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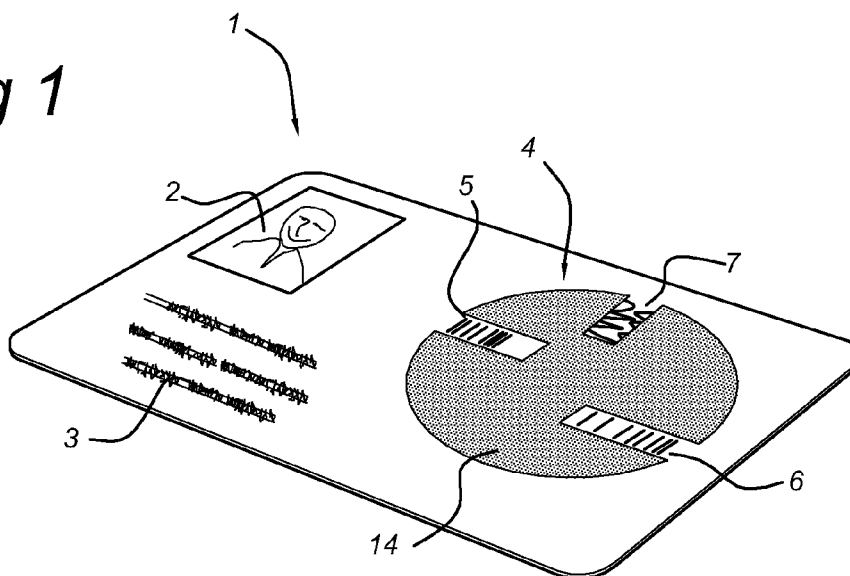
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(54) Title: CARD WITH A METAL FOIL LAYER PROVIDED WITH AN OPENING

Fig 1



(57) Abstract: Card consisting of a base layer (11) to which an aluminum foil (14), is attached. In addition, a protective layer (10) is provided. A part of the aluminum foil is removed with a laser beam to expose information (8, 9, 13, 16) lying therebelow. Further information is optionally attached after the removal of the aluminum foil using a part of the laser beam. The underlying information extends past said opening, i.e. merely a part of the information lying below the metal foil is visible once the opening has been formed therein. Forming openings in various cards at various locations allows a varying appearance of the cards to be provided, starting from a universal card. A card of this type can be used for identification purposes.

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**Card with a metal foil layer provided with an opening**

The present invention relates to a card comprising a base layer with a metal foil and a protective layer attached to a side of the base layer, wherein one side of the metal foil  
5 adjoins an information-containing part and wherein the metal foil is provided with an opening for rendering visible a portion of said information-containing part and the protective layer adjoining said opening is transparent.

A card of this type is generally known in the art as a smart card. In this case, an  
10 aluminum foil part is laminated on the base layer and sealed with a protective layer as a security feature. Subsequently, one or more openings are formed in the aluminum foil at a later stage and afterwards or at the same time information is written with a laser beam in the space which becomes free. This operation hinders misuse.

A hot stamping foil with a hologram is known from EP 0170832, wherein according to  
15 a particular embodiment a magnetic layer is present under the hologram. Information can be read out from this magnetic layer at all times. US 5,331,443 describes a method for forming openings in a layer located behind a hologram, thus changing the effect of the hologram. A method wherein an image is attached to a reflecting layer by etching is  
20 known from EP 0758587.

It often occurs that users require small runs of cards which are substantially identical to  
one another but should be distinguishable by way of a feature. In the case of the  
identification cards, this feature is obviously not another photo or name because these  
25 are generally already attached to a card of this type. The invention seeks in particular to provide for example various codes or the like allowing security staff or the like to see in a particularly simple manner whether specific persons have access to specific areas.

The object of the present invention is to provide a card which can be produced both on  
30 a large scale and on a small scale and can be individualized in a simple and inexpensive manner. In addition, it is the object of the present invention that the simple individualizing should not entail that the card is also simple to imitate.

According to the present invention, the card can comprise any type of card such as identification cards which may or may not form part of a passport, bank card and further securities/cards.

- 5 This object is achieved with the card described hereinbefore by the features of claims 1, 12 and 13.

