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**AT BE CH DE DK ES FR GB GR IE IT LI LU MC
NL PT SE**(71) Applicant: **DORNED B.V.**
Herengracht 331
NL-1016 AX Amsterdam(NL)(72) Inventor: **Boots, Petrus Bernardus**
Herengracht 331
NL-1016 AX Amsterdam(NL)
Inventor: **Schomper, Frans**
Herengracht 331
NL-1016 AX Amsterdam(NL)(74) Representative: **Lips, Hendrik Jan George, Ir.**
HAAGSCH OCTROOIBUREAU Breitnerlaan
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NL-2596 HG Den Haag (NL)(54) **Fraud-proof identification document, as well as method of making the same.**

(57) The invention relates to a fraud-proof identification document. This identification document consists of a laminate of two uniform, completely overlapping, transparent covering sheets of thermosetting plastic material (1, 1') at their inner sides being provided with a thin adhesive layer of thermoplastic plastic material (2, 2'). With the help of a laser printer or another suitable type of printer, the identification data (digits, letters, passport photos, and the like)

are printed on the adhesive layer (2) of one of the transparent covering sheets (2) according to point patterns (3, 4, 5), after which both sheets are laminated on to each other by hot pressing, so that both adhesive layers form one fused adhesive layer, in which the identification data have been accommodated. Disengaging the adhered covering sheets is not possible without damaging the stored identification data.

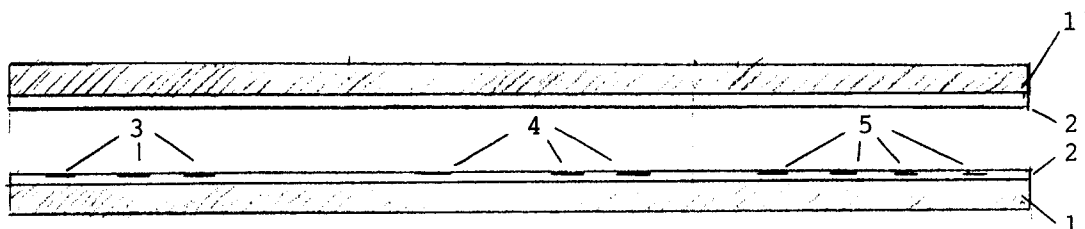


FIG. 1

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The invention relates to a fraud-proof identification document, consisting of a laminate of two uniform and completely overlapping, transparent covering sheets of thermosetting plastic material, which at their inner sides have been provided with a thin adhesive layer of thermoplastic plastic material and have been laminated on to each other by hot-pressing while enclosing the identification data. The invention also relates to the making of such identification documents.

In the sense of this invention, identification documents are understood to mean passes such as admission passes, bank passes, credit cards, as well as documents issued by the central government, such as passports, driving licences, and the like. In order to protect such documents intended for specific personal use against forgery, nowadays they are usually designed in the way as described in the introduction, that is, coated with a laminate of thermosetting plastic material. It is common use, to enclose the document concerned, consisting of printed paper, cardboard, or plastic material, with two transparent covering sheets of thermosetting plastic material, each provided with a thin adhesive layer of thermoplastic material, and subsequently laminate this entirety by hot-pressing.

A thus prepared identification document does offer a primary protection against forging, but does not completely exclude this possibility, as it remains possible to remove the laminate by a heat treatment, change the data of the document, for example by applying another passport photo, and subsequently laminate the thus forged document anew.

The aim of the invention is to provide an identification document, which is absolutely fraud-proof, and in which disengaging the laminate inevitably leads to destruction of the identification data enclosed.

To that end, the invention provides a fraud-proof identification document as described in the introduction, characterized in that the identification data were printed on the adhesive layer of one of the covering sheets by a printer, prior to lamination.

By applying the identification data on one of the adhesive layers of the covering sheets with the help of a printer, it is achieved, that after lamination, these data are so to speak part of a common binding layer, which is formed by the two adhesive layers after hot-pressing of the laminate. The identification data in the shape of for example ink dot patterns present in this binding layer enclosed by two transparent covering sheets, remains clearly visible and legible, because during laminating e.g. with hot pressing rollers, no lateral displacement of the adhesive layers in relation to each other will occur. However, should one want to reopen such a

laminate again, for example by exposing it to the temperature of the hot pressing, pulling both covering sheets from each other would cause the printed pattern to be pulled apart in an irregular way, thereby damaging it such that on laminating anew the originally applied information is damaged to such an extent, that the laminate can no longer be used as an identification document.

Instead of printing the identification data on the adhesive layer of one of both covering sheets, according to the invention, an intermediate sheet can be laminated along as well. In that case, the invention is characterized in that an intermediate sheet of thermosetting plastic material, being provided with a thin adhesive layer of thermoplastic material on at least one side has been laminated along between the two covering sheets, on which third sheet, on its adhesive layer, the identification data have been printed by a printer prior to lamination. This last embodiment is preferred, if one requires a slightly thicker and stronger identification document. Moreover, the intermediate sheet need not be transparent, so that the identification can be made to stand out in contrast to a white back layer. However, in this embodiment the printing patterns of the identification data are in the middle of a binding layer, consisting of two original adhesive layers of the intermediate and one of the covering sheets respectively, so that opening the laminate under heat here will inevitably lead to destruction of the information contents as well.

