(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 876 032 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
09.01.2008 Bulletin 2008/02

(21) Application number: **05731848.7**

(22) Date of filing: **06.04.2005**

(51) Int Cl.:
B42D 15/00 *(2006.01)* ***B41M 3/14*** *(2006.01)*

(86) International application number:
PCT/ES2005/000178

(87) International publication number:
WO 2006/108885 (19.10.2006 Gazette 2006/42)

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU MC NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR LV MK YU

(71) Applicant: **FABRICA NACIONAL DE MONEDA Y TIMBRE - REAL CASA DE LA MONEDA**
28009 Madrid (ES)

(72) Inventors:
- **GARCIA JUEZ, Vicente**
  E-09001 Burgos (ES)
- **BARAJA CARRACEDO, Javier**
  E-09001 Burgos (ES)

(74) Representative: **Carpintero Lopez, Francisco et al**
Herrero & Asociados, S.L.
Alcalá 35
28014 Madrid (ES)

(54) SECURITY STRIP AND SECURITY PAPER COMPRISING SAME

(57) The security strip (1) is formed by sectors where a discontinuous background is observed that is more difficult to reproduce by optical means that a continuous background in order to thus make it more difficult to forge. The discontinuous background consists in a pattern of points (2) printed by means of conventional printing techniques on a space (3) where the repeated absence of points defines a symbol (4), it being foreseen that the points (2) of the pattern distributed geometrically and dimensionally such that they are not visible to the naked eye, that is, that the space (3) between the points is barely noticeable, simulating a continuous background.

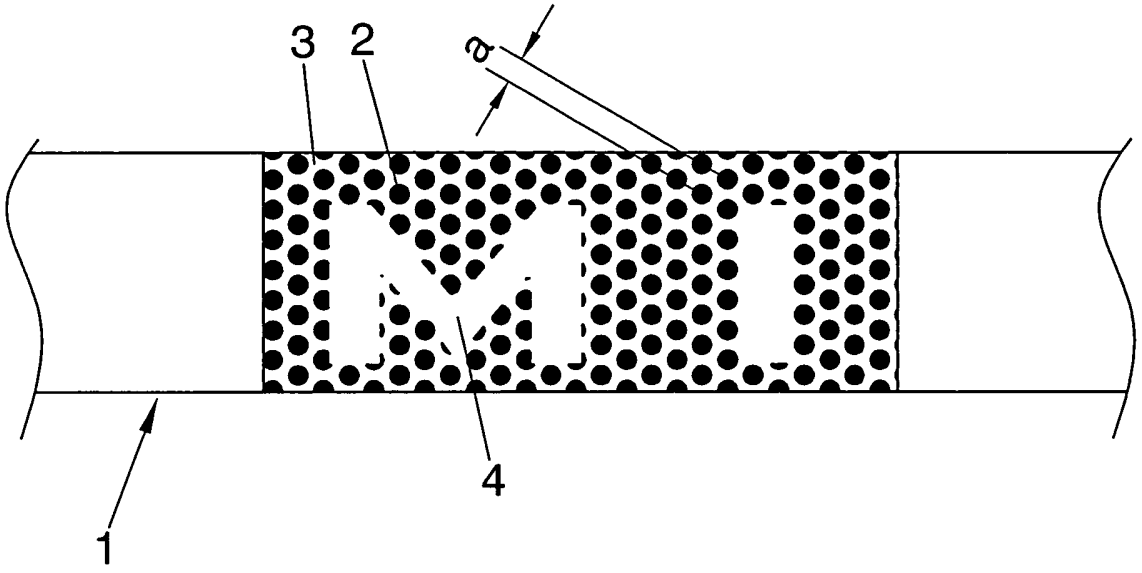

FIG. 1

EP 1 876 032 A1

Description

OBJECT OF THE INVENTION

[0001] The present invention refers to a security strip obtained by conventional printing means at a reduced cost, as well as to the security paper, such as legal tender banknotes, a bank cheque, or another type of document incorporating said security strip.

[0002] It is the object of the invention to obtain a security strip the background of which is formed by a discontinuous pattern of points that is difficult to reproduce by optical means in order to make it difficult to forge.

[0003] It is also the object of the invention that the pattern of points is obtained in a simple manner according to a specific geometrical and dimensional distribution and such that the background seems to be continuous to the naked eye.

BACKGROUND OF THE INVENTION

[0004] A common technique in security paper manufacture is the insertion of a fine strip of material, such as polyester, that is used as a security strip those embedded in the paper in order to make forging of the security document difficult.