According to the present invention, an information-containing layer such as an imprint is present under the metal foil. As a result of the local forming of an opening in the  
10 metal layer, a part of this information is represented. If an opening is introduced in the metal layer at another location, different information is represented by the same imprint. If, for example, this information comprises a color, cards having various color codes can easily be provided. After all, the metal layer can be removed, for example, by  
laser treatment.

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Obviously, it is possible to write after/during the removal of the metal layer further information in the opening which has become free, for example as a result of the fact that the base layer comprises a laser-sensitive material such as laser-sensitive polycarbonate.

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The metal layer preferably comprises a metal foil and more particularly an aluminum foil having a very low thickness of for example less than 1.5  $\mu\text{m}$ . A metal foil of this type can extend over the full extent of the card but it is also possible for the foil to extend over merely a part of the dimensions of the card.

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Metal foils of this type can be provided with a hologram/kinegram by pressing a relief therein.

It is also possible for a further protective layer to protrude adjoining the information.

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This further protective layer, which is directed away from the information, is preferably non-transparent in its configuration.

The opening in the aluminum foil can have any desired shape. The opening may or may not be configured as a recess or be delimited entirely within the aluminum foil.

The present invention also relates to a method for producing a card, including providing a base layer, attaching a metal foil thereto, followed by attaching a protective layer to the metal foil, said metal foil being provided with an opening with a laser beam, wherein an imprint is provided between said metal foil and said base layer, said opening being formed in said metal foil in such a way that merely a part of said imprint is visible via the protective layer. The metal foil can be removed with a laser beam. It has been found that the removal of, for example, an aluminum foil requires comparatively little energy. This energy is generally much lower than that required for writing information in a polycarbonate layer. It has been found that a laser treatment renders an aluminum layer completely invisible. It is assumed that this is caused by the fact that the thin aluminum foil is transformed by the elevated temperature into very small globules. It should, however, be understood that the scope of protection of the invention is not limited by the correctness of this theory. If aluminum is used, the thickness of the layer is preferably 30/40 nanometers. It has been found that in such a case globules are formed that have a diameter of approximately 0.5  $\mu\text{m}$  and are imperceptible or hardly perceptible to the naked eye.

The invention also relates to a group of cards consisting of at least two cards as described hereinbefore. These cards are identical apart from any varying personal features (photo and data of the carrier in the case of identity cards). According to the invention, the cards differ substantially in that an opening is formed at various locations in the metallic foil, as a result of which various items of information become visible.

It will, however, be understood that the metal foil can comprise any conceivable foil. Iron foil or the like can also be used instead of aluminum.

The invention will be explained hereinafter with reference to an exemplary embodiment illustrated in the drawings, in which:

Fig. 1 shows an example of the card according to the present invention;

Fig. 2a shows a first embodiment of a detail from Fig. 1;

Fig. 2b shows a second embodiment of a detail according to Fig. 1; and Fig. 3 is a cross section of the card according to Fig. 1 and 2.

5 The card according to the present invention is denoted in Fig. 1 in its entirety by reference numeral 1. The card is in this case an identity card, as is apparent from the presence of a photo of the holder that is denoted by reference numeral 2 and the further data of the holder denoted by reference numeral 3. It should, however, be understood that the card according to the present invention can be any other type of card such as a bank card, access card, etc.

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As may be seen from Fig. 1 and 2, a security feature 4 is present, consisting of a metal foil 14, in this case an aluminum foil (see also Fig. 3).

15

Openings or recesses are formed in the aluminum layer with a laser treatment. The recesses 5 and 6 are, as may be seen from Fig. 2a and 2b, formed in the same position in each card of a series. Once the aluminum foil has been removed at the location of the recesses 4 and 6, information is inscribed therein by increasing the energy of the laser. Obviously, this information may be individual information. The presence of these openings 5 and 6 is not essential for the invention.

20

According to the present invention, the card is constructed from a base layer 11 on which there is an imprint or other layer 13/16 containing varying information (Figure 3). This information is attached in such a way that during the removal of the layer of aluminum foil 14 lying thereabove, this information does not disappear but rather remains visible (possibly in modified form). Fig. 3 indicates that the information consists of a part 13 and a part 16. An opening 15 is formed in the aluminum layer 14 at the location of the information part 16 and information 16 can be viewed therethrough. The remaining information 13 is not visible owing to the fact that the aluminum foil 14 remains present. If the opening 15 is formed at a different location, information other than 16 will become visible. This is denoted in Fig. 2a and 2b by reference numerals 8 and 9 in the opening 7. In other words, the card constructed in accordance with Fig. 2a displays different information 9 through the opening in the

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aluminum foil layer to information 8 in the card according to Fig. 2b, whereas the same information 13, 16 is present at all times under the aluminum foil layer.

