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(54) **ANTITAMPERING PROCESS AND DEVICE FOR CREDIT INSTRUMENTS OR VARIABLE DATA**

VERFAHREN UND VORRICHTUNG ZUM SCHUTZ GEGEN FÄLSCHUNG FÜR
KREDITDOKUMENTE ODER VARIABLE DATEN

PROCEDE ET DISPOSITIF ANTIFRAUDE POUR INSTRUMENTS DE CREDIT OU DONNEES
VARIABLES

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(56) References cited:
WO-A-97/31784 DE-A- 3 440 653
GB-A- 2 234 601 US-A- 4 039 122

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Description

[0001] The present invention concerns an anti-tampering process and related device applicable, preferably, to instruments of credit of the sort like cheques and banker's draft or any valuable document and when originality of printed data must be checked.

[0002] Although principally oriented to solve the problem of forgeries in the domain of credit instruments, the invention is applicable for preventing forgeries of carriers of variable data, like pharmaceutical or medications containers.

[0003] The anti-tampering device, hereinafter called checker, is suitable to test the instruments of credit so processed.

[0004] In particular, the invention has the scope to make sure that the instruments of credit cashed at Banks, either drawee or not, will be definitely and surely cancelled.

[0005] The same invention is applicable, also, for revealing hidden variable data, that is data which vary for different items, like i.e. serial numbers, date of printing and so on.

[0006] Further aim of the invention is to impede that said instruments of credit, for example cheques, might be forged and recycled after they have been cashed.

[0007] Analogously, the invention is applicable for impeding that any sort of document on which variable data are printed might be forged and recycled after they have been ratified.

[0008] At the actual state of the art, Banks or Credit Institutions pay the instruments of credit, in example cheques, to their holders after verification that the drawee Bank holds on the name of the drawer the amount provided by the cheques and that these ones are not dishonoured.

[0009] The cited checks, which are normally executed automatically by means of optical readers connected to modems, which dialogue with databases, the credit instruments are manually cut with scissors by removing a corner of the same : this operation is known in jargon "cheque truncation".

[0010] The so truncated credit instruments can still have different destinations :

1. when it is cashed at the drawee Bank, they are addressed to archive ;
2. when the paying Bank is not the drawee one, then the cheque is addressed for being finally cashed to this last one.

[0011] Such a procedure is understandably tedious and can induce mistakes in the manual above cited operation of "cheque truncation", so that the credit instrument might be fraudulently put again in circulation for a second illegal payment.

[0012] The present invention discloses a process of treatment of the credit instruments and a related can-

cellation device (checker) which, further than eliminating the operation of "cheque truncation", makes the credit instruments visually unusable for a second fraudulent payment.

[0013] The above mentioned verifications of the validity of the credit instruments and its cancellation at the time of cashing, are by means of the present invention made totally reliable and simple, being the credit instrument itself a carrier of validity proofs.

[0014] Prior art of anti-tampering methods for particular credit instruments, like credit cards, is disclosed in DE-A-3 440 653. The disclosure is nevertheless limited to plastic cards and provides for, upon forgeries attempt, a visual and tact sensitive durable change when submitted to high temperature.

[0015] The invention will be better explained by means of the following figures :

Fig. 1 shows a credit instrument, in example a cheque, after the operation of "cheque truncation", that is the removal of a corner for indicating that the cheque has been paid to the holder (state of the art) ;

Fig. 2 shows a schematic embodiment of the cancellation device of the present invention (checker); Fig. 3 illustrates how the cheque, appears when processed with specific invisible inks, before going in the checker.

Fig 4 shows how the cheque appears at the exit of the checker.

[0016] The removal of the corner 1 of the cheque 2 of Fig. 1, in some cases, as said, is not a sufficient anti-forgery measure, because there exists many reports of fraudulent reconstruction of said corner.

[0017] The credit instrument 2 of Fig. 3, is for the scope of the present invention treated with invisible thermosensitive inks in some zones of the same for example the zones 3 and 4.

[0018] By means of the said treatment of invisible printing on the cheque, it will be printed a word or a symbol, or a combination thereof, which will appear to the cashier only after that the cheque is annulled by means of the checker; in example, in Fig. 4 it appears a word 3 (cancellato), or other conventional symbols chosen by banks for additional recognition against forgery.

[0019] The variable data 4 is, also, printed with invisible ink in a zone 4 of the cheque of Fig.3 : it will then appear after the passage through the checker in the zone referenced with 4 in Fig. 4.

