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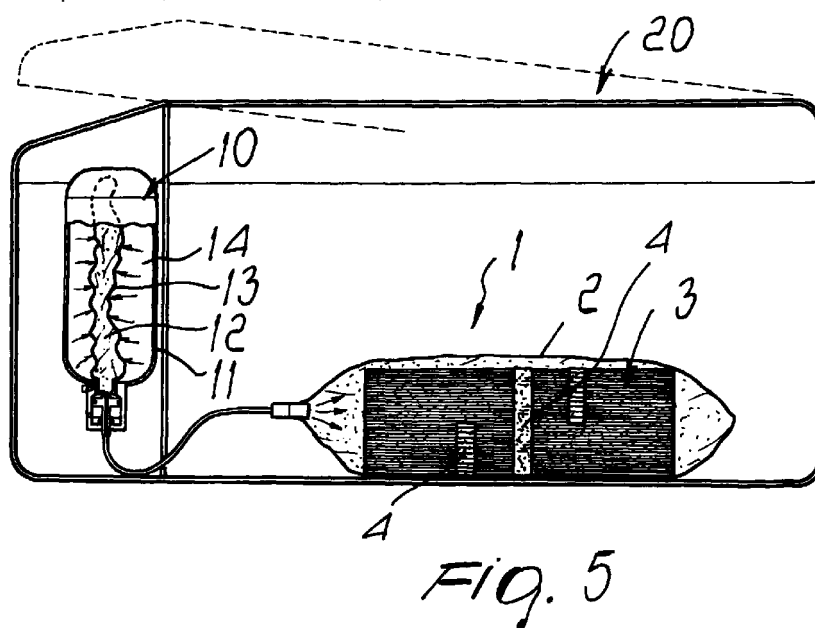
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(54) **Method for invalidating documents in general and bank notes in particular, particularly for the transport of valuables**

(57) A method for invalidating documents in general and bank notes in particular, particularly for the transport of valuables, comprising the step of spraying onto a stack of sheet-like elements (3) that constitute documents, bank notes and the like an adhesive material (12) which is suitable to penetrate, for a certain extent,

between the edges of the sheet-like elements (3) in order to produce a mutual bonding of adjacent sheet-like elements which can be removed only with mutual damage to the adjacent sheet-like elements.



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Description

[0001] The present invention relates to a method for invalidating documents in general and bank notes in particular, particularly for the transport of valuables.

[0002] It is known that in the field of the transport of valuables, in order to make it impossible to spend the money in case of attack or other tampering with the security pouches by unauthorized individuals, specialized cash-in-transit companies use security pouches, i.e., polythene bags which are sealed and contain bundles of bank notes which are wrapped by a band and are tightly tied by a double set of nylon straps.

[0003] The systems currently in use are based on the thermal destruction of the plastic container and on subsequent inking or coloring of the bank notes, in an attempt to make them impossible to spend for any robbers.

[0004] These solutions solve the problem only partially, since they cause several significant drawbacks.

[0005] A first problem arises from the fact that in order to be able to stain the bank notes it is first necessary to destroy the pouch, i.e., the plastic container; such destruction must be performed in order to expose the bank notes, and is performed by using thermal charges at approximately 1200°.

[0006] Once activated, the charges burn the pouch but destroy part of the bank notes, which will not be refunded by central banks if the container is recovered.

[0007] In addition to this drawback, the use of explosive charges is a real danger for anyone handling the strongboxes used to carry the pouches, i.e., cash-in-transit crews, tellers, bank customers and so forth; moreover, such charges can start fires in bank branches, in bank headquarters and on the vehicles used for the transport of valuables.

[0008] Another problem further consists in that the dyes or inks that are used are notoriously greasy and very viscous.

[0009] These characteristics make them unsuitable for deeply penetrating between the bank notes and are further worsened by the resistance opposed by paper money, which is watermarked, glossy and non-absorbent, and by the type of packing and very tight crossed straps that are used.

[0010] In practice, because of these reasons, invalidation of the bank notes is severely compromised and the bank notes can be circulated very easily or be used, as shown by tests performed at automatic self-service gas stations, automatic train ticket dispensers, money-changing machines, etcetera.

