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(54) **Document comprising an authenticity characteristic**

Dokument mit Echtheitseigenschaft

Document comprenant une caractéristique d'authentification

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Description

[0001] The invention relates to a document, preferably a security document such as a bank note, provided with an authenticity characteristic, the authenticity characteristic comprising a series of holes.

[0002] The use of holes as security characteristic, made on a security document is amongst others known from patent application WO97/18092. The holes described in said application are continuous holes, called micro perforations, which are made by a laser in order to together form a pattern, more particularly an image.

[0003] In practice it has appeared that such a pattern of holes is rather easy to imitate to the human eye by means of mechanical means, such as for instance an electronically driven sewing machine. The dimensions and shape of the faked hole pattern however differs from the original produced by means of laser technique.

[0004] Additionally the authenticity of a security document with such a characteristic is not easy to verify without comparing it to an authentic security document.

[0005] It is an object of the invention to at least partially overcome these drawbacks.

[0006] To that end the invention provides a document, preferably a bank note, provided with an authenticity characteristic, the authenticity characteristic comprising a series of holes and a series of markings of the same order of size as the holes, the series of holes and the series of markings together forming one pattern.

[0007] By choosing to also make a series of marking which together with the holes form a pattern, it is in practice almost impossible without complicated equipment to make a forgery that cannot be visually distinguished.

[0008] Because the characteristic on the document is a characteristic by which means the authenticity of a document can be checked, even without comparing it to a same characteristic on a document of which it is known for certain that it is an authentic document, the security characteristic is here called authenticity characteristic.

[0009] A pattern according to this description should be interpreted as an arrangement of markings and holes that can be recognised by the human eye as one unity. This does not have to be a regular pattern. A regular pattern, however, is easy to recognize as such and therefore is preferred. The pattern may also be an arrangement of holes and markings which together form an image and which in that connection is preferred. In the figures some examples have been shown.

[0010] When the holes and markings together form a regular pattern, they can be made such with respect to each other so as to form a grid or array, the holes and markings being made at the same grid distance with respect to each other. It is also possible that the holes one to the other and the marking one to the other form sub grids or arrays, each having their own grid constant. Sub grids or arrays can also be arranged in an orderly manner or form an image.

[0011] Preferably the holes run through the document, so that they form continuous holes, that means holes through the document, or perforations. In connection with the dimension, the holes are also called micro perforations in the art. Such micro perforations can just be visually distinguishable, possibly by means of a magnifying glass, particularly when light falls through. Such holes in general fall within an area with holes, for instance an area of approximately 32 mm x 15 mm. In this area with holes, but also outside of it, a series of marking is printed in the same order of size as the holes, the series of holes and the series of markings together forming one pattern. In practice a hole will have a diameter of approximately 50-200 micron.

[0012] The use of micro perforations on (security) documents in all possible forms is more generally described in among others patent specifications WO-95/26274, WO-00/43216, WO-98/19869 and FR-2.740.727.

[0013] According to the invention the markings are of the same order of size as the holes. As a result they can be combined together in a pattern, in particular an image, so that visually, possibly with image enlarging means, it can immediately be established whether there is question of an authentic security document.

[0014] The markings are visible to the eye, and they are objects, such as round or unround surfaces, circles, crosses, line parts, stars or the like preferably made by printing. In practice said markings will have a diameter of approximately 50-200 micron.

[0015] The holes may have a round shape, but may for instance also be elliptic, elongate or square, or even star-shaped.

[0016] The markings may also have a round shape, but another shape is also possible. The markings may even be star-shaped, or little crosses or the like.

[0017] Preferably, however, the markings and the holes substantially have the same shape. This offers an additional security. Visually it can namely easily be established whether the shape of the markings and the holes is almost corresponding.

[0018] Preferably the holes and the markings together form a pattern, the markings forming a first part of the pattern and the holes a supplementary part of the pattern. As a result it can visually and independently from an original been seen whether the document is authentic.

[0019] Preferably the holes and the markings are made on an almost similar grid or lattice.

[0020] Preferably the series of holes have been made in a first area on the security document according to a grid having a regular mutual distance, and first series of markings in a second area on the security document, also according to a grid having almost the same mutual distance as the holes, the first area and the second area at least partially overlapping each other.

[0021] It is preferred that in the overlapping area the grid of the holes is displaced with respect to the grid of the markings. It is also possible that at least a part of the holes has been made in at least a part of the markings.

[0022] An additional difficulty is introduced when each

time a part of the holes and a part of the markings have been made on a joint row.

[0023] Preferably a series of markings has been made by means of a printing process, for instance an offset process or foil printing process, also called foil laminating or hot stamp print technique. A combination of holes with several printing processes is also possible. See for instance figure 4.

