

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 885 753 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
23.12.1998 Bulletin 1998/52

(51) Int. Cl.⁶: **B44F 1/00**, B42D 15/00,
G03G 7/00

(21) Application number: **97201847.7**

(22) Date of filing: **17.06.1997**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC
NL PT SE**
Designated Extension States:
AL LT LV RO SI

(71) Applicant:
**Gelderse Papiergroep N.V.
7336 AP Apeldoorn (NL)**

(72) Inventors:
• **Hulshof, Walter Antonius Maria
6865 CS Doorwerth (NL)**
• **Hunze, Roelof
7415 EX Deventer (NL)**

(74) Representative:
**Smulders, Theodorus A.H.J., Ir. et al
Vereenigde Octrooibureaux
Nieuwe Parklaan 97
2587 BN 's-Gravenhage (NL)**

(54) **Security paper**

(57) A valuable paper, such as, for instance, a giro or bank transfer form, a check, an identity card, and the like, which valuable paper is adapted to be printed with a toner which melts by heating and adheres to the valuable paper, and which valuable paper is provided with a support of paper or cardboard, wherein at least part of the support, which part is adapted to be printed with the toner, is provided with a coating, the coating being of such design that the adhesion between the toner and the coating and the adhesion between the coating and the support is stronger than the internal bond of the paper or cardboard of which the support is made.

EP 0 885 753 A1

Description

The invention relates to a valuable paper, such as, for instance, a giro or bank transfer form, a check, an identity card, and the like, which valuable paper is adapted to be printed with a toner which melts by heating and adheres to the valuable paper, and which valuable paper is provided with a support of paper or cardboard.

In the valuable papers now frequently used, such as, for instance, giro or bank transfer forms, checks, passports, driver's licenses, identity cards, and similar valuable papers, the personal data of the one to whom the valuable paper belongs are often applied by means of a laser printer, an ink jet printer, or a similar printer. Such a printing is often performed by means of a toner which melts by heating and thus adheres to the valuable paper.

In bank transfer forms and checks, for instance, it is easy to commit fraud with a thus applied print. A first possibility of fraud is to remove the toner print by means of adhesive tape applied onto the toner print. After pulling away the adhesive tape the toner print is pulled off the valuable paper, so that a valuable paper is obtained without print. Subsequently, a print containing data of another person or institution can readily be applied by means of a laser printer or ink jet printer.

Another method of removing the print is to scratch or etch away the toner by means of an erasing knife or chemicals, respectively. After removal of the print new data can be applied by means of a laser printer and/or ink jet printer.

With giro or bank transfer forms such a procedure has the result that amounts can be illicitly debited to random accounts. Passports, driver's licenses and similar identity cards are often printed with personal data by means of a toner which melts by heating and adheres to the valuable paper. It is clear that here, too, the personal data can be changed by the above-described method, so that the identity cards may prove useful in unauthorized hands.

It is an object of the invention to provide the valuable paper of the type described in the opening paragraph with protective features which impede the above possibilities of fraud.

According to the invention the valuable paper of the type described in the opening paragraph is characterized in that at least part of the support, which part is adapted to be printed with the toner, is provided with a coating, the coating being of such design that the adhesion between the toner and the coating and the adhesion between the coating and the support is stronger than the internal bond of the paper or cardboard of which the support is made.

It is thus impossible to remove the toner print by means of adhesive tape because of resulting damage to the support. In fact, the adhesive tape which adheres to the toner will also adhere to the coating. Since the adhe-

sion between the toner and the coating and the adhesion between the coating and the support is stronger than the internal bond of the support, the coating as well as a top layer of the support will be pulled along when the adhesive tape is pulled loose, thus resulting in damage to the support. Such a damage is easily visible, because mostly part of the basis print, which generally has another color than the support itself, is then pulled away. Also, the material of which the support is made may have another color than the coating, so that in case of damage to the coating this damage is also visually observable. With the adhesive tape trick the top layer of the support is substantially torn away, so that the valuable paper has become worthless and cannot be printed again with new personal or institutional data.

A very skillful fraud might eventually be able to remove the toner print by means of erasing techniques as described above without damaging the support of the valuable paper. To also provide a protection from this form of fraud, the valuable paper is characterized according to a further embodiment of the invention in that under irradiation with UV light the support reflects visible light, the coating being of such design that it filters the UV light, so that under irradiation with UV light visible light is reflected only in places where the coating has been removed or damaged. Such a reflection of visible light can readily be detected automatically, so that the valuable papers with which fraud has been practiced can be ascertained automatically.

According to an alternative further embodiment of the invention for protection against fraud by means of erasing techniques the valuable paper is characterized in that under irradiation with UV light the support does not reflect visible light, the coating being of such design that under irradiation with UV light it does reflect visible light, so that under irradiation with UV light dark spots are visible in places where the coating has been removed or damaged, in an otherwise visible light-reflecting surface.

In practice, it is hardly possible to remove the toner without damaging the coating. The two above-described further embodiments of the invention therefore provide an effective protection against fraud by erasing techniques. It is to be noted that in the above-described further embodiments the coating is preferably permeable to chemicals, so that erasing with etching chemicals is not possible, because the chemicals are immediately absorbed in the support.

According to a further embodiment of the invention the protections against fraud by erasing techniques are even further improved when the composition of the coating is such that at the melting temperature of the toner by means of which the valuable paper is to be printed, the coating at least slightly softens, so that the toner print sinks in the coating and blends therewith.

