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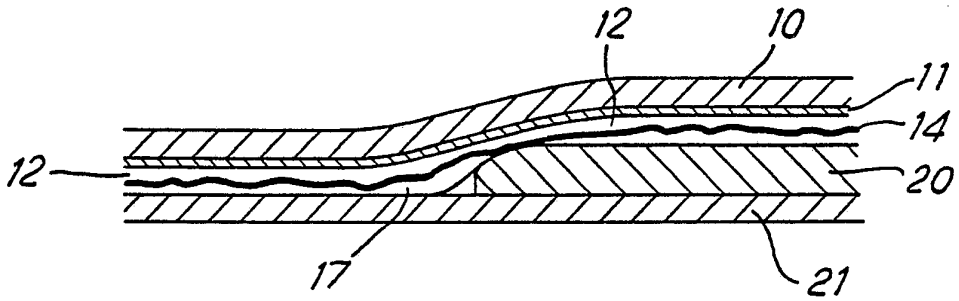
(54) Title: ADHESIVE SHEET MATERIAL



(57) Abstract

A flexible sheet material comprising a transparent cover sheet, a transparent image layer adhered to the rear surface of the cover sheet, and an adhesive on the rear surface of the image layer, the latter surface carrying a metallised image such that the image can be seen from the front surface of the cover sheet. The image may be embossed and only lightly metallised so that the image can be seen, but the sheet material is still transparent. This material can be used for identity documents, the photograph being covered by it but still visible through the image.

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Adhesive Sheet Material

This invention relates to an adhesive sheet material particularly for use in laminating images on identity documents.

Passports and many other identity documents require a photograph of the owner to be securely affixed to prevent exchange of the photograph for fraudulent purposes. It is common practice to laminate a transparent sheet material over the photograph and the surrounding paper or card. However, it is known that forgers are able to lift the transparent sheet and exchange the photograph.

Attempts have been made to incorporate a message, such as the work 'VOID', in the adhesive of the sheet material, the word only appearing if the lamination is tampered with. This has been only partially successful. The invention aims to provide an improved sheet material to prevent a successful exchange.

Accordingly, the invention provides a flexible sheet material comprising a transparent cover sheet, a transparent image layer adhered to the rear surface of the cover sheet, and an adhesive on the rear surface of the image layer, the latter surface carrying a metallised image such that the image can be seen from the front surface of the cover sheet. Preferably, the image is embossed and metallised lightly so that the image can be seen but the sheet material is still transparent. The embossed image may be a holographic image.

Preferably, the image layer is much thinner and more fragile than the cover sheet, but the adhesive on its rear surface is much stronger than the adhesion between the sheet and the layer. When used to laminate a

photograph, the cover layer will peel off, leaving the image irremovably on the photograph, if there is an attempt to tamper with it.

To make the image virtually uncopiable, it may be holographic or laser generated.

In order that the invention shall be clearly understood, an exemplary embodiment thereof will now be described with reference to the accompanying drawings, in which:

Fig. 1 shows the cross-section of an adhesive sheet material;

Fig. 2 shows the cross-section of part of a photograph laminated onto a base.

The sheet material in Fig. 1 comprises a transparent cover layer 10, for example polythene or polyester about 12 microns thick. On its rear or lower surface is a thin layer 11 of wax which serves as an adhesive. Applied to this is a further transparent image layer 12, much thinner than the cover layer 10, e.g. 2 microns. The image layer 12 is a thermoplastic, the bottom or rear surface 13 of which is profiled by embossing so that it carries a relief pattern or image. This pattern is made visible by partial metallisation to form a further layer 14 which is microscopically thin, so thin in fact that it is still transparent. A further pressure sensitive adhesive layer 17 is applied to rear the of the metallisation layer 14, and finally a protective or release sheet 18.

The sheet material is preferably produced by applying the wax layer 11 to the cover layer 10, and then coating the layer 11 with a lacquer in the form of a liquid

emulsion of an acrylic or similar plastic. When this dries or sets, it forms a very thin thermoplastic layer. This is then machine embossed on surface 13 with a very fine shallow relief image, such as a holographic image, a diffraction pattern or a simple etched pattern done by hand.

In an alternative, the image might be embossed on a self-supporting thermoplastic sheet which is afterwards laminated with the wax and the cover layer 10.

The sheet material is used by first stripping off the sheet 18 to reveal the adhesive layer 17. Referring to Fig. 2, a photograph 20 is placed in position on a backing sheet 21 e.g. a page of a passport. The sheet material with the layer 17 face down is placed over the photograph 20 and extending beyond its edges over the sheet 21. Pressure is now applied to cause the layer 17 to adhere to the upper surfaces of both photograph 20 and sheet 21. The effect is to lock the photograph 20 in place, laminated between the cover layer 10 and the backing sheet 21. The photograph may itself be stuck directly to the backing sheet 21.

Visually, the photograph is still quite clear for comparison with the person presenting the document, but over its surface it carries a very slight glistening image as embossed on image layer 12. This is clearly visible to verify that the photograph has not been tampered with.

If substitution is attempted, the cover layer 10 must inevitably be removed first, and it is arranged that whether or not heat is applied, it is inevitably the wax layer 11 which will separate before the adhesive layer 17. Consequently, the photograph retains the image

layer 12, which cannot be parted from it without destroying it. Because layer 12 is so thin, it will be destroyed if there is an attempt to separate it also. When the substitute photograph is put in its place, it will inevitably lack the embossed image, and the fake will be easily recognised. If the image is a holographic one, this would be extremely difficult to simulate even if a substitute image of some sort could be contrived, since a holographic image is not copiable without access to the original master place.