[0024] A good embodiment is designed such that the markings can be placed as close to the holes as possible. In general this will be along the edge of an area of holes.

[0025] According to another embodiment the holes and the markings together form a visually recognizable pattern, preferably an image.

[0026] According to yet another embodiment the transmissivity of the markings is lower than the transmissivity of the document on which the markings have been made, in particular lower than a marking's adjacent surroundings.

[0027] All these embodiments, possibly in combination, provide an additional security possibility. The characteristics may for instance be varied per denomination of banknotes, as a result of which they may also serve to distinguish the various denominations.

[0028] The invention is further elucidated on the basis of an exemplary embodiment of authenticity characteristics according to the invention, in which:

Figure 1 shows a grid of holes and markings;

Figure 2 shows an alternative grid;

Figure 3 shows another alternative; and

Figure 4 shows a fourth alternative.

[0029] Figure 1 shows an authenticity characteristic 1 according to the invention, in which on a first part 2 of a grid markings 3 have been made, and on a second part 4 of the grid micro perforations 5, the micro perforation and the markings together forming the points of the grid, having a mutual distance a in the one direction and b in the direction perpendicular to it.

[0030] For a simple visual detection of the holes and markings, also against the light, the markings are preferably made in a dark colour, or in another way let light through to a limited degree.

[0031] In figure 2 an authenticity characteristic 1 can be seen in which the micro perforations 5 have been made on the points of a grid or array 6, besides which a series 7 of markings 3 has been made on the points of an almost identical grid. Visually it cannot immediately be seen that the grid distance of the micro perforations one to the other and the grid distance of the markings one to the other, correspond.

[0032] Figure 3 shows an authenticity characteristic 1 according to the invention, markings 3 (closed circles) and holes 5 (open circles) together forming a pattern, which visually can immediately be recognized as a pattern. The markings here form a first part 8 of the pattern and the micro perforations a second part of the pattern. Here the markings more or less envelope the (sub) pattern of the holes.

[0033] The markings and micro perforations have been arranged in groups in rows 9-1, 9-2, ... Here the distance between adjacent rows usually is b, but when markings and micro perforations are adjacent (lines 9-2 and 9-3 for instance) the distance is Z, which has been chosen such that it is larger than the placement accuracy of the micro perforations and the placement accuracy of the markings. In the example of figure 3 it is clear that the authenticity of the authenticity characteristic can immediately be visually checked.

[0034] In figure 4 an example is given of a micro perforation 5, here in the shape of an elliptic hole, a first marking 10 in the shape of an ellipse made by means of offset printing in the same shape and dimension of the micro perforation has been made in close proximity of the micro perforation. In close proximity of the micro perforation and of the first reference marking a second marking 11 has been made, for instance by means of foil printing. This threesome can be made in the shape of a regular pattern, the group (in this case three) having been grouped one to the other and groups subsequently forming a pattern. The groups can be grouped in a triangle, but also in any other configuration. The groups may consist of at least one marking and at least one hole. The markings may also be different one from the other.

[0035] Many variations can be thought of here, for instance one in which the holes have been made on a grid with another period than the markings, or in which a part of the holes have been made in the markings. As long as the holes and the markings form a pattern that is recognizable it is considered to be an alternative of the authenticity characteristic according to the invention.

Claims

1. Document, preferably a bank note, provided with an authenticity characteristic, the authenticity characteristic comprising a series of holes (5) **characterized in that** the authenticity characteristic comprises a series of markings (3) of the same order of size as the holes (5), the series of holes (5) and the series of markings (3) together forming one pattern.

2. Document according to claim 1, the holes being continuous holes.

3. Document according to claim 1 or 2, the markings having substantially the same shape as the holes.

4. Document according to claim 1, 2 or 3, the holes and markings together forming a pattern, the markings forming a first part of the pattern and the holes an

additional part of the pattern.

5. Document according to any one of the preceding claims, the holes and the markings being made on an almost similar grid.

6. Document according to claim 1, 2 or 3, the series of holes being made in a first area on the security document according to a grid having a regular mutual distance, and first series of markings in a second area on the security document, also according to a grid having almost the same mutual distance as the holes, the first area and the second area at least partially overlapping each other.

7. Document according to claim 6, the grid of the holes in the overlapping area being displaced with respect to the grid of the markings.

8. Document according to any one of the preceding claims, a part of the holes and a part of the markings each time being made on a joint row.

9. Document according to any one of the preceding claims, a series of markings being made by means of a printing process, for instance offset printing.

10. Document according to any one of the preceding claims, a series of marking being made by means of for instance foil printing or foil lamination.

