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(54) **Biztonsági betét, különösen chipkártyához**

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.

SECURE INSERT INTENDED, IN PARTICULAR, FOR A CHIP CARD

Description

[0001] The present invention relates to a secure insert intended, in particular, for a chip card, and in particular, but not exclusively, for a contactless chip card.

[0002] A number of prior art methods are known for assembling the components of a chip card for the purpose of obtaining a card having certain characteristics of resistance to bending and to the delamination of the layers of the card body. These known methods, using a plurality of sheets of plastic material assembled by hot or cold lamination, have been used on a large scale, to the extent that the use of chip cards has become practically universal.

[0003] Unfortunately, the success of the chip card as a highly popular product has also led to increasing problems concerning the falsification of chip cards. This is because, owing to the use of cards, notably, for the purpose of payment, access control, identity checking, or other chip card applications, it has become tempting in some fields to market counterfeit chip cards which are not properly issued by the usual card issuers, namely banks, telephone companies, or other chip card issuers, notably in the field of access control or identity checking.

[0004] Some falsification techniques consist, for example, in deleting the logo produced by printing on the surface of the chip card, or reproducing a counterfeit logo on false chip cards. Other falsification techniques consist in exploiting the relative ease with which the laminated layers of the chip card can be separated, in order to place a counterfeit insert in the card while retaining the original outer layers, or vice versa.

[0005] The applicant has therefore considered it useful to develop a chip card manufacturing method for increasing the ease of checking whether a card is a genuine card, issued by its legitimate issuer, or a falsified card.

[0006] Another object of the invention is to propose a manufacturing method which can increase the mechanical resistance to the disassembly of chip cards by delamination, which is especially useful for contactless chip cards provided with an insert having an antenna for remote communication with a contactless chip card reader, but also for conventional laminated contact cards.

[0007] To this end, the principle of the method according to the invention is that of providing the card insert with a defect in homogeneity capable of producing, after lamination, a visual or tactile characteristic which can be used to recognize whether or not the card is falsified. Advantageously, this defect in homogeneity also increases the resistance of the insert and the chip card to the disassembly of the layers of the card, in addition to the visual or tactile effect. This is because this visual or tactile characteristic is generated within the card itself,

thus greatly increasing the difficulty of any subsequent access to this characteristic for the purpose of falsification.

[0008] The present invention therefore proposes an insert as defined in Claim 1.

[0009] For the manufacture of highly secure inserts for contactless chip cards according to the invention, provision is made for the intermediate sheet to be equipped with an antenna. In this case, the apertures in the intermediate sheet of the insert are produced outside the area covered by the antenna.

[0010] The invention also relates to a chip card as defined in Claim 5.

[0011] Other characteristics and advantages of the invention will be evident from the perusal of the detailed description and the attached drawings, in which:

- Figure 1A shows an insert for a chip card, in a plan view;
- Figure 2A shows the insert of Figure 1, viewed in cross section; Figure 2B shows the insert of Figure 2A, after lamination;
- Figure 3 shows a view through the cross section A-A of a chip card having an insert according to Figures 1 and 2, and a plurality of outer layers located on either side of the insert.

[0012] Reference is now made to Figure 1. This figure shows a plan view of an insert 1 for a chip card according to the invention. The insert 1 shows in a transparent view an antenna 3 located in the thickness of the insert, or screen printed on its surface. Thus in this example the insert is for a contactless card, but the invention is also applicable to inserts for contact cards.

[0013] As shown in Figure 1, the insert 1 comprises a plurality of holes or apertures 9 which can be formed by cutting or moulding, according to the size and thickness characteristics of the insert. The juxtaposed holes may form any pattern or a pattern predetermined by the issuer of the chip card using the insert. Thus it would be very easy to imagine an insert in which the holes represent the logo of a bank, or of a credit or bank card management organization. Thus, in the illustrated example, apertures having the shape of the letters SPS have been created. However, it is also possible to provide a single aperture, which on its own represents the contours of a logo 4, without the need to form the shape of the logo by juxtaposing a number of points or holes. The stylized "SPS" logo in the illustrated example has been formed in this way.