In a modification, the image is not actually embossed. It can be produced for example by simple masked metallisation of the surface. This is not quite so difficult to copy as a hologram, but would still require considerable work to forge. It may therefore provide sufficient security against fraud.

In a yet further modification, the invention can be applied to the provision of tamper-proof labels. In this case, there is no need to see through the label which is simply applied to an article to be proved genuine. The image may be embossed or not as before, and the metallisation may be full (i.e. opaque) or partial. The image needs only to be in some way difficult to reproduce. Such a label when applied is then impossible to remove for illicit use, since the delicate image layer will be left behind and destroyed by any further tampering.

Claims

1. A flexible sheet material comprising a transparent cover sheet, a transparent image layer adhered to the rear surface of the cover sheet, and an adhesive on the rear surface of the image layer, the latter surface carrying a metallised image such that the image can be seen from the front surface of the cover sheet.

2. A flexible sheet material as claimed in Claim 1 wherein the adhesive on the rear surface has much stronger adhesion than that between the sheet and the image layer.

3. A flexible sheet material as claimed in Claim 1 or 2 wherein the image layer is relatively thinner and more fragile than the cover sheet.

4. A flexible sheet material as claimed in any of Claims 1 to 3 wherein the image is embossed before being metallised.

5. A flexible sheet material as claimed in Claim 4 wherein the image is a holographic image.

6. A flexible sheet material as claimed in any of the Claims 1 to 5 wherein the metallisation is only partial so that the image can be seen but the sheet material is still transparent.

7. A flexible sheet material as claimed in any preceding Claim wherein the attachment between the sheet and the image layer is produced by a wax.

8. A flexible sheet material as claimed in any preceding Claim wherein the adhesive on the rear surface is covered by a release sheet.

9. An identity document in which a photograph is covered by a flexible sheet material, as defined in Claim 6, which extends beyond the edges of the photograph so that the adhesive on the rear surface thereof adheres to the document, the photograph being visible through the partially metallised image.

10. An identity document as claimed in Claim 9, wherein removal of the cover sheet leaves the image layer firmly attached to the photograph.

11. An identity document as claimed in Claim 10 wherein the image layer is too fragile to be removed intact from the photograph.

12. A method of manufacturing a flexible sheet material as claimed in any of Claims 1 to 8 which includes the steps of applying a wax layer to a self-supporting sheet of plastics material, coating the wax with a liquid emulsion of a plastics material, and allowing the emulsion to dry out to form a further but relatively thinner plastic sheet.

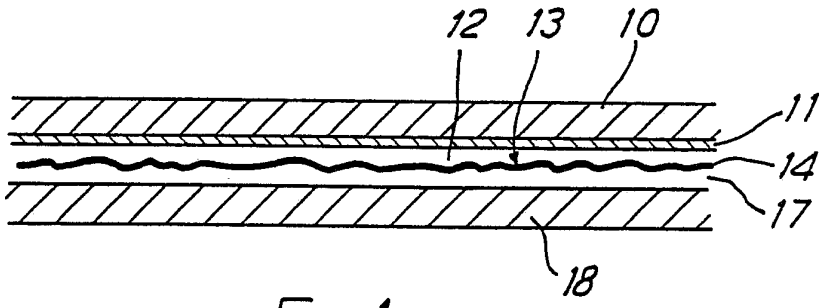

FIG.1

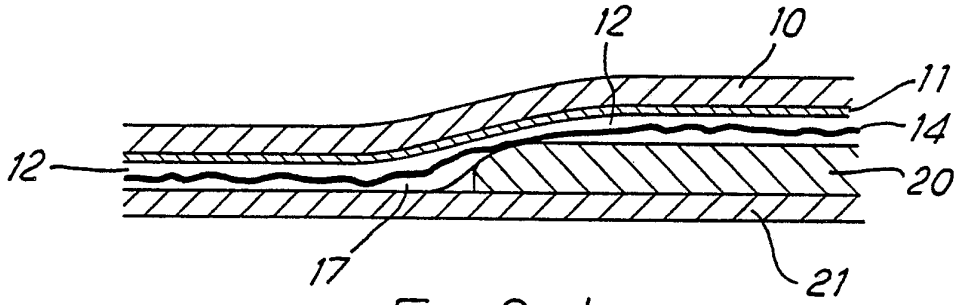

FIG.2

INTERNATIONAL SEARCH REPORT

International Application No PCT/GB 88/00062

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all) [6]

According to International Patent Classification (IPC) or to both National Classification and IPC

IPC[4]: B 42 D 15/02; G 09 F 3/02

II. FIELDS SEARCHED

Minimum Documentation Searched [7]

Classification System	Classification Symbols
IPC[4]	B 42 D; G 09 F

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, 3864855 (PEKKO et al.) 11 February 1975 see column 1, lines 25-60; column 2, lines 47-59; column 4, lines 4-7; column 4, lines 12-19; figure 1	1-3,7,8
Y	--	4-6,9-11
X	US, A, 4180929 (SCHULTZ Jr) 1 January 1980 see column 3, lines 26-29; column 3, line 67 - column 4, line 11; column 4, lines 18-20; figures 1-3	1-3,8
X	-- FR, A, 1486673 (NATIONAL STARCH AND CHEMICAL CORP.) 30 June 1967 see page 1, column 1, last paragraph - column 2, paragraph 1; page 2, column 1, last paragraph; page 2, column 2, lines 36-54; page 3, column 1, lines 30-34	12
A	--	1,2,10,11
	./.	

* Special categories of cited documents: [10]

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

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
8th April 1988	03 MAY 1988
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	P.C.G. VAN DER PUTTEN

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. GB 8800062 SA 20545

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 26/04/88
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US-A- 4180929	01-01-80	None	
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