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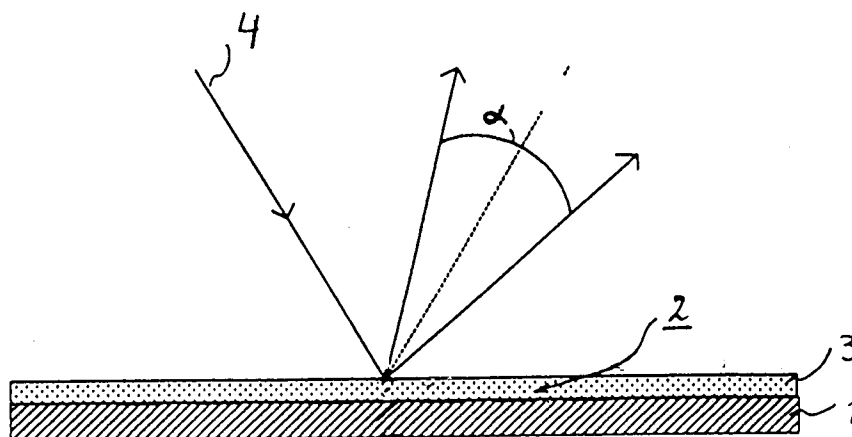
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NL-2501 AW The Hague (NL)**(54) **Support for a graphical image having a copying security.**

(57) A support having a graphical image is provided with a security element against copying systems. The security element is a light-diffusing coating applied onto the support and covering the graphical image at least in part. The coating diffuses incident

light in a reflecting manner, as a consequence of which the underlying image becomes poor or invisible for a copying system which scans the support by means of light.

*Fig. 1***EP 0 646 472 A1**

The invention relates to a support provided with a graphical image.

Such a support can be an original document, a security or another document.

In order to protect such a support against undesirable copying, a great number of security elements against copying are known. Most of these security elements require expensive or complex adaptation of the supports, as a consequence of which they are not generally applicable, even though they provide good security.

It is the aim of the present invention to supply a support provided with a graphical image which may simply and inexpensively be protected against undesirable copying.

For this purpose a support provided with a graphical image according to the invention is characterized in that the support is provided with a light-diffusing coating which covers the graphical image at least in part. The invention is based on the insight that the present copying systems, especially colour photocopying machines, are provided with a scanning system having a light source and a sensor which are moved over the support with the graphical image to be copied. The light which is diffused by the light-diffusing coating diffuses too much light to the sensor, as a consequence of which the underlying image is no longer detectable. Consequently, it is not possible to copy the graphical image, while the graphical image on the support does remain visible to the human eye.

In a preferred embodiment of a support according to the invention the coating is a pigmented varnish system. This coating has a sufficiently long life.

The coating is more easily visible to the human eye when the pigment is an iridescent pigment having colouring power. Under observation from different angles the coating displays different reflection colours.

The pigment preferably contains mica or mother of pearl. Mica provides a good light diffusion with iridescent effect at a low ratio of amount of pigment and the printed volume, while mother of pearl can yield white by subtractive colour mixing and yields a grey glittering non-copyable print. Moreover, the mother of pearl colours are clearly recognizable under a microscope.

A light diffusing coating which can be obtained in a simple way can be realised when the coating is a semi-transparent coating containing an amount of a reflecting element. Preferably, the reflecting element contains silver or bismuth. As a consequence of its good reflecting properties, silver provides a good reflection of light at a low ratio of amount of silver and the printed volume, while bismuth not only renders it possible to apply the coating on the support by means of the usual

varnishing machines, but also by means of silk-screen printing techniques or engraved printing techniques.

When the reflecting element is BiOCl, a sufficient light resistance is obtained.

If the coating of BiOCl is applied by means of silk-screen printing, a support which is adequately protected against undesirable copying is obtained when the coating contains 10-40 percent by weight of BiOCl or when the coating contains 25 to 100 g/m² of BiOCl.

When the coating is a coating of clear lacquer containing glass beads, preferably having an average diameter of between 50 and 100 μ m, then apart from a visible copying security, a tangible copying security is also introduced.

The invention will hereafter be described by way of example by means of the drawing. In the drawing:

figure 1 shows a support provided with a graphical image and a light-diffusing coating according to the invention, and

figure 2 shows the support of figure 1 during copying.

The invention will be described by means of a light-diffusing coating containing BiOCl. It will be clear, however, that other light-diffusing coatings, as described in the claims, also provide a suitable copying security. The invention is therefore not restricted to a light-diffusing coating containing BiOCl (bismuth oxychloride).

Figure 1 shows a schematic cross section of a support 1 provided with a graphical image 2. The support 1 is for instance a security, such as a banknote. The support 1 is further provided with a light-diffusing coating 3 which covers the graphical image 2 at least in part. The coating 3 consists of a varnish system containing BiOCl. The usual varnish systems, binding agents and lacquers may be used as basis for this, both the so-called clear varnish systems, the latex systems and silk-screen printing systems and engraved printing systems. Depending on the pigment to be used, ultra violet absorbants and binding agents may be added to this.

The coating 3 is applied onto the support 1 by silk-screen printing, in this case with a so-called T48 sieve having a mesh opening of 135 μ m. After drying, the coating 3 has an amount of 55 g/m² of BiOCl. A greater amount of BiOCl increases the light-diffusing effect. In practice, it has been found that a light-diffusion sufficient for copying security is obtained when the coating contains 10-40 percent by weight of BiOCl or 25 to 100 g/m² of BiOCl.

The light-diffusion caused by the coating 3 is shown in figure 1. Incident light 4 shines on the coating 3 and is diffused back within an angle α .

