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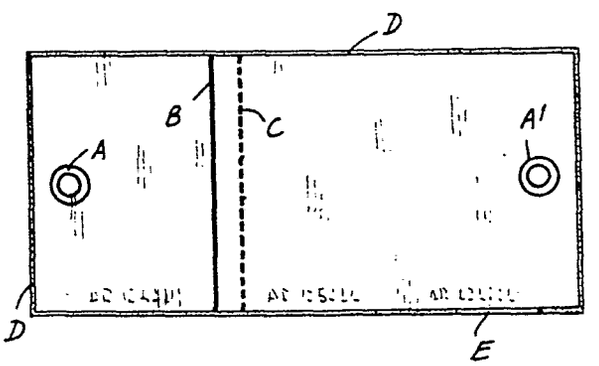
(54) Anti-forgery system for paper money or other documents.

(57) The present invention relates to a system for preventing the forgery of paper money or of any other document on a paper support, such as documents of credit, access tickets for stadiums, theaters, etc. The system comprises circles (A,A¹) of a magnet-responsive material, such as steel, bands (B,C) of steel and neutral fluorescent yellow coloured bands (D) with non-fluorescent interruptions (E) and allows the easy and rapid identification of bank notes or of other authentic documents by using ordinary and common objects or, more rapidly, by means of adapted mechanized devices which use the same principle.



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ANTI-FORGERY SYSTEM FOR PAPER MONEY OR OTHER DOCUMENTS

The present invention relates to an anti-forgery system for paper money or other documents.

Conventional systems in this field substantially consist in printing the bank notes or documents on watermarked paper or in inserting a thin aluminum lamina in the paper.

However, such systems have disadvantages, since they actually do not deter the forgery and illegal production of bank notes, documents of credit, etc.

The problem faced by the system according to the present invention consists in preventing the forgery of any kind of paper money or bank note, document of credit, or of any kind of document on a paper support to which it is applied, in particular to allow the safe identifiability of the documents of credit, bank notes or other documents. This problem is solved by the system having the features indicated in claim 1.

The features and advantages of the system according to the invention will become apparent from the following description with reference to the accompanying drawing, the only figure whereof schematically shows a plan view of a document with the anti-forgery system according to the invention.

The present invention comprises numerous solutions which constitute, even when taken individually but especially all together, an effective remedy against forgery.

Two or more concentric circles A, A^1, made of steel or of another magnetizable material which can be detected by a magnet, are included in the paper in one or more parts of the bank note or document, for example in a central region to the right and to the left of the note. The thickness is preferably approximately 15 microns but a different value may be selected, so long as it is adequate for the function; the diameter, which is of approximately 1 cm if possible, and the width of the strip, which is preferably approximately 1 mm, can indeed have different dimensions so long as they are adequate for the document or bank note.

However, it is possible to provide, instead of said small circles, other figures with different shapes and dimensions which preserve similar characteristics. In particular, it is possible to apply a continuous or discontinuous band (indicated at B and C in the figure) along the bank note or document in replacement of the aluminum filaments at present provided in various bank notes, so long as it is made of magnet-responsive material, of the width and thickness adequate for the kinds and sizes of the documents to be produced.

In order to verify the authenticity of the bank note or other document it is possible to move a magnet, or, in order to facilitate the operation, a rod with a magnet at one end or along a certain length (e.g. 8-10 cm) of said rod, close to the circles or to the continuous and discontinuous bands provided as described (made of material responsive to magnetic fields).

A neutral fluorescent yellow band, also known as "invisible ink" band (see the figure at D), which can be seen only upon exposure to ultraviolet rays, is provided along the entire perimeter of the bank note or in another part of the document, whereas an interruption of said band in pale blue (e.g. approximately 2 cm, shown in the figure at E) is left without fluorescence, so as to be blue-violet under ultraviolet rays. Said non-fluorescent pale-blue band E allows to rapidly sort the tickets or bank notes into bundles.

Any side serial numbers, for example in bank notes, are made of visible fluorescent blue, so as to verify its possible alteration, such as in the case of money laundering, to allow comparison with a central serial number of neutral fluprescent yellow ink (so-called invisible ink).

All the checks which can be made in relation to the solutions so far described can be performed by electronic machines programmed for this purpose or by adding the appropriate solutions and modifications to those currently in use for counting or checking bank notes.

Besides the various solutions so far described, the system according to the present invention also provides a particular kind of watermark, composed of four different thicknesses.

Two or more circles of different thickness, such that they can be detected and distinguished by touch, i.e. by pressing the sheet in the exact point with two fingers, are provided in one or more points of the bank note, even in a position which is concentric to the previously described steel circles A, A^1. The embodiment described herein includes an outermost circle with a thickness of e.g. approximately 110 microns and an innermost circle with a thickness of 60 microns; the paper, including the metal strips, has a thickness of 80 microns, whereas the intermediate parts vary between 70 and 100 microns. However, the dimensions and geometrical figures generally suggested in the present description must be considered as variable according to the different requirements in the various fields of application and according to the discretion of the engraver or designer.

The system as described is applied during the production at the paper mill as regards watermarking and the application of the magnetic strips, and

in the print shop as regards printing with the various fluorescent and non-fluorescent paints.