[0014] Reference is now made to Figure 2, which shows the insert 1 of Figure 1 in a cross section A-A. As can be seen, the insert is composed of an intermediate layer 7, having a set of apertures or holes 9, and outer layers 11, 13. The intermediate sheet 7 has, for example, a thickness of about 40 micrometres, and the outer sheets 11, 13 have a thickness of about 100 micrometres, making it possible to produce a very thin insert measuring about 240 micrometres, very suitable for the production of chip cards with a standard thickness according to the ISO 7816 standard. Evidently, other dimensions may be provided without departing from the scope of the invention, and it is also possible to use only a single outer layer of flowable material, in which case its thickness will

preferably be in the range from about 100 to about 400 micrometres.

[0015] It is important to note that the material of the outer layers 11, 13 of the insert 1 is flowable; that is to say, it is chosen to have flowing characteristics which are such that, during the step of laminating the layers of the insert, some of the material of the outer layers 11, 13 located facing the apertures 9 of the intermediate layer 7 can migrate towards the apertures 9, thereby creating a defect in the homogeneity of the material in theses areas of the outer layers located facing the holes 9. In all cases, this absence of material results in a locally lower density of material, and consequently the pressing force applied to these locations of lower density generates a difference in perception there which is visually or even tactilely detectable. A visual and/or tactile element is thus generated on the insert, notably on the surface of the outer layers of the insert, as a result of the absence of material or the lower density at the position of the holes 9 filled during the lamination step. Depending on the material chosen for the insert, the resulting visual effect, for example the presence of a logo in the core of the insert, may be observed by transparency or by reflection.

[0016] Additionally, the filling of the apertures 9 in the insert by the flow of material from the outer layers towards the intermediate layer creates a mechanical effect of the mortise and tenon type for fastening the outer layers to the intermediate layer, so that any subsequent attempt to separate the layers of the insert will leave easily detectable traces, which contributes to the security of the insert and of the chip card using this insert.

[0017] Figure 3 shows how the insert 1 according to the invention can be used for making a chip card 15. It is simply necessary to laminate the outer layers 17, 19, 21 of the chip card by a known lamination method. The surface irregularities created by the apertures in the intermediate sheet of the insert remain visible on the surface of the completed chip card 15, either directly or as a result of a degree of inclination of the card, depending on the observation light. This difference in perception is sometimes referred to as "flash" in the English terminology. If the apertures are deep enough, the surface irregularities may also be perceptible by touch on the outside of the card.

[0018] The insert for a chip card according to the invention is particularly advantageous, since it creates in the core of the insert 1, and consequently in the core of the chip card 15 using the insert, a visual and/or tactile element which can be used to identify the origin of the insert. Additionally, the method of manufacturing the insert 1 by lamination causes the apertures 9 of the insert to be filled with the material of the outer layers of the insert, providing an assembly which, for practical purposes, cannot be disassembled without leaving traces proving that the insert or the chip card has been dismantled. The structure produced by means of the invention is therefore practically impossible to dismantle. If delamination still takes place, it is even possible to provide for the appearance, at the position of the filled spaces, of a logo or a desired text or message, for example the expression "VOID" in the English terminology, to signify that the card is unusable.

[0019] If the insert 1 according to the invention is used to manufacture a chip card, the visible logo produced at the position of the apertures 9 will be embedded in the core of the chip card. Consequently it cannot be deleted, modified or repeated on another card. However, it will be sufficiently visible by transparency, or as a result of

the inclination of the card relative to the axis of observation.

[0020] Evidently, a person skilled in the art will be capable of making the best choice of the pairs of materials used for the layers of the insert, and of the temperatures and pressures applied during the lamination, to permit the melting of the materials to be laminated and thus obtain correct adhesion between the materials. Tests conducted by the applicant have shown that this technology works particularly well with the polycarbonate (PC) materials for the layers of the insert and/or of the chip card, but also with PVC or PET.