[0005] Patent of invention US 4 652 015 proposes a procedure to incorporate a security strip in the security paper used for banknotes and bank cheques, a strip that is formed such that the characters on the strip can only be read by means of transmitted light and are not visible under reflected light.

[0006] This security strip consists of polyester sheet coated by an aluminium sheet on which the characters are printed by means of a caustic soda resistant ink, such that the surface on which the characters have not been reflected gives off when in contact with caustic soda, the characters then remaining slightly in relief.

[0007] In the event of these characters being large they may be visible under reflected light and could therefore be imitated by a forger using printing techniques with certain links, which although not perfect could deceive the general public. The optical effect caused by the metallic characters is not easy to reproduce; however, since the characters occupied a small space within the strip a defect in the imitation can go unnoticed.

[0008] Known as an evolution in the techniques used to make forgery more difficult is the security paper proposed in patent of invention EP 0 319 157, comprising a waterproof security strip consisting of a metal sheet on at least one of its two sides with metal-free portions consisting in repeating marks, words or designs. In contrast to the patent described above, the metal surface constitutes the background and there is therefore a greater continuous metal surface, which makes its reproduction noticeably more difficult, even more due to the fact that there are no printing means that may imitate the contrast provided by a continuous metallic strip when the document is examined with reflected or transmitted light.

[0009] One of the problems associated to printing techniques in order to achieve continuous metallisation of the strip consists in the fact that they are not easily accessible to manufacturers and the printing is very slow, on the other hand another problem relates to the incorporation of fluorescent elements being extraordinarily complicated if the metal part of the security strip is continuous and dark.

DESCRIPTION OF THE INVENTION

[0010] The invention proposed consists in the security strip or band obtained at low cost by means of conventional printing techniques that produce a discontinuous background configured by a pattern of points that is hardly noticeable to the naked eye but that observed with suitable magnifying means allows distinguishing the characteristics thereof, as well as the object of the invention being the security paper incorporating said strip.

[0011] The pattern of points on the security strip will usually constitute the background of the letters or signs incorporated on the strip, letters or signs that will be formed thereon by the absence of points.

[0012] One of the advantages derived from the present invention refers to the configuration of the background being by means of a discontinuous pattern instead of a continuous background, which makes it more difficult to reproduce by optical means, thus obtaining greater security.

[0013] Similarly, the configuration of the background by means of a pattern allows incorporating fluorescent, phosphorescent, luminescent, magnetic and other elements either in the points and/or in the space between the points, or the area of the points can be distinguished from the space by the use of fluorescent materials in different colours.

[0014] Using simple printing techniques it is possible to achieve the discontinuous pattern of points with the features described regarding the difficulty of forging, at the same time as simulating a background that seems continuous to the naked eye.

[0015] For this reason the pattern of points will have a distribution of the points forming it according to a series of geometric characteristics detailed below:

The points will be distributed in lines determining a screen ruling comprised between 30 and 200 lines per centimetre, within the usual screen angles.

The minimum space between the centres of the points that are distributed on a same diagonal is comprised between 10 and 270 microns.

DESCRIPTION OF THE DRAWINGS

[0016] In order to complement the description being made and to aid towards a better comprehension of the

features of the invention, according to our preferred practical embodiment, we incorporate as an integral part of said description a set of drawings that are illustrative and not limiting in nature, and represent the following:

[0017] Figure 1.- Shows an enlarged view of the section of the security strip for a banknote showing the background formed by a discontinuous pattern of points where the absence of points forms a symbol.

PREFERRED EMBODIMENT OF THE INVENTION

[0018] The security strip (1) object of this invention, as observed in Figure 1, is made up of sectors with a discontinuous background consisting in a pattern of points (2) defined upon a space (3) where the repeated absence of points defines a symbol (4), it being foreseen that the points (2) of the pattern are distributed geometrically and dimensionally so that they are not visible to the naked eye, that is, that the space (3) between the points is barely noticeable.

[0019] In this sense, according to that mentioned above, it is considered that the points (2) are distributed in lines with a concentration comprised between 30 and 200 lines per centimetre.

[0020] Similarly, the distance a, represented in the Figure, corresponding to the distance between the centres of the points (2) that are distributed on a same diagonal is comprised between 10 and 270 microns.

