1) are punched or cut from a film of material produced by photography from a computer screen on which the printed matter are computer generated, or from any other computer generated output, such computer generation facilitating variations in inscription features in the printed matter and a varying pattern of background printing.

6. The method as claimed in any one of the preceding Claims wherein the size of at least one character in the printed matter (2) is varied.

7. The method as claimed in any on of the preceding Claims wherein the style of at least one of the characters in the printed matter (2) is varied.

8. The method as claimed in any one of the preceding Claims wherein at least one of the characters in the printed matter (2) is rotated from its true alignment.

9. The method as claimed in any one of the preceding Claims wherein at least one of the characters in the printed matter (2) is displaced from its natural position.

10. The method as claimed in any one of the preceding Claims wherein at least one of the characters in the printed matter (2) is formed with one or more lines thereof having a thickness differing from other characters in the printed matter (2).

11. The method as claimed in any one of the preceding Claims wherein a surplus character is added to the printed matter (2) on a random basis.

12. An identification marker tag of generally planar construction with one in-plane dimension being less than 2mm and carrying identification indicia (2) to provide identification of products, the visible physical characteristics of printed matter (2) applied to the marker tag (1) being varied and recorded during production of same.

Patentansprüche

1. Verfahren zur Herstellung eines Identifikationsmarkierungskennzeichens (1) allgemein planarer Ausführung, wobei eine in gleicher Ebene liegende Abmessung weniger als 2 mm beträgt und das Identi-

fikationsangaben (2) trägt, bei dem man die sichtbaren physischen Eigenschaften des Druckinhalts (2), mit dem das Markierungskennzeichen versehen wird, bei seiner Herstellung verändert, gekennzeichnet durch Aufzeichnen der Art der Veränderung, um dadurch Produkte zu identifizieren.

2. Verfahren nach Anspruch 1, bei dem das Markierungskennzeichen (1) zwischen oder innerhalb von und zwischen Chargen von Markierungskennzeichen oder Chargengruppen derartiger Kennzeichen mit den physischen Eigenschaften des Druckinhalts (2) versehen wird.

3. Verfahren nach Anspruch 1 oder 2, bei dem die Kennzeichen (1) in Form von Streifen oder Fäden vorliegen.

4. Verfahren zur Herstellung mehrerer Identifikationsmarkierungskennzeichen, wobei jedes Kennzeichen durch das Verfahren nach einem der vorhergehenden Ansprüche hergestellt wird, einschließlich Versehen des Druckinhalts (2), mit dem die Kennzeichnungsmarkierung versehen ist, mit einem gedruckten Hintergrund auf die Kennzeichnungsmarkierung, wobei der gedruckte Hintergrund bei der Herstellung der Markierungskennzeichen über eine Zahl von ähnlichen Kennzeichen (1) verteilt wird, wodurch kein Kennzeichen mit einem anderen identisch ist.

5. Verfahren nach einem der vorhergehenden Ansprüche, bei dem die Markierungskennzeichen (1) aus einem durch Photographie eines Rechnerbildschirms, auf dem der Druckinhalt von dem Rechner erzeugt wird, oder einer anderen rechnererzeugten Ausgabe hergestellten Materialfilm gestanzt oder geschnitten werden, wobei eine derartige Erzeugung durch den Rechner Veränderungen der Beschriftungsmerkmale des Druckinhalts und ein variierendes Muster des Hintergrunddrucks erleichtert.

6. Verfahren nach einem der vorhergehenden Ansprüche, bei dem die Größe mindestens eines der Zeichen des Druckinhalts (2) verändert wird.

7. Verfahren nach einem der vorhergehenden Ansprüche, bei dem der Stil mindestens eines Zeichens des Druckinhalts (2) verändert wird.

8. Verfahren nach einem der vorhergehenden Ansprüche, bei dem mindestens eines der Zeichen des Druckinhalts (2) aus seiner wahren Ausrichtung gedreht wird.

9. Verfahren nach einem der vorhergehenden Ansprüche, bei dem mindestens eines der Zeichen des Druckinhalts (2) aus seiner normalen Position verschoben wird.

