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(54) **METHOD FOR OBTAINING SECURITY PAPER AND SECURITY PAPER OBTAINED BY SUCH METHOD.**

(57) The method comprises the incorporation to the security paper itself of a series of indicia, which may be letters, anagrams, etc., obtained from an water resistant ink with which the corresponding printing is achieved on an water soluble medium, so that after said printing, the medium is eliminated and the indicia remain in suspension and may be applied to the paper in the same way as are incorporated to such paper the conventional security planchettes of fibrilles. Said paper web also incorporates fluorescent or phosphorescent pigments for identification of the indicia with ultraviolet light or by transparency, and optionally also magnetic materials or simply metal materials for detection of the indicia by means of a magnetic field.

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OBJECT OF THE INVENTION

The present invention relates to a method for obtaining security paper, the said method being aimed at successfully enhancing the extent of security of this kind of paper from potential counterfeits, the same being specifically applicable to the field of paper money and to obtaining any other kind of document requiring a paper with like benefits.

The invention also relates to the security paper the said method yields.

BACKGROUND OF THE INVENTION

The extent of security that paper of this kind affords is obviously a reflection of how difficult it is to manufacture the same, or in other words how difficult it is to counterfeit the same.

In this sense and in addition to the classical watermarks, visible by transparency, a well-known and widespread practice is to provide the paper mass with security planchettes or fibrilles, the first visible microprinted or otherwise, and with luminescent or iridescent material, and the latter visible or invisible, and fluorescent under ultraviolet light, in both cases distributed in an arbitrary or disorderly manner upon the surface of the document.

The use of sheets or yarns of plastic or metallic material is also known, that can even be treated to carry optical properties or properties capable of being analyzed by suitable sensors, added to the paper at the sheet formation stage, the same being enclosed in cellulose fibres, thereby on the one hand rendering it almost impossible to remove the said yarns without tearing the paper, hence revealing that the document has been manipulated, and on the other preventing them from being inserted in other paper to make the latter seem genuine, for the yarn is only in a position to be inserted into the cellulose mass when in the paper machine and at the sheet formation stage.

It is also a known fact that these security elements can be contributed to the paper in a unitary and isolated manner, though they are generally used in combination.

DESCRIPTION OF THE INVENTION

The method for obtaining security paper subject of the invention, and more specifically the paper the said method yields, stands as a new alternative in this field, allowing the new means to be used to "personalize" the paper, be it on their own or preferably together with the aforesaid means.

More specifically the method subject hereof relies on the use of raw materials, naturally besides

paper that is obtained by any suitable conventional means, namely a water resistant ink and a water soluble medium.

More specifically, the water resistant ink is used for printing any manner of indicia, such as letters, anagrams and so forth, upon the said water soluble medium.

After obtaining the said indicia, suitably printed upon the said medium, the latter is left in water or an aqueous liquid for as long as it requires to be dissolved, whereupon the indicia remain in suspension and ready to be incorporated to the security paper, at a third and final operative stage, and in a manner similar to how the security planchettes or the fibrilles are conventionally incorporated to the said paper.

Furthermore, another characteristic of the invention provides for the ink used to obtain the indicia to contain fluorescent or phosphorescent pigments, and also magnetic materials, depending upon the system to be subsequently employed in detecting such indicia and verifying the document.

PREFERRED EMBODIMENT OF THE INVENTION

More specifically, in practice the printing ink used in the method subject hereof must be insoluble in water, for instance based upon an acrylic polymer, or styrene, butadiene, or epoxy polymer or also acrylonitrile, or such others as provide insolubility in water, which ink can as aforesaid be provided with fluorescent or phosphorescent pigments, preferably brightly coloured.

Such indicia can be letters or anagrams of any kind, but shall preferably be conceptually related to the issuer of the document.

In this sense, and in token only of example, in the case of paper money, the said indicia can in one way or another refer to the country of origin or issue of the said currency and similarly to the institution issuing a document, if the latter is in turn the case.

The medium envisaged to print the ink, specifically as a water soluble medium, is provided as polyvinyl alcohol or mixtures of other soluble polymers.

After solving the medium and incorporating the indicia to the security paper as such, the said indicia remain floating upon the ready-formed paper mass and, given the special optical characteristics thereof, they can be recognised on the dry paper with the assistance of an ultraviolet light by reflection, or under normal light by transparency, the same hence lying "latent" within the paper until inspected using the aforesaid optical means.

As also mentioned hereinbefore, the indicia can carry magnetic or simply metal materials, and can hence be recognised within a magnetic field.

Given that the said indicia are made of a flexible material, given the composition of the ink, on being inserted in the sheet of paper making up the document in question, the same are subjected to no tension whatsoever and do not disrupt the printing methods, and are compatible with any other known security.

As they are produced using printing techniques and can be easily incorporated to the paper with systems that already exist, it is extremely easy to obtain different personalizations, as aforesaid, not only for each user or consumer of the paper, but for every kind of manufactured work.

We feel that the device has now been sufficiently described for any expert in the art to have grasped the full scope of the invention and the advantages it offers.

The materials, shape, size and layout of the elements may be altered provided that this entails no modification of the essential features of the invention.

The terms used to describe the invention herein should be taken to have a broad rather than a restrictive meaning.

Claims

1. Method for obtaining security paper, of the kind designed for paper money or any other type of securities or documents and that can optionally also be provided with watermarks, planchettes, fibres and/or security yarns, essentially characterised in comprising the incorporation to the ready-formed paper mass of indicia such as letters, anagrams and so on, obtained using water resistant ink and previously printed on a water soluble medium, so that after printing the said indicia on the said medium, the latter is immersed in water or in an aqueous liquid where the indicia remain in suspension to be subsequently incorporated to the paper mass, assisting in the security thereof.
2. Method for obtaining security paper, as in claim 1, characterised in that in preparing a water resistant ink a polymer insoluble in water is used, for instance an acrylic polymer, styrene or butadiene, or epoxy polymer or acrylonitrile, whereas the water soluble medium used is preferably polyvinyl alcohol or a mixture of other soluble polymers.
3. Security paper obtained by the method of the above claims, characterised in carrying inside a number of indicia such as letters, anagrams or the like, with a water resistant ink base, comprising an insoluble polymer, the said indi-

cia carrying fluorescent or phosphorescent pigments allowing the same to be recognised using an ultraviolet light, by reflection, or under a normal light, by transparency, the said indicia hence normally lying "latent".

4. Security paper as in claim 3, characterised in that the indicia are also provided with magnetic or simply metallic materials, that can be recognised in a magnetic field.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/ES 92/00004

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) *		
According to International Patent Classification (IPC) or to both National Classification and IPC		
IPC ⁵ D 21 H 21/44 D 21 H 21/40		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁷		
Classification System	Classification Symbols	
IPC ⁵	D 21 H	
Documentation Searched other than Minimum Documentation to the extent that such documents are included in the fields searched ⁸		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ⁹		
Category ¹⁰	Citation of Document ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
X	US,A,4552617 (CRANE & CO.) 12 November 1985, see the whole document ----- -----	1-3
* Special categories of cited documents: ¹⁰ "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document 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 "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 "Δ" document member of the same patent family		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
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