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54 **An arrangement for revealing that a document has been copied.**

57 In order to establish that written matter, a drawing, a document, or the like, being present in the shape of sheet-formed material, has been copied, said sheet-formed material is provided with a marking. Said marking consists of a substance which in ordinary environmental conditions is either invisible or has a special appearance. When exposed to strong light, e.g. a flash lamp, or heat of more than 40°C said substance becomes permanently visible or changes its appearance, respectively. On an original document it will, thus, be possible to detect that the document was, e.g. put through a copier. Said sheet-formed material may be completely impregnated with said substance or it may be provided with said substance in the shape of a pattern, if desired, such marking may be provided on an ordinary sheet.

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An arrangement for revealing that a document has been copied.

The invention relates to an arrangement for revealing that written matter, a drawing, a document, or the like, being present in the shape of sheet material has been copied.

In many companies, enterprises and institutions documents, drawings, plans, i.e. various kinds of information to be safeguarded, are safely put away to prevent unauthorized persons from acquiring knowledge of the content of said documents. Thus, e.g. industrial espionage is becoming a growing problem in many enterprises, and there may also be cases of dishonesty among employees. The simplest form of such illegal insight in documents, archives and the like is simply to make a copy in a copier. In this manner the legitimate owner of the documents will not notice or know of the fact that his confidential papers have been copied. If the legitimate owner of the papers was aware of such illegal copying he would in many cases be able to take the consequences, either by changing his plans, or by ensuring that accessibility is rendered more difficult.

There is, thus, a demand for being able to detect such illegal copying activity. It is, consequently, an object of the present invention to provide an arrangement for revealing that copying has occurred, so that it is possible to detect that such copying has been carried out.

According to the present invention the sheet formed material forming the basis of written matter, a drawing, a document, or the like, may be impregnated in advance with a substance or a chemical preparation which may be invisible or visible with a special appearance, which preparation may be applied all over the sheet-formed material, or in special patterns. It is also possible to apply said substance or preparation on ordinary paper at a later, desired time, e.g. quite simply, with a felt pen or by spraying. This chemical substance is of such a nature that, when exposed to light intensity stronger than ordinary daylight and working light, and/or heat above approximately 40°C, it will change its appearance or be discoloured, respectively, and will, thus, disclose that the sheet-formed material has been exposed to copying or depicting by photography with use of a flash lamp.

In British Patent Specification No.1.193.511 there is disclosed a method for revealing a forgery by means of a control device when there is good reason to suspect a forgery is present. Thus, this method can only be used in connection with a specialized apparatus. In US Patent Specification No.2.889.799 a tape is described which is intended

to be used as proof that a certain procedure at a predetermined temperature has been undertaken and the tape is especially intended for the closing of packages containing sterilized products.

The invention is used for revealing unauthorized copying or registration of authorized copying of a "finished" document by which a marking or registration will be visible on the document. The use of a tape of the type described in the mentioned US patent will, in itself, not offer any protection against unauthorized copying. A very important feature of the invention is that it is essential that the marking is an indelible marking which has been provided by a substance which is known per se. A further important feature is that a marking is provided on the original deposition or document.

The basic problem to be solved by the invention can be regarded as a security or recording problem with respect to depositions, etc.

Normally, one would be very careful when handling original documents in order to ensure that the original will not be destroyed in any way. It would not be natural to provide the original document with a marking of any kind which could change the document after a copying process. The usual way of handling is allowing the copy, i.e. not the original, to be given a marking of some kind. Thus, the basis of the invention is the handling of written matter and various substances producing markings may be used, which must be regarded as advantageous.

Suitable substances for this use are known per se and may, e.g. be based on cobalt chloride and glycerin as main components. In this connection we would like to stress that this is just an example, there being a series of substances that change colour when influenced by light/heat. Such substances only have to be adapted for impregnation/application on, e.g. a sheet of paper.

It might be suitable to use a coloured substance in advance to show that the sheet of paper or document is safeguarded against copying. The other possibility is that the substance is invisible and is made visible in the printer or if photographed with a flash lamp. In this case it is essential that the reaction is not reversible, making any discolouring permanent.

There may also be cases when it is necessary to permit a document or a drawing to be copied. In such cases it may be suitable to apply another security marking, e.g. one that reacts to show a different colour from the original one. For such aims it may be very advantageous to use application by felt pen, or the like.

It may also be advantageous to use markings which will appear as a certain pattern after an illegal copying. In some enterprises it may also be most advantageous to use ordinary paper with those documents that should be especially safeguarded provided with a special spray or marked by felt pen as indicated above.

Since strong light or heat will occur in most conventional copiers, or in case of photography there will be concentrated light from a projector or a flash lamp any copying/photographing of a document, a drawing, or the like being present on a sheet formed material impregnated with a light and/or heat sensitive substance will be revealed.

8. The use as defined in claim 6, wherein said substance is applied in a predetermined pattern.

9. The use as defined in claim 6, wherein said substance is applied by brushing, spraying, or the like on a sheet-formed material of a conventional kind.

10. The use as defined in claim 6, wherein said substance becomes visible in a determined colour.

Claims

1. An arrangement for revealing that written matter, a drawing, a document, or the like, being present in the shape of a sheet-formed material, has been copied,

characterised in that said sheet-formed material is provided with a non-removable marking in the form of a substance, known per se, which in normal conditions of the surroundings is either invisible or has a special appearance and which, when influenced by strong light, e.g. a flash lamp, and/or heat of more than approximately 40°C, will yield a permanent marking on the sheet-formed original material.

2. An arrangement as defined in claim 1, **characterised in** that the entire sheet-formed material is impregnated with said substance.

3. An arrangement as defined in claim 1, **characterised in** that said substance is applied in a predetermined pattern.

4. An arrangement as defined in claim 1, **characterised in** that said substance is applied by being brushed, sprayed, or the like on a sheet-formed material of a conventional kind.

5. An arrangement as defined in claim 1, **characterised in** that said substance becomes visible in a certain colour.

6. The use of a substance which in ordinary environmental conditions is either invisible or has a special appearance, and which when influenced by strong light, e.g. from a flash lamp, and/or heat above approximately 40°C, becomes permanently visible or changes its appearance, for marking documents in case it is essential to be able to ascertain whether copying has occurred, since on the original document a permanent marking will remain which confirms such copying.

7. The use as defined in claim 6, wherein the entire sheet-formed material is impregnated with said substance.

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