[0020] The invisible thermosensitive inks used by the invention, suitable for printing characters on instruments of credit, are those of the type known in commerce as Termovario Varnish, which show the following features :

- the printed characters are invisible (transparent) below a given transition temperature, while they appear in colours above said transition temperature ;

- the transition is irreversible ;
- the transition temperatures ranges between 60° and 70° Celsius ;
- the intensity of the colour increases up to 90° Celsius (saturation temperature) ;
- the velocity of colour development depends from the thickness of the applied film of ink and from the nature of the support, but is strictly linked to temperature : at 90°C the change from invisible to visible takes about 2-3 seconds, while at 120° C the transition happens within a fraction of a second.

[0021] The above mentioned thermosensitive inks are suitable for different printing techniques : i.e. offset, lithography, letterpress, screen-printing or rotogravure.

[0022] Furthermore, they are commercially available in different blendable colours. This last feature allows to design a mixture of inks of difference colours in a secret mixing ratio, different for each Bank, so to add another safety element against tampering of credit instruments.

[0023] Additionally, in order to give holders antitampering evidence of the said instrument, which may circulate and transferred to different holders before being cashed at the bank, a variable data invisible printing is, also, reported on a zone 4 of said credit instrument : variable data could, i.e., be the serial number and the account number.

[0024] In its essential principles, the invention is so explained :

the invisible ink treated credit instrument 2, as it appears in Fig. 2 is inserted into the slit 5 and dragged by rolls 6-6', said rolls 6-6' are heated at a temperature above 90°C and below 120°C.

[0025] Temperature control means 9 preside for maintaining constant the pre-set temperature of the rolls 6-6'.

[0026] After being processed through the heated rolls 6-6', the instrument of credit 2 is by draggers 7-7' and 8-8' brought to the slit 10, wherefrom it exits.

[0027] A different embodiment of the checker may foresee infrared lamps instead of the heated rolls 6-6' : it is then sufficient that the credit instrument is invested for a fraction of a second by infrared rays for revealing the hidden symbols or, alternatively, it could pass for some seconds through an oven whose inside temperature is in the range 90°C-120°C.

[0028] The infrared lamp would result to be very practical when items to check are of different sizes.

[0029] The invisible ink applied on the credit instrument is, at the time of its editing, covered by thin layers of ultraviolet filtering paint and/or acrylic film, whose scope is either to protect said invisible ink, either to impede successive forgeries.

[0030] The same process of the present invention is applicable whereas variable data must be reported on documents, like date, place, reference numbers, serial number of which it is necessary to ascertain the authenticity.

[0031] A different field of application of the present in-

vention is the antitampering of the variable data printed on the containers of medicaments, which are susceptible of tampering for what concerns expiring date, lot number and others.

[0032] Being understandable that the range of application of the inventive action hereabove explained is very wide, it is sought protection for any embodiment which is based on the present invention as set out in the claims.

Claims

1. An anti-tampering process for impeding forgeries of valuable documents and/or variable data carriers, **characterised in that** at least a zone of said valuable document and/or carrier is firstly processed by printing an image with invisible thermosensitive ink and secondly covered by protective thin layers of ultraviolet filtering paint and/or acrylic film, the temperature of irreversible transition to visible of said invisible thermosensitive ink being in the range 60°C to 70°C, whereby said transition is provided by a checking device comprising a heating device, the temperature thereof is controlled in the range 90° to 120° C.
2. Anti-tampering process according to claim 1 **characterised in that** said transition to visible of said invisible thermosensitive ink is provided by said checking device, the heating element thereof consisting of rolls dragging said document or carrier.
3. Anti-tampering process according to claim 1 **characterised in that** said transition to visible of said invisible thermosensitive ink is provided by a checking device, the heating element thereof consisting of an infrared lamp.

Patentansprüche

1. Verfahren gegen Stampfer zum Verhindern von Fälschungen von wertvollen Dokumenten und/oder variablen Datenträgern. Insbesondere ist es **gekennzeichnet dadurch**, dass mindestens ein Teil von oben genanntem wertvollen Dokument und/oder Träger zuerst durch Drucken eines Bildes mit unsichtbarer, temperaturempfindlicher Tinte hergestellt wird, das zweitens bedeckt ist mit einer dünnen Schutzschicht aus ultravioletter Filtrierfarbe und/oder Akrylfilm, wobei die Temperatur vom Übergang zwischen unsichtbar und sichtbar von besagter unsichtbaren temperaturempfindlicher Tinte im Bereich von höchstens 60° C und mindestens 70° C liegt. Insbesondere wird oben genannter Übergang von einer kontrollierenden Vorrichtung überprüft durch Aufweisen einer Heizungs-

richtung, die die Temperatur im Bereich von 90° bis 120° C kontrolliert.