5 As may be seen from Figure 3, a transparent polycarbonate layer 10 is attached to the base layer and a non-transparent white polycarbonate layer is attached to the other side of the base layer. The construction of the card can be extended as desired. It is also possible to omit the layer 12.

10 The invention allows individualized information to be provided, by attaching a universal imprint 13, 16, for a number of cards by rendering visible at all times a different portion of the imprint as a result of the removal at all times of a different part of the metal foil.

15 A person skilled in the art will think on reading the foregoing of a large number of exemplary embodiments which lie within the scope of the appended claims. It is thus possible to configure the information in any desired manner. It is possible to have various items of information consist of various colors, various patterns and the like. The foil layer can also be attached in any conceivable manner such as by laminating, sputtering and the like.

**CLAIMS**

1. Card (1) comprising a base layer (11) with a metal foil (14) and a protective layer (10) attached to a side of the base layer, characterized in that optically perceptible information (8, 9, 13, 16) which cannot be seen through said metal foil is present between said metal foil and said base layer (11), and the protective layer (10) above said metal foil is transparent.
2. Card as claimed in claim 1, wherein one side of the metal foil (14) adjoins said optically perceptible information part (8, 9, 13, 16) and in which the metal foil is provided with an opening (7, 15) for rendering visible a portion of said optically perceptible information and the protective layer adjoining said opening is transparent.
3. Card as claimed in claim 1 or 2, wherein the information-containing part comprises a polycarbonate layer.
4. Card as claimed in one of the preceding claims, wherein said metal foil comprises a holographic/kinematic structure.
5. Card as claimed in one of the preceding claims, wherein said metal foil comprises aluminum foil.
6. Card as claimed in one of the preceding claims, wherein said metal foil has a thickness of less than 1.5  $\mu\text{m}$ .
7. Card as claimed in one of the preceding claims, comprising a further protective layer (12) adjoining the other side of said information-containing part.
8. Card as claimed in claim 7, wherein said protective layer (12) adjoining said information-containing part (8, 9, 13, 16) is non-transparent.
9. Card as claimed in one of the preceding claims, wherein the information

comprises a color.

10. Card as claimed in one of the preceding claims, wherein said information comprises symbols.

5

11. Card as claimed in one of the preceding claims, comprising an identity document.

12. Group of cards comprising two cards as claimed in one of the preceding claims, comprising identical optical information (8, 9, 13, 16), wherein said openings (15) in  
10 said metal foil are formed in various positions for representing various items of information, the embodiment of said cards being furthermore identical.

13. Method for producing a card, including providing a base layer (11), arranging a metal foil (14) thereto, followed by providing a protective layer (10) to the metal foil,  
15 said metal foil being provided with an opening with a laser beam, characterized in that an optically perceptible imprint is provided between said metal foil and said base layer, said opening being formed in said metal foil in such a way that merely a part of said optically perceptible imprint is visible via the protective layer (10).

20 14. Method as claimed in claim 13, wherein prior to attaching the metal foil to a location of the metal foil, said information is attached to the base layer.

15. Method as claimed in one of claims 13 or 14, wherein the information which is visible after/during the provision of said opening (15) using a laser beam is inscribed in  
25 the base layer.