Effectively, printing of the adhesive layer of one of both covering sheets or of an intermediate sheet can take place with the help of a controlled laser printer, coupled to a scanner, which scans and prints the information to be applied point by point. In this way, passport photos, such as used with many of such documents, can be accommodated as well.

The invention also provides an efficient method of making a number of identification documents as described hereinbefore.

For making identification documents, in which the identification data are printed on the inner side, provided with a adhesive layer, of one of both covering sheets, the method according to the invention is characterized in that a first transparent sheet of thermosetting plastic material, coated on one side with a thin adhesive layer of thermosetting plastic material, which sheet has the size of a number of identification documents, is printed with identification data for a number of identification documents on the coated sides according to sections, by a printer, that a second, transparent sheet, similar and uniform to the first sheet, is put on this first sheet with the adhesive layers of both sheets facing each other and laminated with the first sheet by hot pressing, and that the laminate obtained is

cut according to sections to form a corresponding number of identification documents.

For making identification documents with an enclosed intermediate sheet, the method according to the invention is characterized in that a sheet of thermosetting plastic material, coated with a thin adhesive layer of thermoplastic plastic material on at least one side, which sheet has the size of a number of identification documents, is printed with identification data for a number of identification documents according to the sections by a printer, that this sheet is positioned between two transparent sheets of thermosetting plastic material, each of them coated on one side with a thin adhesive layer of thermoplastic material, which two sheets have the same dimensions as the intermediate sheet and have their adhesive layers facing each other, that the three sheets are laminated by hot pressing, and that the laminate obtained is cut according to the sections to form a corresponding number of identification documents.

Efficiently, in this method, printing with identification data is performed by a laser printer coupled to a scanner, at which identification data are scanned and printed point by point.

The method according to the invention is particularly suitable for programmed automated processing of a series of identification documents. By programmed laser printing, a relatively large sheet of thermosetting plastic material can readily be printed with a number of identifications next to and under each other on its adhesive layer, which are distributed across the large sheet matrix-wise. After laser print printing, the second sheet is laid up, or the sheet is positioned between two outer covering sheets, and laminating takes place in one hot pressing operation, as a result of which one obtains a laminated plate consisting of a number of information documents positioned next to and under each other section-wise, that only need to be cut loose from each other, which can simply take place with the help of suitable equipment. Each of the identification documents thus obtained is completely fraud-proof, since in all these documents the printing ink is situated in the interior of a common binding layer of two enclosing sheets of thermosetting plastic material.

The invention is now further explained by means of an embodiment, in which the making of a number of identification documents with the help of two covering sheets to be laminated is explained. In the drawing

Fig. 1 shows a both covering sheets prior to laminating in diagrammatical side view in cross-section,

Fig. 2 shows the laminate obtained by hot pressing, likewise in diagrammatical side view in cross-section, and

Fig. 3 shows a diagrammatical plan view of this laminate with the subdivision in individual identification documents indicated thereon.

In fig. 1, a transparent sheet of thermosetting material has been indicated by 1, for example a high-grade polyester. This sheet 1 is coated with a thin layer 2 of thermoplastic adhesive material, for example ethyl vinyl acetate. The dimensions of this sheet have been selected such, that as seen in fig. 3, a series of identifications can be applied thereon next to and under each other (identifications 1 through 6).

This sheet is used for printing identification data thereon, in which a laser printer prints these data, indicated by 3, 4 and 5, on the adhesive layer 2. The data concerned of various identifications (3, 4, 5) are printed point by point after point by point opto-electronic scanning of basic data, digits, passport photos and the like, and the data belonging to a specific identification are present in one of the sections on the sheet 1.

After printing with identification data, a second, uniform and transparent sheet 1' provided with a similar adhesive layer 2' is laid on to the adhesive side 2 of the first sheet 1 with the adhesive side 2'.

Subsequently, hot pressing takes place, for example with hot pressing rollers or with hot pressing plates, as a result of which a laminate is formed, as shown in fig. 2.

As can be seen in fig. 2, this laminate consists of two transparent outer layers 1 and 1' of polyester or another suitable thermosetting material, with a binding layer 2'' of the thermoplastic material of the original adhesive layer 2 and 2' therebetween. Within this binding layer 2'', all printed identification data have now been completely contained in the binding material, whereby it is guaranteed that the laminate can not be opened without taking the printing ink information 3, 4 and 5 from its original connection and there consequently destroying it as identification.

Fig. 3 shows a diagrammatical plan view of the laminate obtained with the border lines of the several identifications indicated thereon.

By cutting the laminate through across the full lines, one obtains the individual identifications 1 through 6, which represent very reliable and fraud-proof safety documents, in which forgery later on is absolutely impossible.