BIZTONSÁGI BETÉT, KÜLÖNÖSEN CHIPKÁRTYÁHOZ

SZABADALMI IGÉNYPONTOK

1. Betét (1) többrétegű chipkártyához (11), amely betét tartalmaz egy közbülső lapot (7), és a közbülső lap (7) mindkét oldalán legalább egy külső lapot (11, 13), amelynek olyan felülete van, amely közvetlenül érintkezik a közbülső lap (7) megfelelő felületével, és ahol a közbülső réteg tartalmaz legalább egy kitöltetlen részt (9) a betét rétegelése előtt, ahol a külső lapok (11, 13) közül legalább az egyik egy folyékony anyagból van, amely a közbülső lapnak (7) a külső lapokkal (11, 13) történő egyesítése során a külső lapok (11, 13) anyagának egy része a közbülső lap kitöltetlen részébe (9) jut oly módon, hogy a betét (1) felületén egy látható és/vagy tapintható szabálytalanságot képez, amely képes jelezni a betét és/vagy a chipkártya eredetiségét, **azzal jellemezve**, hogy a kitöltetlen rész (9) alakja egy olyan logót reprezentál, amely a betét (1) kibocsátójára és/vagy gyártójára jellemző.

2. Az 1. igénypont szerinti betét (1), **azzal jellemezve**, hogy több kitöltetlen részt (9) tartalmaz, melyek egy olyan logót képező módon vannak elrendezve, amely képes jelezni a betét származási helyét.

3. A 2. igénypont szerinti betét (1), **azzal jellemezve**, hogy a közbülső lap (7) antennával (3) van ellátva, továbbá a kitöltetlen részek (9) az antennával (3) befedett zóna külső oldalán vannak létrehozva.

4. Az előző igénypontok bármelyike szerinti betét (1), **azzal jellemezve**, hogy a közbülső lap (7) és a külső lapok (11, 13) anyaga a polikarbonát, a PVC és a PET közül van kiválasztva.

5. Többrétegű, laminált struktúrájú chipkártya (15), **azzal jellemezve**, hogy tartalmaz egy az előző igénypontok bármelyike szerinti betétet (1), továbbá a betét egyik oldalán legalább egy olyan külső réteget (17, 19, 21), amely szilárdan, célszerűen laminálással van rögzítve a betét (1) megfelelő lapjához.

6. Az 5. igénypont szerinti chipkártya (15), **azzal jellemezve**, hogy legalább egy külső réteg (17, 19, 21) polikarbinátból, PVC-ből vagy PET-ből van előállítva.

7. Az 5. igénypont szerinti chipkártya (15), **azzal jellemezve**, hogy a külső rétegek (17, 19, 21) vastagsága körülbelül 100-400 µm.

8. Eljárás az 1-4. igénypontok bármelyike szerinti, chipkártyához (15) való betét (1) gyártására, **azzal jellemezve**, hogy az alábbi lépésekből áll:

- vesztünk egy anyagréteget a betét (1) közbülső lapjának (7) és ebben a közbülső lapban (7) létrehozunk legalább egy kitöltetlen részt (9) egy előre meghatározott mintázat szerint;
- a betét (1) közbülső lapjának (7) mindkét oldalára laminálással felviszünk legalább egy folyékony anyagú réteget (11, 13), ily módon a laminálás során a képlékeny anyag rétegeinek (11, 13) anyagának egy része a betét (1) közbülső lapjában (7) lévő kitöltetlen részekbe (9) jut, ezáltal a betéten olyan szabálytalanságokat képez, melyek szemmel és/vagy tapintással érzékelhetők.

9. Eljárása többrétegű chipkártya (15) gyártására, **azzal jellemezve**, hogy az eljárás alábbi lépéseket tartalmazza:

- vesztünk egy a 8. igénypont szerinti betétet (1);
- a betét (1) mindkét oldalán elhelyezünk legalább egy lapot (17, 19, 21), amely egy külső anyagból, előnyösen polikarbonátból, PVC-ből vagy PET-ből van; és
- végrehajtunk egy végső laminálási műveletet annak érdekében, hogy a betétet (1) és a külső anyagból lévő lapokat (17, 19, 21) szilárdan egymáshoz rögzítsük.