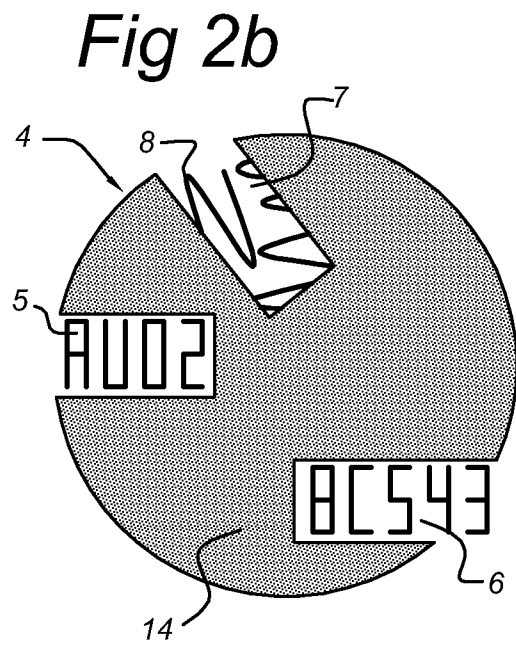
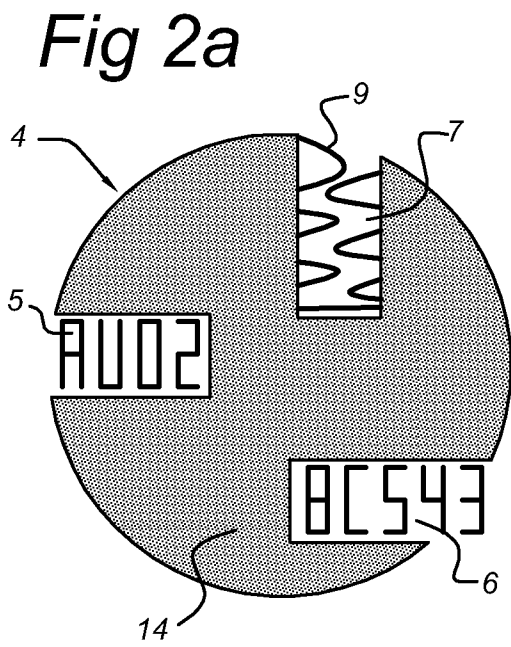
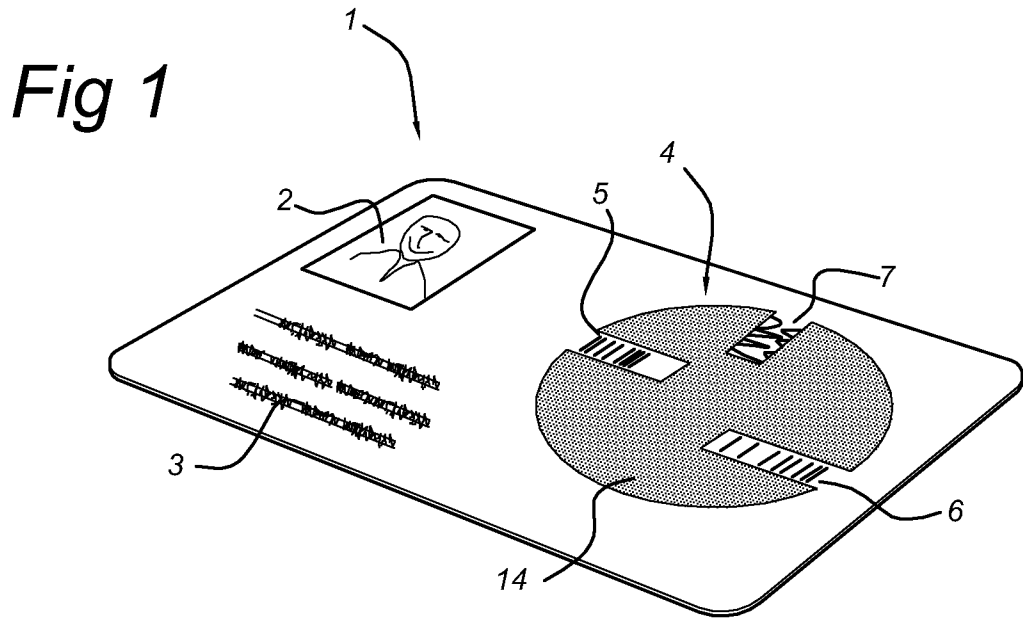
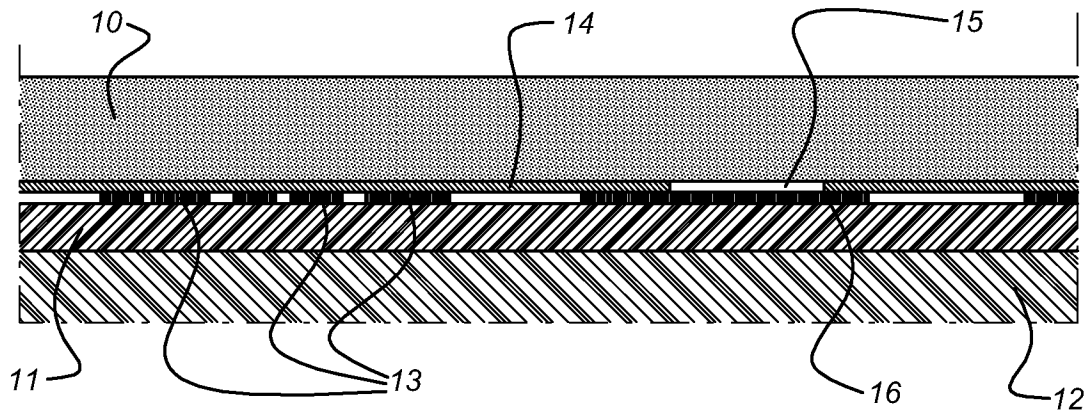