2. Verfahren gegen Stampfer nach Anspruch 1 **gekennzeichnet dadurch**, dass der oben genannte Übergang zu sichtbar der ebenfalls oben genannten unsichtbaren temperaturempfindlichen Tinte durch die oben genannte kontrollierende Vorrichtung vorgenommen wird, wobei das Heizelement aus Rollen, die oben genanntes Dokument oder Träger befördern, besteht. 5
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3. Verfahren gegen Stampfer nach Anspruch 1 **gekennzeichnet dadurch**, dass oben genannter Übergang zu sichtbar der ebenfalls oben genannten unsichtbaren temperaturempfindlichen Tinte durch die kontrollierenden Vorrichtung vorgenommen wird, wobei das Heizelement eine Infrarotlampe aufweist. 15
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Revendications

1. Procédé anti-falsification empêchant la contrefaçon des documents valables et/ou des porteurs d'informations variables, **caractérisé en ce qu'**au moins une zone de ledit document et/ou porteur valable est premièrement traité en imprimant une image avec de l'encre thermosensible invisible et deuxièmement couvert par des couches minces protectrices de la peinture de filtrage ultra-violette et/ou du film acrylique, la température de transition irréversible à visible de ladite encre thermosensible invisible étant dans l'intervalle de 60° C à 70° C, par lequel ladite transition est fournie par un dispositif de contrôle comportant un dispositif de chauffage, dont la température est contrôlée dans l'intervalle de 90° à 120° C. 25
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2. Procédé anti-falsification selon la revendication 1 **caractérisé en ce que** ladite transition à visible du dit invisible thermosensible encre est fournie par ledit dispositif de contrôle, dont l'élément de chauffage étant composé des roulements traînant ledit document ou porteur. 40
45
3. Procédé anti-falsification selon la revendication 1 **caractérisé en ce que** ladite transition à visible de ledit encre thermosensible invisible est fournie par un dispositif de contrôle, dont l'élément de chauffage étant composé d'une lampe à rayons infrarouges. 50