Figure 2 shows the support 1 according to the invention in relation to a colour reproduction system having a light source 5 and a sensor 6. The light source 5 and the sensor 6 move according to the line 7. The signals of light sent by the light source 5 are diffused to the sensor 6 by the light-diffusing coating 3, as a consequence of which the graphical image 2 situated between the support 1 and the coating 3 is no longer completely perceptible to the sensor 6. The copy of the support provided by the colour copying system therefore lacks a part of the graphical image and the copy can thus be clearly distinguished from the original.

It is remarked that the amount of pigment required for sufficient light-diffusion in order to provide a copying security may be determined by simple experiments (trial and error).

Claims

1. Support provided with a graphical image, **characterized in that** the support is provided with a light-diffusing coating which covers the graphical image at least in part.

2. Support according to claim 1, **characterized in that** the coating is a pigmented varnish system.

3. Support according to claim 2, **characterized in that** the pigment is an iridescent pigment having colouring power.

4. Support according to claim 3, **characterized in that** the pigment contains mica.

5. Support according to claim 4, **characterized in that** the pigment contains mother-of-pearl.

6. Support according to claim 1 or 2, **characterized in that** the coating is a semi-transparent coating containing an amount of a reflecting element.

7. Support according to claim 6, **characterized in that** the reflecting element is silver.

8. Support according to claim 6, **characterized in that** the reflecting element contains Bi.

9. Support according to claim 8, **characterized in that** the reflecting element is BiOCl.

10. Support according to claim 9, **characterized in that** the coating contains 10-40 percent by weight of BiOCl.

11. Support according to claim 9, **characterized in that** the coating contains 25 to 100 g/m² of BiOCl.

12. Support according to claim 1, **characterized in that** the coating is a coating of clear lacquer containing glass beads.

13. Support according to claim 12, **characterized in that** the average diameter of the glass beads lies in the range of between 50 and 100 μ m.

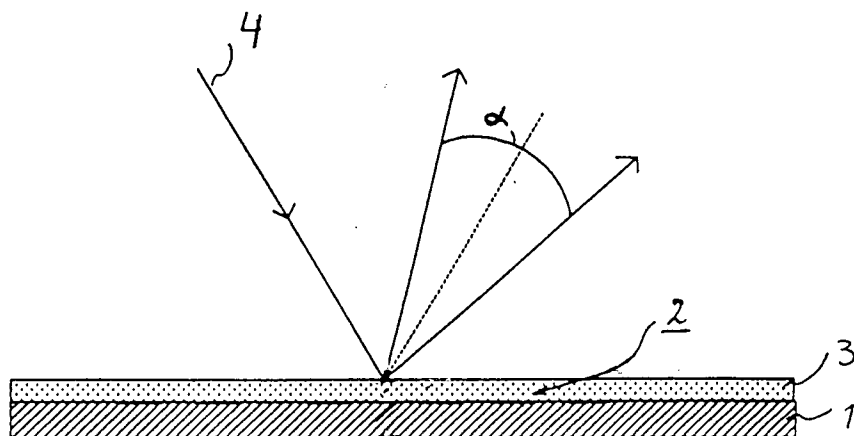


Fig. 1

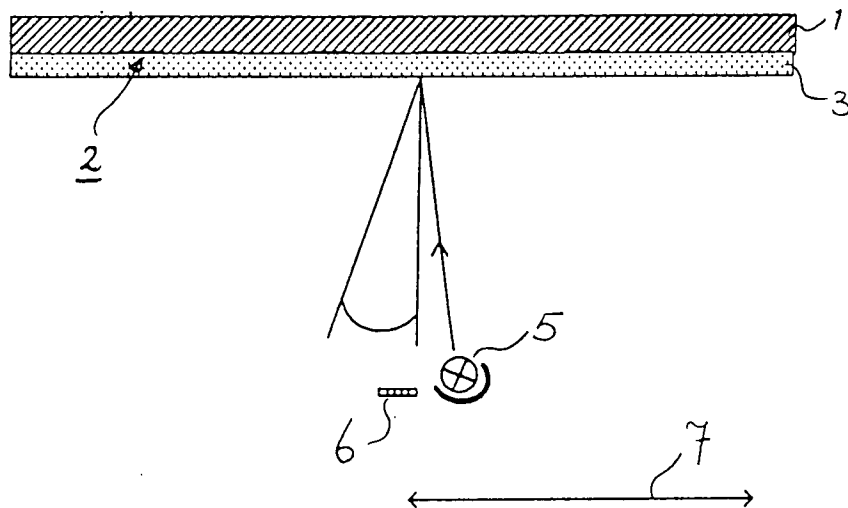


Fig. 2



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EUROPEAN SEARCH REPORT

Application Number
EP 94 20 2491

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X,Y	PATENT ABSTRACTS OF JAPAN vol. 11, no. 194 (P-588) (2641) 23 June 1987 & JP-A-62 018 586 (DAINIPPON PRINTING) 27 January 1987 * abstract *	1-13	B41M3/14 G03C5/08
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Y	--- DATABASE WPI Section Ch, Week 8032, Derwent Publications Ltd., London, GB; Class A89, AN 80-56179C & JP-A-55 084 975 (NITTO ELECTRIC) 27 June 1980 * abstract *	8-11	
Y	--- GB-A-2 143 774 (KISOKASEISANGYOU) * page 1, line 74 - line 88 *	6,7	
Y	--- GB-A-2 147 542 (FADE-IN PRODUCTS) * page 1, line 5 - line 16; claims 1,4; figures 1,2 *	12,13	

The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 5 December 1994	Examiner PHILOSOPH, L
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	