The simple application of even only some of the described technical solutions constitutes a valid barrier against forgery attempts.

The present invention must be considered as being extendible to those accessory variations which as such are within its scope.

Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the scope of each element identified by way of example by such reference signs.

Claims

1. An anti-forgery system for paper money, documents of credit, tickets or documents on a paper support, characterized by one or more concentric geometric figures, in particular circles (A, A_1), made of steel or of another magnet-responsive material.

2. An anti-forgery system according to claim 1, characterized in that the steel circles have a thickness of 15 microns, a circumference of approximately 1 cm, and a width of approximately 1 mm or of other adequate dimensions.

3. An anti-forgery system according to claim 1, characterized by a continuous or discontinuous band (8,C) along the bank note or document, made of magnet-responsive material, in particular steel, with a width of preferably 1 mm, a thickness of preferably 15 microns to the kinds and dimensions of the documents.

4. An anti-forgery system according to any of the preceding claims, allowing to verify the authenticity of the tickets or other documents by moving a magnet, possibly arranged at the end of an appropriately provided rod or along a portion thereof, toward the circles or toward the discontinuous bands or toward the other figures provided according to the same system.

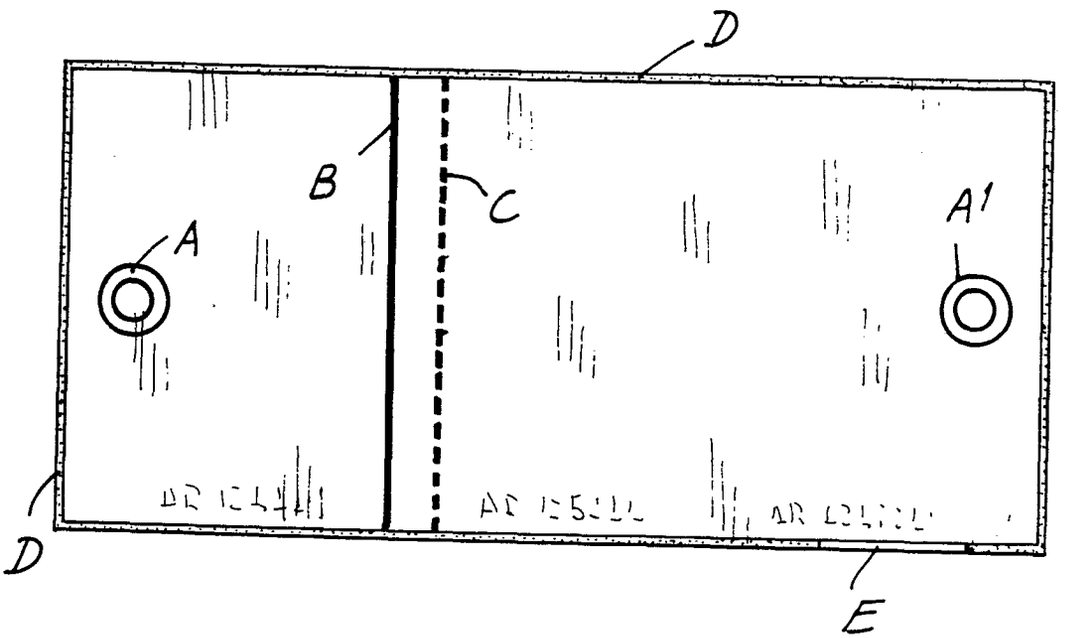
5. Anti-forgery system according to any of the preceding claims, characterized by one or more bands (D) of neutral fluorescent yellow (so-called invisible ink) along the border of the ticket or document, which can be seen only upon exposure to ultraviolet rays, whereas an interruption (E) of said band (D), non-fluorescent pale blue coloured and therefore violet under ultraviolet rays, allows to rapidly sort the tickets or bank notes in bundles.

6. An anti-forgery system according to any of the preceding claims, characterized by a watermarked paper having four different thicknesses in one or more points of the ticket, possibly at said circles (A,A^1) or geometrical figures with an outermost circle with a thickness of approximately 110 microns, an innermost one with a thickness of approximately 60 microns, the thickness of the paper including the steel circles being of approximately 80 microns, and the intermediate parts having a thickness variable between approximately 70 and 100 microns, the entire structure being distinguishable by touch by pressing the ticket between two fingers in the exact point.

7. An anti-forgery system according to any of the preceding claims, wherein the bank notes or documents have side serial numbers of visible fluorescent blue paint, so as to check their correctness or possible alteration by comparing them with a number arranged e.g. at the center in fluoresent yellow which is neutral but responsive to ultraviolet rays so as to avoid the forgery of said numbers as in the case of money laundering.

8. An anti-forgery system according to any of the preceding claims, characterized in that the checks for verifying authenticity are performed by electronic machines programmed for this purpose or by adding the appropriate measures and modifications to those currently in use and adapted to count or check bank notes.

9. An anti-forgery system according to the preceding claims, but with different figures and dimensions and adapted to the different kinds of documents to which it is applied and according to the discretion of the engraver and designer.


D
B
C
A
A1
D
E