[0011] It should be added to the above that the container, i.e., the strongbox that is used, is usually damaged completely if the thermal charge is operated, and therefore the strongbox cannot be repaired and must be replaced completely.

[0012] The aim of the present invention is to eliminate the above-noted drawbacks, by providing a method

for the safe and unequivocal invalidation of documents in general and bank notes in particular, particularly for the transport of valuables, which allows to neutralize the bundle of documents, bank notes and the like so a robber cannot spend them in any way, yet allows, in case of attack and recovery, to check the watermarked paper that has not been contaminated and to count the individual bank notes rendered unusable, since the portion of the bank note that remains intact is normally between 60 and 70%.

[0013] Within the scope of this aim, a particular object of the invention is to provide a method for invalidating documents in general which is extremely safe for assigned personnel in that no thermal charges are used and that the pouch that contains the bank note bundles need not be torn.

[0014] Another object of the present invention is to provide a method which, by way of its particular implementation characteristics, is capable of giving the greatest assurances of reliability and safety in use.

[0015] Another object of the present invention is to provide a method for invalidating documents in general and bank notes in particular, particularly for the transport of valuables, which can be performed with simple and inexpensive means.

[0016] This aim, these objects and others which will become apparent hereinafter are achieved by a method for invalidating documents in general and bank notes in particular, particularly for the transport of valuables, according to the invention, characterized in that it comprises the step of spraying onto a stack of sheet-like elements that constitute documents, bank notes and the like an adhesive material which is suitable to penetrate, for a certain extent, between the edges of said sheet-like elements in order to produce a mutual bonding of adjacent sheet-like elements which can be removed only with mutual damage to said adjacent sheet-like elements.

[0017] Further characteristics and advantages of the present invention will become apparent from the following detailed description of a preferred but not exclusive embodiment of a method for invalidating documents in general and bank notes in particular, particularly for the transport of valuables, illustrated only by way of non-limitative example in the accompanying drawings, wherein:

Figure 1 is a schematic perspective view of a stack of bundles of bank notes, treated on their surface with the adhesive;

Figure 2 is a schematic view of the stack of bundles, illustrating the region of penetration of the adhesive material;

Figure 3 is a schematic perspective view of the removal of the bonded edges from the stack of bundles, illustrating the possibility to inspect the individual bank notes on a surface larger than 60%;

Figure 4 is a sectional side view of the pouch inside

the container;

Figure 5 is a schematic sectional side view of the step for introducing the adhesive material in the pouch;

Figure 6 is a perspective view of the container in which the pouch with the stack of bundles is introduced.

[0018] With reference to the above figures, the method for invalidating documents in general and bank notes in particular, particularly for the transport of valuables, consists on a general level in spraying onto the outer surface of a stack of sheet-like elements that constitute documents, bank notes and the like an adhesive material which is advantageously constituted by cyanoacrylate adhesives with very low viscosity, which by virtue of their high capillarity facilitate penetration between the tightly packed bank notes.

[0019] The very fast polymerization, which can be estimated to take approximately 4 or 5 seconds and is obtained according to the temperature and relative humidity, blocks the penetration of the adhesive in a portion between the edges of the adjacent sheet-like elements which can be estimated at 8 to 10 mm, allowing, in case of robbery and recovery, the verification of the watermarked paper that is not contaminated and the counting of the individual bank notes that have been rendered non-spendable, since a percentage of the bank note between 60 and 70% remains practically intact.

[0020] Once recovery has been performed, as shown schematically in Figure 3, it is possible to remove the part affected by the adhesive, thus being able to separate again the individual sheet-like elements, which can be checked directly by central bank officers in order to obtain full reimbursement of the money that has been neutralized and rendered non-spendable by the application of the adhesive.

[0021] Any attempt to separate the individual sheet-like elements inevitably causes mutual damage to the adjacent sheet-like elements, since part of one bank note is transferred to another bank note and accordingly it is evident that said bank note cannot be used even in vending machines.