FIGURE 1

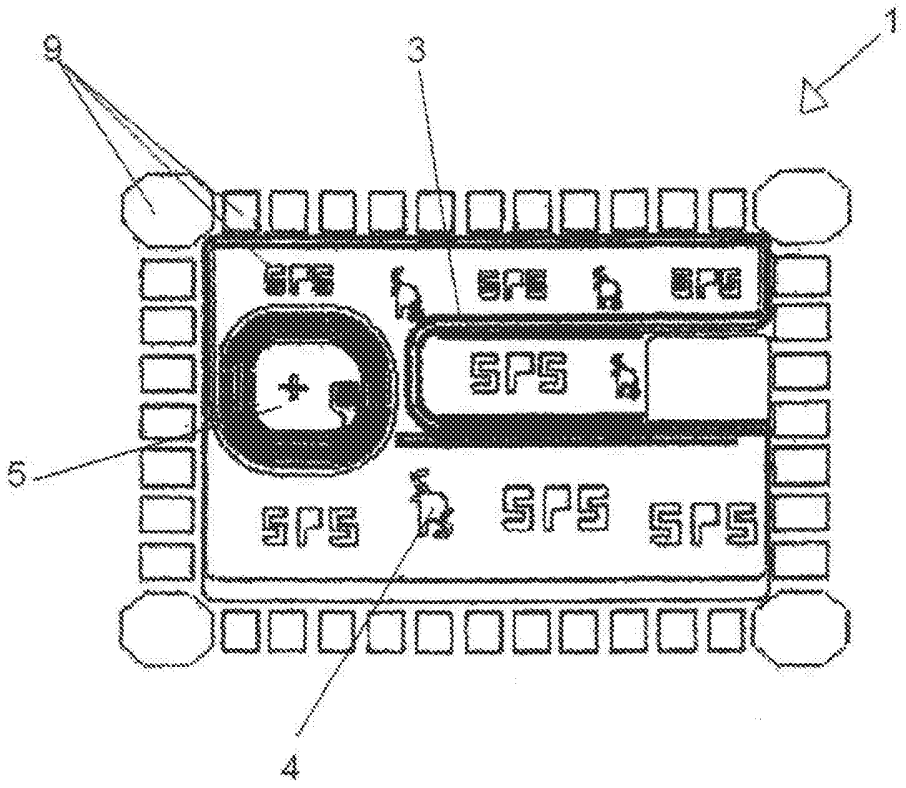

FIGURE 2A

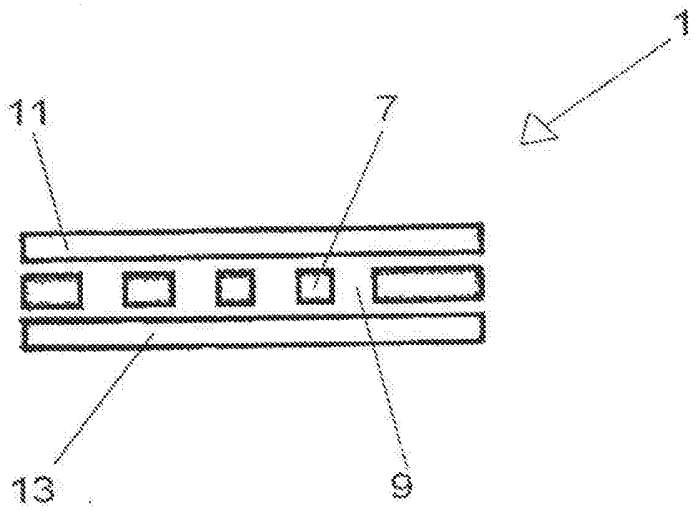

FIGURE 2B

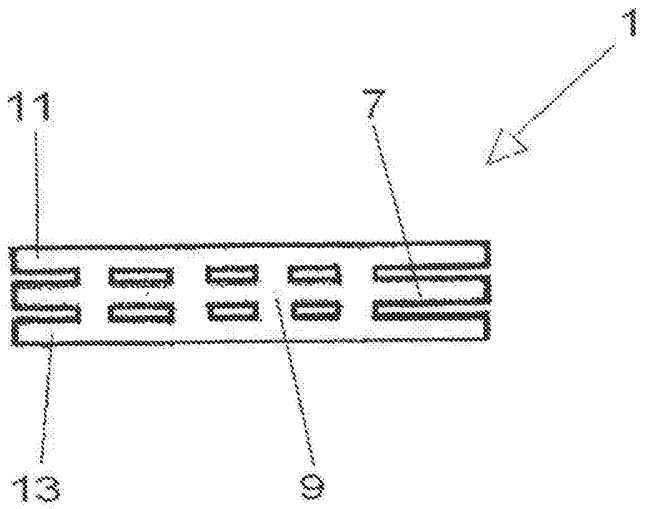

FIGURE 3