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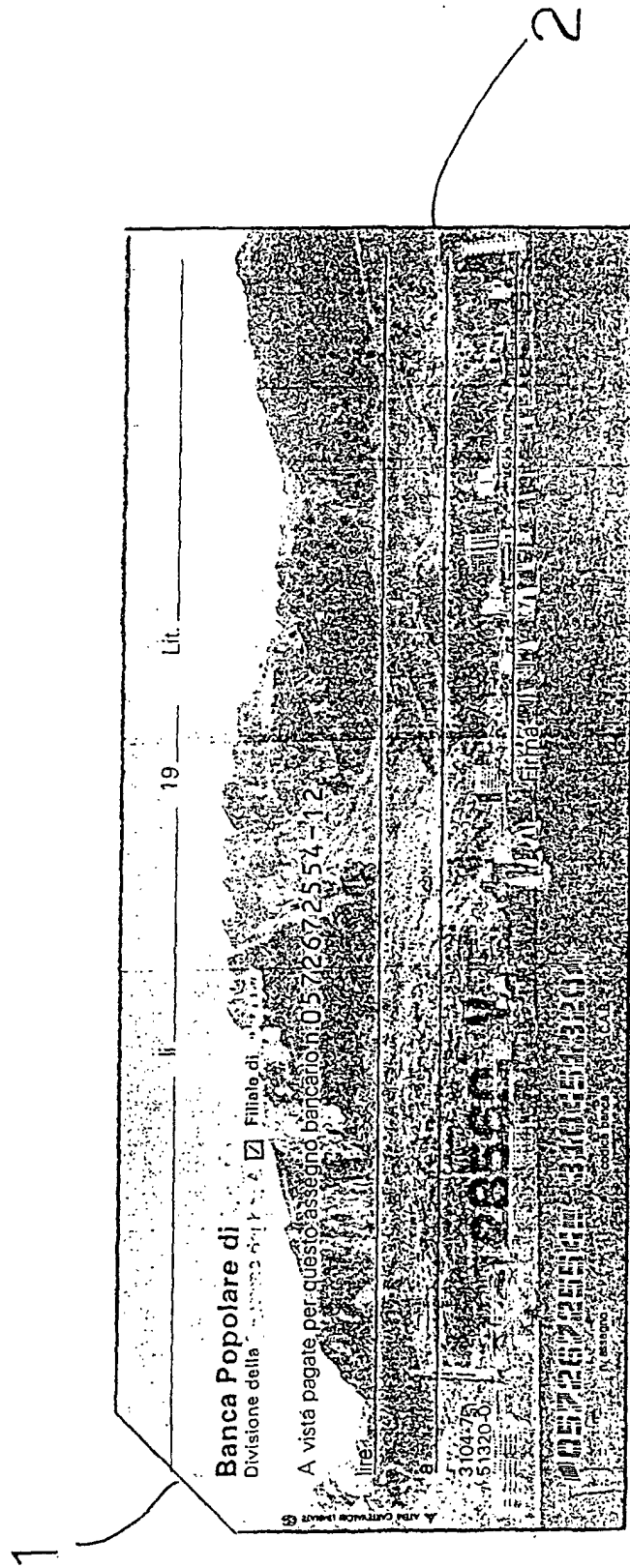
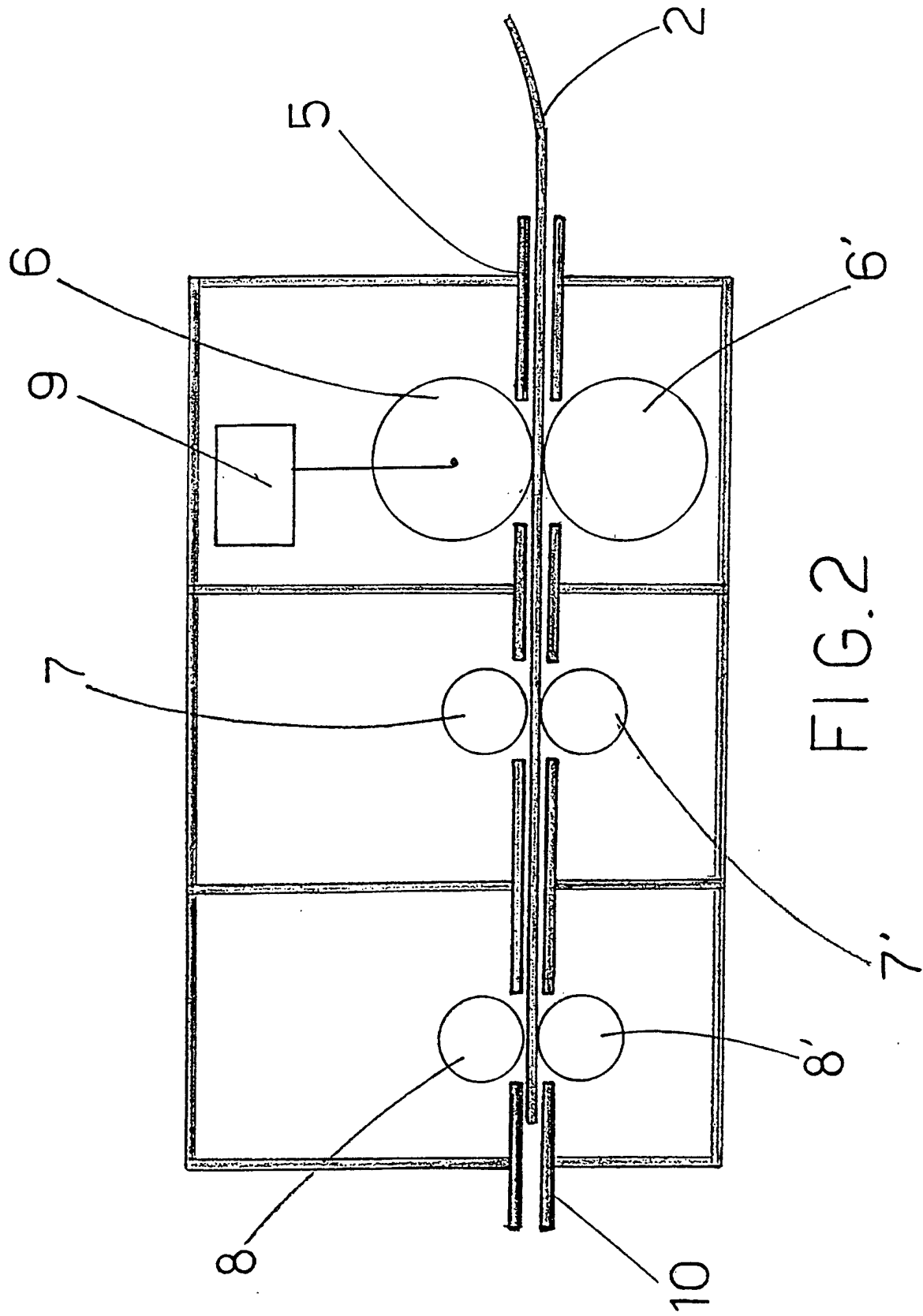


FIG. 1



2

3

4

2002 . 4
01800 . 2

1197 211869-09

Libro

Banca

li

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Lib.

Italiana

Arredati, pagatori, portafoglio, assegno, bancario

a.

NUMERO ASSEGNO

CODICE BANCA

C.A.B.

CODICE CLIENTE

Prima

119721186909

20020418002

FIG. 3

[illegible]