[0022] An embodiment which is considered optimum provides for a pouch, generally designated by the reference numeral 1, which is constituted by a self-sealing bag or envelope 2 preferably made of polyethylene and containing bundles of bank notes, generally designated by the reference numeral 3, which are wrapped with bands 4 and tightly packed by the conventional set of straps.

[0023] The bag or container 2 is connected to an adhesive dispenser, generally designated by the reference numeral 10, constituted by a rigid external container 11 which contains the adhesive material, which is designated by the reference numeral 12 and is contained in a soft container 13.

[0024] The interspace 14 between the soft container 13 and the rigid container 11 is pressurized so as to apply the compression of the soft container 13 that is required in order to transfer the adhesive 12 to the self-sealing bag 2, which contains the documents or bank notes 3 to be invalidated.

[0025] The dispensing of the adhesive 12 is activated when, following an unauthorized maneuver, the system activates the device for perforating the head of the soft container 13.

[0026] Dispensing occurs only if the container of the adhesive 12 is connected to the self-sealing bag 2 that contains the bank notes 3.

[0027] The dispensing, thanks to the double soft and rigid container system, is capable of transferring the adhesive 12 completely into the self-sealing bag 2 in all positions, whether vertical, horizontal, upright, upside down or on one side.

[0028] With this system, only the adhesive material 12 is introduced in the bag 2, accordingly avoiding the explosion of the self-sealing bag 2 due to the pressure and keeping it in practice in contact with the bank notes 3. The adhesive 12, spread uniformly inside the bag 2, penetrates in the above-described manner into the stack of bundles, mutually bonding the various bank notes 3 at their edges and thus obtaining a monolithic assembly which can no longer be used as a bank note, since it is not possible to separate the individual bank notes without causing considerable surface damage which makes them unusable.

[0029] From the above description it is thus evident that the invention achieves the intended aim and objects, and in particular the fact is stressed that a bank note invalidation method is provided which is extremely safe for cash-in-transit crews, tellers and customers because the conventional explosive thermal charges are not present and because the thermal destruction of the bag or container is not performed, since the adhesive is introduced directly into the bag without having to use pressure values which might lead to the rupture of said bag.

[0030] Moreover, complete neutralization of the bank notes is achieved, but it is possible to recover the bank notes both in case of robbery and in case of incorrect procedural behavior of the cash-in-transit crew.

[0031] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the inventive concept.

[0032] All the details may furthermore be replaced with other technically equivalent elements.

[0033] In practice, the materials used, as well as the contingent shapes and dimensions, may be any according to requirements.

[0034] The disclosures in Italian Patent Application No. MI99A000643 from which this application claims priority are incorporated herein by reference.

[0035] Where technical features mentioned in any claim are followed by reference signs, those reference

signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

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Claims

1. A method for invalidating documents in general and bank notes in particular, particularly for the transport of valuables, characterized in that it comprises the step of spraying onto a stack of sheet-like elements (3) that constitute documents, bank notes and the like an adhesive material (12) which is suitable to penetrate, for a certain extent, between the edges of said sheet-like elements (3) in order to produce a mutual bonding of adjacent sheet-like elements which can be removed only with mutual damage to said adjacent sheet-like elements.

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2. The method according to claim 1, characterized in that said adhesive material (12) is constituted by cyanoacrylate adhesive.
3. The method according to claim 2, characterized in that said cyanoacrylate adhesive (12) has a very low viscosity in order to penetrate between said adjacent sheet-like elements (3).

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4. The method according to claim 2, characterized in that said cyanoacrylate adhesive polymerizes in 4-5 seconds.

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5. The method according to claim 2, characterized in that said cyanoacrylate adhesive penetrates between said sheet-like elements for 8 to 10 mm.

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6. A pouch (20) for containing documents in general and bank notes in particular, characterized in that it comprises a bag (2) inside which it is possible to insert a stack of sheet-like elements (3) that constitute the documents, bank notes and the like, said bag being connected to a dispenser (10) of adhesive material which has a rigid external container (11) and a soft internal container (13) which contains an adhesive material (12) and allows complete dispensing of the adhesive in all positions, an interspace (14) being provided between said soft container (13) and said rigid external container (11) and being connected to a bottle of pressurized gas which can be activated in order to invalidate said documents.

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