Yet another possibility of fraud would be to copy an original valuable paper which is provided with a coating as described above on a color copying machine. Subse-

quently, the above-described fraud techniques by means of adhesive tape and/or erasing techniques can be used to remove the prints originally applied with toner from the copy. Subsequently, new toner prints can be applied by means of a laser printer and/or ink jet printer, so that a forged valuable paper is obtained.

To exclude this possibility of fraud, the valuable paper is characterized according to a further embodiment of the invention in that it is at least locally printed with a thermal pigment or liquid crystals assuming different colors at different temperatures. Such a thermal pigment is not taken over when copying. Since the pigments or liquid crystals can be supplied in a large number of different compositions, in which, depending on the composition, different color changes occur at different temperatures, this protection can hardly be circumvented by the fraud. In fact, the fraud does not know at which temperature the one who is to inspect the valuable paper for authenticity carries out his inspection. Moreover, these inspections can be carried out one day at a first temperature and the other day at another temperature. At these different temperatures the pigment will show different colors. The inspection of the color of the pigment at different temperatures can readily be carried out automatically. The embodiment provided with a coating which filters UV light and with a support which reflects visible light under irradiation with UV light also gives the advantage that damages can readily be detected automatically. In fact, a damage to the support at the location of the coating gives a reflection of visible light which is readily measurable. In view of the above, preference is given to a valuable paper which is provided with a support which emits visible light under irradiation with UV light and a coating which filters UV light and is then provided with an at least locally applied print of thermal pigment according to the invention.

According to a further embodiment of the invention a coating which filters UV light comprises as main constituent a copolymer of styrene and an acrylic ester in a solution of acetic acid and water. Such a product is, for instance, Basoplast 265D™ of BASF.

If required, the support and/or the coating may have undergone treatments with different chemicals which all lead to a color change of the support when it comes into contact with specific chemical substances, such as, for instance, caustics, acids, solvents, bleaching agents, and the like. In different techniques of forgery or fraud, caustics, acids, solvents and bleaching agents are used. When such chemical substances are used, a thus treated valuable paper will show a color change, which renders it useless to print the valuable paper again with new personal or institutional data, because the fraud will be immediately recognizable.

According to a further embodiment of the invention the support of the valuable paper may be provided with further protective features, such as a watermark, irisning planchets, and UV-fluorescent fibers or detectable safety threads. Such features are known per se, for

instance, for bank notes.

The valuable paper may further be provided with protective features applied during printing of the valuable paper. As referred to herein, printing is not the application of the toner print with a laser printer and/or ink jet printer, but the basis print present on the coating before application of the toner print with personal and institutional data.

Finally, it is to be noted that the coating preferably has such a thickness and surface structure that the average user will not notice this coating and will have the impression that he has to do with normal paper or cardboard.

Claims

1. A valuable paper, such as, for instance, a giro or bank transfer form, a check, an identity card, and the like, which valuable paper is adapted to be printed with a toner which melts by heating and adheres to the valuable paper, and which valuable paper is provided with a support of paper or cardboard, characterized in that at least part of the support, which part is adapted to be printed with the toner, is provided with a coating, said coating being of such design that the adhesion between the toner and the coating and the adhesion between the coating and the support is stronger than the internal bond of the paper or cardboard of which the support is made.
2. A valuable paper according to claim 1, characterized in that under irradiation with UV light the support reflects visible light, said coating being of such design that it filters the UV light, so that under irradiation with UV light visible light is reflected only in places where the coating has been removed or damaged.
3. A valuable paper according to claim 1, characterized in that under irradiation with UV light the support does not reflect visible light, said coating being of such design that under irradiation with UV light it does reflect visible light, so that under irradiation with UV light dark spots are visible in places where the coating has been removed or damaged, in an otherwise visible light-reflecting surface.
4. A valuable paper according to any of the preceding claims, characterized in that the composition of the coating is such that at the melting temperature of the toner by means of which the valuable paper is to be printed, the coating at least slightly softens, so that the toner print sinks in the coating and blends therewith.
5. A valuable paper according to any of the preceding claims, characterized in that the valuable paper is at

least locally printed with a thermal pigment or liquid crystals assuming different colors at different temperatures.

6. A valuable paper according to at least claim 2, characterized in that the main constituent of the coating is a copolymer of styrene and an acrylic ester in a solution of acetic acid and water. 5
7. A valuable paper according to claim 6, characterized in that the main constituent is formed by BASOPLAST 265D™ of the firm of BASF. 10
8. A valuable paper according to any of the preceding claims, characterized in that the support or coating may have undergone a treatment with different chemicals which all lead to a color change of the support when it comes into contact with specific chemical substances, such as, for instance, caustics, acids, solvents, bleaching agents, and the like. 15 20
9. A valuable paper according to any of the preceding claims, characterized in that the support is provided with further protective features, such as a watermark, irising planchets, and UV-fluorescent fibers or detectable safety thread. 25
10. A valuable paper according to any of the preceding claims, characterized in that it is provided with further protective features applied during printing of the valuable paper. 30

35

40

45

50

55



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 97 20 1847

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	US 5 045 426 A (MAIERSON ET AL) * the whole document *	1	B44F1/00 B42D15/00 G03G7/00
X	PATENT ABSTRACTS OF JAPAN vol. 12, no. 376 (M-750) [3223] , 7 October 1988 & JP 63 126783 A (TOPPAN MOORE), 30 May 1988, * abstract *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			B42D G03G B41M
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		2 October 1997	Evans, A
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			

EPO FORM 1503 03.92 (P04C01)