The method can be modified by employing an intermediate sheet, also made of polyester, which however need not be transparent, and has likewise been provided with a thin adhesive layer of thermoplastic material, on to which the identification data are printed in the same way. Subsequently, this intermediate sheet is positioned between two covering sheets according to fig. 1, after which laminating takes place. Thus, once again one obtains a

laminate with a number of identifications applied thereon, which can be separated from each other in the same way in order to obtain individual identification documents.

It should be understood, that many modifications and variations are possible within the field of the invention. If, for example, one requires rounded-off corners at the individual identification documents, cutting can be substituted by punching, for example.

It is also possible to make "kangaroo-type" laminates as described in dutch patent application 80 04467 instead of the usual laminates.

After reading the above, further variations will be apparent to the expert.

Claims

1. Fraud-proof identification document, consisting of a laminate of two uniform and completely overlapping, transparent covering sheets of thermosetting plastic material, which at their inner sides have been provided with a thin adhesive layer of thermoplastic plastic material and have been laminated on to each other by hot-pressing while enclosing the identification data, **characterized in** that the identification data were printed on the adhesive layer of one of the covering sheets by a printer, prior to lamination.
2. Fraud-proof identification document, consisting of a laminate of two uniform and completely overlapping, transparent covering sheets of thermosetting plastic material, which at their inner sides have been provided with a thin adhesive layer of thermoplastic plastic material and have been laminated on to each other by hot-pressing while enclosing the identification data, **characterized in** that an intermediate sheet of thermosetting plastic material, being provided with a thin adhesive layer of thermoplastic material on at least one side has been laminated along between the two covering sheets, on which third sheet, on its adhesive layer, the identification data have been printed by a printer prior to lamination.
3. Method of making a number of identification documents according to claim 1, **characterized in** that a first transparent sheet of thermosetting plastic material, coated on one side with a thin adhesive layer of thermosetting plastic material, which sheet has the size of a number of identification documents, is printed with identification data for a number of identification documents on the coated sides according to sections, by a printer,

that a second, transparent sheet, similar and uniform to the first sheet, is put on this first sheet with the adhesive layers of both sheets facing each other and laminated with the first sheet by hot pressing, and

that the laminate obtained is cut according to sections to form a corresponding number of identification documents.

4. Method of making a number of identification documents according to claim 2, **characterized in** that a sheet of thermosetting plastic material, coated with a thin adhesive layer of thermoplastic plastic material on at least one side, which sheet has the size of a number of identification documents, is printed with identification data for a number of identification documents according to the sections by a printer,

that this sheet is positioned between two transparent sheets of thermosetting plastic material, each of them coated on one side with a thin adhesive layer of thermoplastic material, which two sheets have the same dimensions as the intermediate sheet and have their adhesive layers facing each other,

that the three sheets are laminated by hot pressing, and

that the laminate obtained is cut according to the sections to form a corresponding number of identification documents.

5. Method according to claim 3 or 4, **characterized in** that printing with identification data is performed by a laser printer coupled to a scanner, at which identification data are scanned and printed point by point.

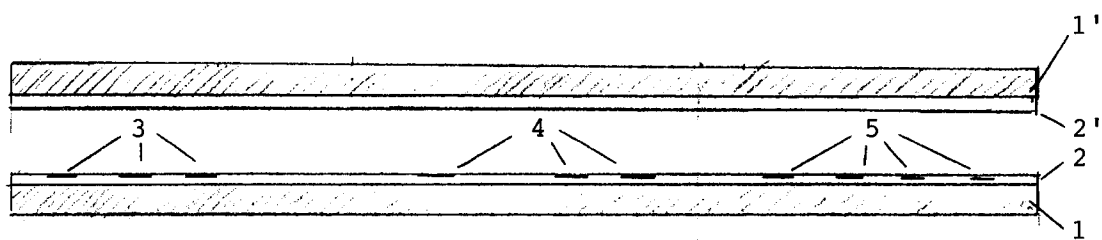


FIG. 1

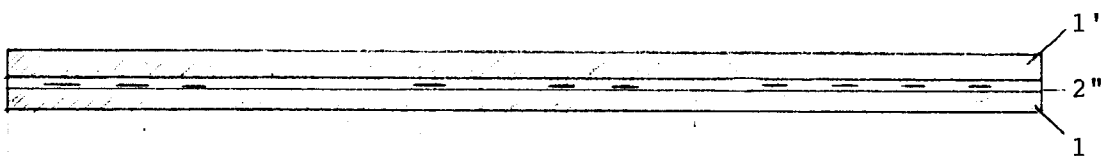


FIG. 2

IDENT. 1	IDENT. 2	IDENT. 3
IDENT. 4	IDENT. 5	IDENT. 6

FIG. 3



European Patent
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EUROPEAN SEARCH REPORT

Application Number

EP 92 20 3406

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.5)
A	EP-A-0 013 418 (HOECHST) * page 5, line 13 - line 24; figures 1,2 * -----	1,2	B42D15/10
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B42D B32B
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 12 MARCH 1993	Examiner EVANS A.J.
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			