10. Verfahren nach einem der vorhergehenden Ansprüche, bei dem mindestens eines der Zeichen des Druckinhalts (2) so ausgebildet ist, daß sich die Dikke einer oder mehrerer seiner Linien von anderen Zeichen des Druckinhalts (2) unterscheidet.

11. Verfahren nach einem der vorhergehenden Ansprüche, bei dem dem Druckinhalt (2) ein zusätzliches Zeichen auf Zufallsbasis hinzugefügt wird.

12. Identifikationsmarkierungskennzeichen allgemein planarer Aufühung, wobei eine in gleicher Ebene liegende Abmessung weniger als 2 mm beträgt und das zur Identifikation von Produkten Identifikationsangaben (2) trägt, wobei die sichtbaren physischen Eigenschaften des Druckinhalts (2), mit dem das Markierungskennzeichen (1) versehen wird, während seiner Herstellung verändert und aufgezeichnet werden.

Revendications

1. Procédé de fabrication d'une marque distinctive d'identification (1) de construction généralement plane, dont une dimension dans le plan mesure moins de 2 mm et porte des inscriptions d'identification (2), comportant les étapes consistant à faire varier les caractéristiques physiques visibles de la matière imprimée (2) appliquée sur la marque distinctive lors de la production de celle-ci, caractérisé par l'enregistrement de la nature de la variation, pour ainsi fournir une identification de produits.

2. Procédé selon la revendication 1, dans lequel les caractéristiques physiques de la matière imprimée (2) sont appliquées à la marque distinctive (1) entre, ou dans et entre, des lots de celle-ci ou des groupes de lots de telles marques.

3. Procédé selon la revendication 1 ou 2, dans lequel les marques (1) ont la forme de rubans ou de fils.

4. Procédé de fabrication d'une pluralité de marques distinctives d'identification, chaque marque étant fabriquée par le procédé selon l'une quelconque des revendications précédentes, comportant l'application d'un arrière-plan imprimé sur la marque distinctive, à la matière imprimée (2) appliquée à celle-ci, l'arrière-plan imprimé étant étendu, lors de la fabrication des marques distinctives, en travers d'un certain nombre de marques similaires (1), ce par quoi aucune marque ne sera identique.

5. Procédé selon l'une quelconque des revendications

précédentes, dans lequel les marques distinctives (1) sont poinçonnées ou découpées à partir d'un film de matériau produit par photographie à partir d'un écran d'ordinateur sur lequel la matière imprimée est générée par ordinateur, ou à partir de toute autre sortie générée par ordinateur, une telle génération par ordinateur facilitant les variations des caractéristiques d'inscription dans la matière imprimée et un motif varié d'impression d'arrière-plan.

6. Procédé selon l'une quelconque des revendications précédentes, dans lequel on fait varier la dimension d'au moins un caractère dans la matière imprimée (2).

7. Procédé selon l'une quelconque des revendications précédentes, dans lequel on fait varier le style d'au moins l'un des caractères dans la matière imprimée (2).

8. Procédé selon l'une quelconque des revendications précédentes, dans lequel au moins l'un des caractères dans la matière imprimée (2) est tourné par rapport à son alignement correct.

9. Procédé selon l'une quelconque des revendications précédentes, dans lequel au moins l'un des caractères dans la matière imprimée (2) est déplacé de sa position normale.

10. Procédé selon l'une quelconque des revendications précédentes, dans lequel au moins l'un des caractères dans la matière imprimée (2) est fabriqué de telle sorte qu'une ou plusieurs de ses lignes aient une épaisseur différente d'autres caractères dans la matière imprimée (2).

11. Procédé selon l'une quelconque des revendications précédentes, dans lequel un caractère supplémentaire est ajouté à la matière imprimée (2) de manière aléatoire.

12. Marque distinctive d'identification de construction généralement plane, dont une dimension dans le plan mesure moins de 2 mm et porte des inscriptions d'identification (2) pour fournir une identification de produits, les caractéristiques physiques visibles de la matière imprimée (2) appliquée sur la marque distinctive (1) étant variées et enregistrées au cours de la production de celle-ci.

FIG. 1.

FIG. 2.

ABCD1234*ABCD1234*ABCD1234*
ABCD1234*ABCD1234*ABCD1234*