11. Document according to any one of the preceding claims, at least a part of the holes being made in at least a part of the markings.

12. Document according to any one of the preceding claims, a hole having a diameter of approximately 50-200 micron.

13. Document according to any one of the preceding claims, the holes and the markings together forming a visually recognizable pattern, preferably an image.

14. Document according to any one of the preceding claims, the transmissivity of the markings being lower than the transmissivity of the document on which the markings have been made, particularly lower than a marking's adjacent surroundings.

Patentansprüche

1. Dokument, vorzugsweise eine Banknote, mit einem Echtheitskennzeichen versehen, wobei das Echtheitskennzeichen eine Serie von Löchern (5) umfaßt, **dadurch gekennzeichnet, daß** das Echtheitskennzeichen eine Serie von Merkmalen (3) in derselben Größenordnung als die Löcher (5) umfaßt, wobei die Serie von Löchern (5) und die Serie von Merkmalen (3) zusammen ein Muster bilden.

2. Dokument nach Anspruch 1, wobei die Löcher duchgehende Löcher sind.

3. Dokument nach Anspruch 1 oder 2, wobei die Merkmale hauptsächlich dieselbe Form als die Löcher haben.

4. Dokument nach Anspruch 1, 2 oder 3, wobei die Löcher und die Merkmale zusammen ein Muster bilden, wobei die Merkmale ein erstes Teil des Musters und die Löcher eine zusätzliches Teil des Musters bilden.

5. Dokument nach irgendeinem der vorhergehenden Ansprüche, wobei die Löcher und die Merkmale auf einem fast gleichen Gitter angeordnet sind.

6. Dokument nach Anspruch 1, 2 oder 3, wobei die Serie von Löchern in einem ersten Gebiet auf dem Wertdokument gemäß einem Gitter mit einem regelmäßigen gegenseitigen Abstand, und eine erste Serie von Merkmalen in einem zweiten Gebiet auf dem Wertdokument, ebenfalls gemäß einem Gitter mit nahezu demselben gegenseitigen Abstand als die Löcher, angeordnet ist, wobei das erste Gebiet und das zweite Gebiet einander zumindest teilweise überlappen.

7. Dokument nach Anspruch 6, wobei das Gitter der Löcher in dem Überlappungsgebiet bezüglich des Gitters der Merkmale verschoben ist.

8. Dokument nach irgendeinem der vorhergehenden Ansprüche, wobei jedesmal ein Teil der Löcher und ein Teil der Merkmale auf einer gemeinsamen Reihe angeordnet sind.

9. Dokument nach irgendeinem der vorhergehenden Ansprüche, wobei eine Serie von Merkmalen durch ein Druckprozeß, zum Beispiel Offsetdruck, angeordnet ist.

10. Dokument nach irgendeinem der vorhergehenden Ansprüche, wobei eine Serie von Merkmalen durch zum Beispiel Foliedruck oder Folielaminieren angeordnet ist.

11. Dokument nach irgendeinem der vorhergehenden Ansprüche, wobei zumindest ein Teil der Löcher in zumindest einem Teil der Merkmale angeordnet ist.

12. Dokument nach irgendeinem der vorhergehenden Ansprüche, wobei ein Loch einen Diameter von ungefähr 50 - 200 Mikrometern hat.

13. Dokument nach irgendeinem der vorhergehenden

Ansprüche, wobei die Löcher und die Merkmale zusammen ein visuell erkennbares Muster bilden, vorzugsweise ein Bildnis.

14. Dokument nach irgendeinem der vorhergehenden Ansprüche, wobei die Durchlässigkeit der Merkmale niederdriger ist als die Durchlässigkeit des Dokuments worauf die Merkmale gemacht sind, insbesondere niedriger als die angrenzende Umgebung eines Merkmals.

Revendications

1. Document, de préférence un billet de banque, muni d'une caractéristique d'authenticité, la caractéristique d'authenticité comprenant une série de trous (5), **caractérisé en ce que** la caractéristique d'authenticité comprend une série de marquages (3) du même ordre de grandeur que les trous (5), la série de trous (5) et la série de marquages (3) formant conjointement un motif.

2. Document selon la revendication 1, les trous étant des trous continus.

3. Document selon la revendication 1 ou 2, les marquages ayant sensiblement la même forme que les trous.

4. Document selon la revendication 1, 2 ou 3, les trous et les marquages formant conjointement un motif, les marquages formant une première partie du motif et les trous formant une partie supplémentaire du motif.

5. Document selon l'une quelconque des revendications précédentes, les trous et les marquages étant réalisés sur une grille pratiquement similaire.

