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(54) **Method of preventing erasure of an image and a booklet of security papers.**

(57) A method of preventing erasure of an image produced from an erasable ballpoint pen or a correctable typewriter by writing or typing the image upon a surface coated with an adsorbent inorganic material, such as a montmorillonite acid clay. Such a method prevents fraudulent alteration of security papers.

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Croydon Printing Company Ltd.

METHOD OF PREVENTING ERASURE OF AN IMAGE AND A BOOKLET OF SECURITY PAPERS

This invention generally relates to the prevention of fraudulent alteration of documents. In particular, it relates to a method of preventing erasure of an image produced from an erasable ballpoint pen or a correctable typewriter, and also to a booklet of security papers.

It is conventional for security papers which are likely to be the subject of attempts at fraudulent alteration to contain reactive chemicals which produce colour changes if an attempt is made to erase or alter printed, typed or written indicia on the document. Whilst such chemicals are very useful, they do not serve as a safeguard against all possibilities for fraudulent alteration of security papers.

For example, ballpoint pens are now available, the ink from which is erasable for several hours after it has been applied to a writing surface. Such ballpoint pens are described in US Patent 4 097 290 wherein it is stated that the ink properties of initial erasability and eventual permanence are due to certain rubber compounds and volatile solvents present in the ink. Whilst pens of this kind overcome the long-felt drawback of not permitting neat corrections, they also pose a serious problem in facilitating fraudulent alteration of security papers. A ballpoint pen as just described will be referred to hereafter as an "erasable ballpoint pen".

A further example is provided by the kind of typewriter now marketed which enables corrections to be made by "lifting" typed indicia off the typing surface by means of the typewriter ribbon, and then typing other indicia in their place. Whilst such a facility is clearly advantageous for the typist, it again poses a problem in facilitating fraudulent alteration of security papers. A typewriter as just described will be referred to hereafter as a "correctable typewriter".

It has now been found that attempts at fraudulent alteration of an image or indicia on a security paper, the image or indicia having been produced from an erasable ballpoint pen or a correctable typewriter, can be prevented by the provision of a coating of an adsorbent inorganic material on the writing or typing surface of the security paper. As the image or indicia produced on the coated surface is rendered substantially permanent from the time of writing or typing, it is much more difficult, if not impossible, to erase or alter it.

Accordingly, the present invention provides a method of preventing erasure of an image produced from an erasable ballpoint pen or a correctable typewriter characterised in that the image is written or typed on a coated surface in which the coating contains an adsorbent inorganic material. The surface may for example be the surface of a security paper, such as a bank cheque of the kind issued to the banks' customers in cheque books. The present invention therefore also provides a booklet of security papers which are detachably secured together characterised in that the papers are provided with a coated typing or writing surface in which the coating contains an adsorbent inorganic material.

A particular advantage of the present invention is that a coated surface of the kind just described also affords good printability.

The adsorbent inorganic material is advantageously electron-accepting and may be silica gel although an acidic clay is preferred especially an acidic clay of the kind customarily used as a colour developer in pressure-sensitive copying paper. Examples of such a clay include attapulgite and bentonite, for instance montmorillonite, clays. The most preferred clay is an acid-washed dioctahedral montmorillonite clay such as that sold by Mizusawa Industrial Chemicals Ltd., Japan under the name "Silton M-AB."

The minimum amount of inorganic material required to prevent erasure of the image varies in accordance with the particular material employed. Generally though, the minimum amount is about 1 gram per square metre of surface. The achievement of the invention is not of course dependent on any maximum amount of inorganic material but no additional benefit seems to be obtained over an amount of about 10 grams per square metre of surface.

In addition to the inorganic material, the coating may also contain an extender, such as kaolin, and a binder, such as a butadiene latex.

Security paper having a coating of an adsorbent inorganic material is prepared in a conventional manner. Thus, a coating mix containing the inorganic material and other components is prepared and coated on to security base paper sheet at, for example, the size press.