Fig 3



**INTERNATIONAL SEARCH REPORT**

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**A. CLASSIFICATION OF SUBJECT MATTER**  
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According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No. |
|-----------|--|-----------------------|
| A         | EP 0 170 832 A (KURZ LEONHARD FA)<br>12 February 1986 (1986-02-12)<br>abstract; figure 2   | 1, 13                 |
| A         | EP 0 559 069 A (KURZ LEONHARD FA [DE])<br>8 September 1993 (1993-09-08)<br>abstract; figure 3  | 1                     |
| A         | US 5 331 443 A (STANISCI JOSEPH J [US])<br>19 July 1994 (1994-07-19)<br>abstract; figures 1,2  | 2                     |
| A         | EP 0 758 587 A (LANDIS & GYR TECH INNOVAT<br>[CH] ELECTROWATT TECH INNOVAT CORP [CH])<br>19 February 1997 (1997-02-19)<br>abstract; figure 6 | 2                     |
|           | -/--   |                       |

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                   | Relevant to claim No. |
|-----------|--|-----------------------|
| A         | US 5 522 623 A (SOULES JACK A [US] ET AL)<br>4 June 1996 (1996-06-04)<br>abstract; figure 1<br>----- | 9,10,15               |

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/NL2008/050510

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date          |
|--|------------------|-------------------------|---------------------------|
| EP 0170832                             | A                | 12-02-1986              | DE 3422908 A1 02-01-1986  |
|  |                  |                         | JP 6030983 B 27-04-1994   |
|  |                  |                         | JP 61092896 A 10-05-1986  |
|  |                  |                         | US 4629647 A 16-12-1986   |
|  |                  |                         |                           |
| EP 0559069                             | A                | 08-09-1993              | AT 139487 T 15-07-1996    |
|  |                  |                         | BR 9300682 A 31-08-1993   |
|  |                  |                         | DK 559069 T3 15-07-1996   |
|  |                  |                         | ES 2089608 T3 01-10-1996  |
|  |                  |                         | HK 1003986 A1 13-11-1998  |
|  |                  |                         | JP 3877337 B2 07-02-2007  |
|  |                  |                         | JP 6064375 A 08-03-1994   |
|  |                  |                         | US 5383687 A 24-01-1995   |
|  |                  |                         |                           |
| US 5331443                             | A                | 19-07-1994              | NONE                      |
|  |                  |                         |                           |
| EP 0758587                             | A                | 19-02-1997              | AU 702924 B2 11-03-1999   |
|  |                  |                         | AU 6088896 A 13-02-1997   |
|  |                  |                         | CH 690067 A5 14-04-2000   |
|  |                  |                         | DE 59603052 D1 21-10-1999 |
|  |                  |                         | JP 3883232 B2 21-02-2007  |
|  |                  |                         | JP 9048171 A 18-02-1997   |
|  |                  |                         | PL 315565 A1 17-02-1997   |
|  |                  |                         | RU 2150392 C1 10-06-2000  |
|  |                  |                         | US 5759420 A 02-06-1998   |
|  |                  |                         |                           |
| US 5522623                             | A                | 04-06-1996              | NONE                      |