6. Document selon la revendication 1, 2 ou 3, la série de trous étant réalisée dans une première zone sur le document de sécurité selon une grille avec une distance régulière entre les trous, et la première série de marquages dans une seconde zone sur le document de sécurité, également selon une grille avec pratiquement la même distance entre les marquages que celle de la grille des trous, la première zone et la seconde zone se chevauchant au moins partiellement.

7. Document selon la revendication 6, la grille des trous dans la zone de chevauchement étant déplacée par rapport à la grille des marquages.

8. Document selon l'une quelconque des revendications précédentes, une partie des trous et une partie des marquages étant réalisées à chaque fois sur une rangée commune.

9. Document selon l'une quelconque des revendications précédentes, une série de marquages étant réalisée au moyen d'un procédé d'impression, par exemple l'impression offset.

10. Document selon l'une quelconque des revendications précédentes, une série de marquages étant réalisée au moyen par exemple de l'empreinte à la feuille ou du laminage de feuilles.

11. Document selon l'une quelconque des revendications précédentes, au moins une partie des trous étant réalisée dans au moins une partie des marquages.

12. Document selon l'une quelconque des revendications précédentes, un trou ayant un diamètre d'environ 50-200 microns.

13. Document selon l'une quelconque des revendications précédentes, les trous et les marquages formant conjointement un motif visuellement reconnaissable, de préférence une image.

14. Document selon l'une quelconque des revendications précédentes, la transmissivité des marquages étant inférieure à la transmissivité du document sur lesquels sont réalisés les marquages, en particulier inférieure à un environnement proche du marquage.

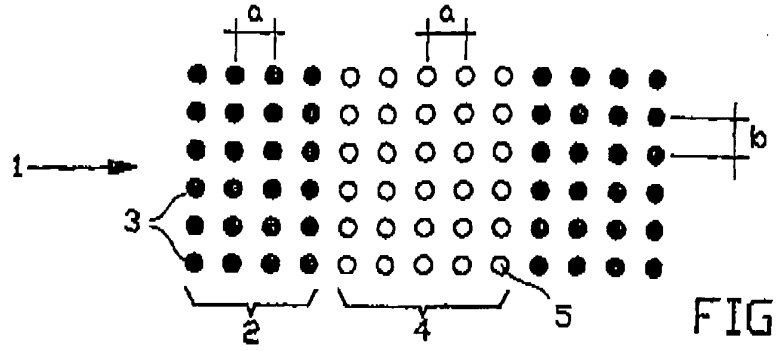


FIG. 1

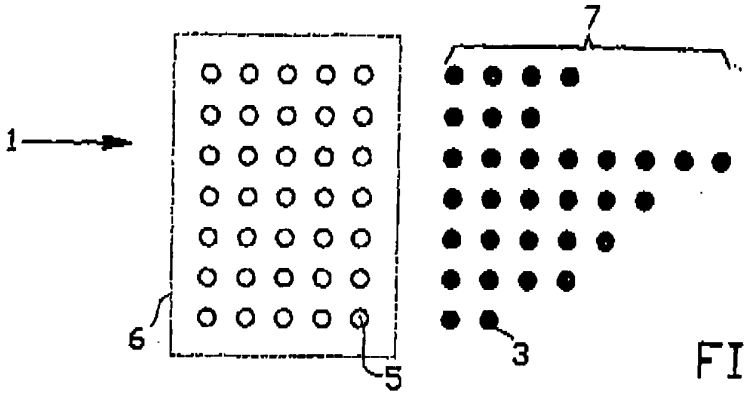


FIG. 2

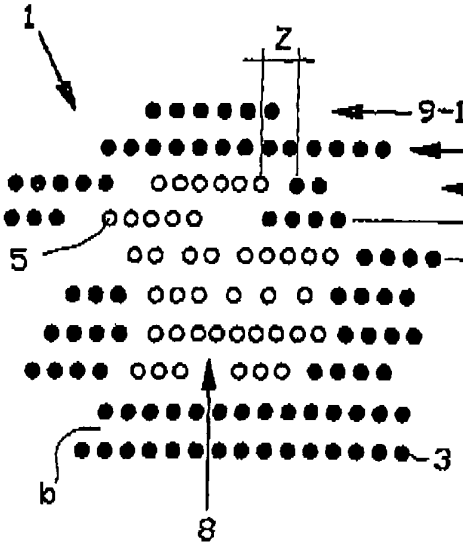


FIG. 3

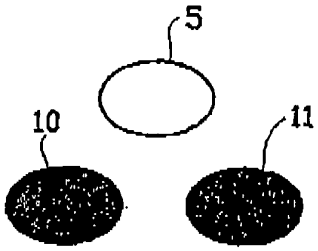


FIG. 4