The invention will now be illustrated by the following

examples :-

Preparation of a Coated Security Paper

A coating mix was made by adding 23kg sodium hydroxide and 5kg Cellufix FF5 (a carboxymethyl cellulose water retention aid) to 180 gallons of water, and mixing for 10 minutes. 805kg "Silton M-AB" (acid-washed dioctahedral montmorillonite clay) and 200kg Dinkie A (kaolin) were then added with a further 110 gallons of water and mixed for 60 minutes. Finally 340kg Dow 86433 (butadiene latex binder) and 110 gallons of water were added and mixed to provide a coating mix with a solids content of 35.5%.

The coating mix containing "Silton M-AB" was then coated on to security base paper sheet (88 grams per square metre) to give a coated security paper (95 grams per square metre) in which the amount of "Silton M-AB" was 4.1 grams per square metre.

Paper coated thus was found to have good printability.

Comparative Example

The paper coated with "Silton M-AB" clay and a conventional china clay-coated printing paper were each written upon by an erasable ballpoint pen (sold under the trade name "Replay" by Papermate) and by a correctable typewriter (sold by IBM). Attempts at correction were then made by means of a rubber eraser and by suitable operation of the typewriter respectively. In both cases the original image remained substantially fast on the 'Silton M-AB' - coated paper but was easily removed from the conventional printing paper.

What we claim is :-

1. A method of preventing erasure of an image produced from an erasable ballpoint pen or a correctable typewriter characterised in that the image is written or typed on a coated surface in which the coating contains an adsorbent inorganic material.

2. A booklet of security papers which are detachably secured together characterised in that the papers are provided with a coated typing or writing surface in which the coating contains an adsorbent inorganic material.

3. A method or booklet according to claim 1 or 2, characterised in that the adsorbent inorganic material is electron-accepting.

4. A method or booklet according to claim 3, characterised in that the electron-accepting adsorbent inorganic material is silica gel.

5. A method or booklet according to claim 3, characterised in that the electron-accepting adsorbent inorganic material is an acidic clay.

6. A method or booklet according to claim 5, characterised in that the acidic clay is selected from the group consisting of attapulgite and bentonite clays.

7. A method or booklet according to claim 6, characterised in that the bentonite clay is a montmorillonite clay.

8. A method or booklet according to claim 7, characterised in that the montmorillonite clay is an acid-washed di-octahedral montmorillonite clay.

9. A method or booklet according to any one of the preceding claims characterised in that the weight of the coating is from 1 to 10 grams per square metre of surface.

10. A method or booklet according to any one of the preceding claims, characterised in that the coating contains a binder.

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EUROPEAN SEARCH REPORT

Application number
EP 80 30 4166

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
	US - A - 2 333 979 (R.H. BRADT) * Entire document *	1,2,10
	BE - A - 523 251 (BREPOLS) * Claims 1,2; page 2, line 1 to page 3, line 13; example *	1,2,10
	US - A - 2 641 557 (B.K. GREEN) * Entire document *	1,3,5,6,10
	GB - A - 760 080 (NATIONAL CASH REGISTER) * Page 1; page 2, lines 18-129; page 3, lines 49-62 *	1,3,5,6,10
	DE - A - 2 036 892 (O. HUBER) * Claims 1,2; page 5, line 18 to page 6, last line; page 7, line 11 to page 9, last line *	3,4,9,10
	US - A - 2 213 643 (W.H. ALTON) * Page 1, left-hand column, lines 1-8, 22-46; right-hand column, lines 24-46; page 2, right-hand column, lines 1-50, 65-75; page 3, left-hand column, lines 1-12, 58-66 *	3,5-7,10

CLASSIFICATION OF THE APPLICATION (Int. Cl.³)

D 21 H 5/10

TECHNICAL FIELDS SEARCHED (Int. Cl.³)

B 41 M 3/14
B 44 F 1/12
D 21 H 1/22
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CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

☑ The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	12-01-1981	NESTBY