[0021] According to this distribution of the points (2) forming the pattern, it is contemplated that the material of the points (2) can have features of fluorescence, phosphorescence or magnetism and that the material of the space (3) does not have that feature, or the other way around, or similarly there is the possibility that the material of the points (2) is fluorescent and the material of the space (3) is also fluorescent, but in different colours. On the other hand, the combination of materials with phosphorescence or magnetism features for the points (2) and for the space (3) is also contemplated.

[0022] The security strip thus formed with the features described can be incorporated on a paper, such as a banknote, a bank check all others, in order to thus provide it with security properties that make it difficult to forge.

Claims

1. The security strip (1), **characterised in that** it is formed by sectors in which a discontinuous background consisting in a pattern of points (2) defined upon a space (3) is observed, wherein the repeated absence of points defines a symbol (4), it being foreseen that:

- the points (2) of the pattern are distributed in lines according to a concentration comprised between 30 and 200 lines per centimetre, within the usual screen angles.
- the minimum distance between the centres of the points (2) that are distributed on a same diagonal is comprised between 10 and 270 microns,

such that the points (2) cannot be distinguished and the space (3) between the points is barely noticeable to the naked eye.

2. A security strip according to claim 1, **characterised in that** the points (2) forming the pattern are made in a material chosen from fluorescent, phosphorescent, luminescent and magnetic.

3. A security strip according to claim 1, **characterised in that** the space (3) is formed in a material chosen from fluorescent, phosphorescent, luminescent and magnetic.

4. A security strip according to claim 1, **characterised in that** the points (2) forming the pattern and the space (3) are formed in a material chosen from fluorescent, phosphorescent, luminescent and magnetic.

5. A security paper incorporating a security band that can be obtained according to the characteristics described in claims 1 to 4.

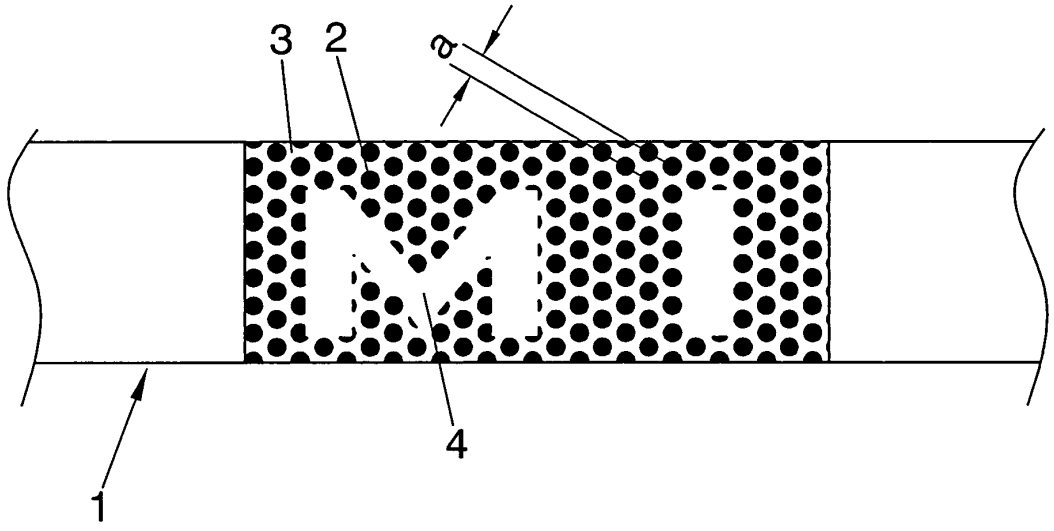

FIG. 1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2005/000178

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 B 42 D 15/00, B 41 M 3/14

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7 B 42 D, B 41 M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WIPL, PAJ, CIBEPAT

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 721 849 A1 (NATIONALE BANK VAN BELGIE V.N.) 17.07.1996, col 2, lin 30-col 3, lin 23; col 4, lin 9-col 5, lin 10; col 5, lin 40-59; fig 1-3	1-5
X	GB 2 191 733 A (NORPRINT INTERNATIONAL LTD) 23.12.1987, pag 1, lin 104-pag 2, lin 82; fig 1, 2	1-5

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
31.05.2005	10 JUN 2005
Name and mailing address of the ISA/ **OEPM** Facsimile No.	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/ES2005/000178

EP 0 721 849 A1	17.07.1996	AT 183 448T T DE 69 511 518D D1	15.09.1999 23.09.1999
GB 2 191 733 A	23.12.1987	None	

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 4652015 A **[0005]**
- EP 0319157 A **[0008]**