

Method for producing information page and information page

BACKGROUND OF THE INVENTION

5 1. Field of the Invention

[0001] The present invention relates to an information page for a security document, such as a passport.

2. Description of Prior Art

10 [0002] Properties required from an information page of a security document are partly contradictory. First, the structure of an information part of the information page should make it impossible for a forger to disassemble the information part. A further requirement is that at least some of the information of the information page can be entered thereto by utilizing laser engraving. In order to achieve these goals, in practice the information part has to be
15 manufactured of a material whose bending properties and bending resistance are poor.

[0003] However, an information page should have good bending properties as well as good bending resistance. Consequently, it is necessary to fasten a flexible and bending durable connecting part to the information part
20 so as to enable the information page to be connected to the security document. In order to achieve a sufficient security level, the information part of the information page is to be connected to the connecting part in a manner not allowing these parts to be detached from one another without leaving visible marks to reveal this.

25 [0004] A solution is previously known where a material having a net-like structure is utilized in producing an attachment part. Advantages obtained with such a solution are good bending properties and a good bending durability. However, a drawback with this solution is that the material having a net-like structure is more difficult to handle during the manufacturing process of the
30 information page, since even relatively small undesired stretching of the material leads to changes in shape or breakages of the material.

SUMMARY OF THE INVENTION

[0005] An object of the present invention is to solve the above mentioned drawback and to provide a solution which makes it possible to obtain an information page with desired properties. This object is achieved with a method of producing an information page according to independent claim 1 and with an information page according to independent claim 8.

[0006] In the present invention, a support layer is used for supporting the material having a net-like structure. This support layer is attached to the material having a net-like structure during the manufacturing process in order to obtain an attachment part which is easier to handle during subsequent manufacturing steps and which ensures that the produced information page has the desired properties. Also after the production process during use of the security document, the support layer provides support for the material having a net-like structure.

[0007] Preferred embodiments of the method and information page are disclosed in dependent claims 2 to 7, 9 and 10.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] In the following, the present invention will be described in closer detail by way of example and with reference to the attached drawings, in which

Figure 1 shows a security document with an information page according to the invention,

Figure 2 illustrates a first embodiment of the invention,

Figure 3 illustrates a second embodiment of the invention,

Figure 4 illustrates a third embodiment of the invention, and

Figure 5 illustrates a fourth embodiment of the invention.

DESCRIPTION OF AT LEAST ONE EMBODIMENT

[0009] Figure 1 shows an information page 1 according to the invention, which has been connected to a security document. In the example of Figure 1, the security document is a passport whereto the information page 1 has been fastened by means of its connecting part 2. The information page 1 can be fastened to the security document e.g. by means of a stitch, i.e. in the same manner as other pages included in the security document.

[0010] An upper surface of an information part 3 of the information page shows identification information provided on the information page, such as the name, date of birth, photograph, et cetera of the passport owner. Some of the information may have been entered utilizing e.g. laser engraving technology while some of the information may have been entered utilizing a printing ink.

[0011] Figure 2 illustrates a first embodiment of the invention. Figure 2 shows steps A to F for producing an information page.

[0012] In steps A and B an information part 3 is produced. In this embodiment, the information part is manufactured by arranging at least two material sheets 4 on top of each other and by attaching these sheets to each other at a raised temperature by laminating. A suitable material for the sheets 4 is polycarbonate (PC), for instance. In such a case, at least one of the sheets 4 is preferably made of clear carbonized polycarbonate. Thus, energy originating from a laser beam causes the plastic material to darken at points at which energy has been directed. Consequently, desired information can be written and drawn by laser engraving to the information page. After lamination, a uniform information part 3 is obtained.

[0013] It is shown by way of example in connection with steps A and B of Figure 2 that the information part 3 is produced to have a step in the lower left corner. Though such a step makes it possible to produce an information page with a smooth lower surface in Figure 2, as the attachment part can be received in the step, this step is not absolutely necessary. In the example of Figure 2, the step is produced by attaching to each other material sheets 4 of different sizes. This is, however, only one alternative. Another alternative is to utilize material sheets of a corresponding size, preferably of a size which is sufficient to produce a plurality of information parts. In such a case, the sheets are attached to each other by laminating. After lamination, the attached sheets are cut down into a plurality of information parts. Finally, the single information parts are processed in a suitable manner to produce a step as shown in Figure 2. A prior art solution for such processing in order to achieve a step in the information part is known from EP-A-1380442, for instance.

[0014] In step C, a material 5 having a net-like structure is put to use. The term "net-like structure" refers to a material layer with holes through it, such as to a perforated sheet, to a fabric or to a woven material layer consisting of a plurality of intersecting threads. In order to make it easier to handle the

material 5 having a net-like structure, a support layer 6 is placed on top of it. The support layer 6 is then attached to the material 5 having a net-like structure by laminating layers 5 and 6 to each other, for instance. If lamination is used, the lamination process can be carried out with a hot roll laminator, for instance. During the attachment step, the size of the material layers 5 and 6 is preferably sufficient to produce a plurality of attachment parts for a plurality of information pages. Examples of materials suitable for layers 5 and 6 include a polyester fabric (woven) for the material 5 having a net-like structure and a copolyester film for the support layer 6.

10 [0015] In connection with step C, a predetermined pattern or text can be printed on one of the layers 5 or 6 before or after these layers have been attached to each other. In such a case, the attachment part will have a pattern or a text when the manufacturing process is completed. If a forger attempts to manipulate the attachment part in order to change the information page of the security document, for instance, such an attempt is easier to detect since the printed pattern or text may change its shape during the attempted forgery.

15 [0016] In order to avoid practical difficulties while printing on the material having a net-like structure, the printing is preferably provided on the support layer 6 instead. One preferred alternative is to print on the surface of the support layer 6 which comes in contact with the material 5 having a net-like structure as layers 5 and 6 are attached to each other. In such a case, at least one of the layers 5 or 6 has to be transparent in order for the printed pattern to be visible. One alternative is to utilize a combination of white polyester as the material having a net-like structure and a transparent copolyester film as the support layer, for instance.

20 [0017] In step D, the layer consisting of the material 5 having a net-like structure and of the support layer 6 is cut into a plurality of attachment parts 2 each having a predetermined shape. Therefore, the size of the support layer 6 is substantially the same as the size of the material 5 having a net-like structure.

25 [0018] In step E, one of the attachment parts 2 is placed against the surface of the information part 3, and the attachment part 2 is attached to the information part. The attachment can be carried out by raising the temperature in the area indicated by arrows 7 for instance in a laminating phase or in a welding phase. Practice has shown that a very advantageous way of attaching

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the attachment part 2 to the information part 3 is ultrasonic welding. Preferably, the support layer 6 is thick enough to give support to the layer 5 during manufacture, but thin enough to let the material of the information part 3 (polycarbonat, for instance) partially penetrate through it to the holes of the layer 5 while the attachment part is being attached to the information part (during ultrasonic welding, for instance). This is achieved by using a layer 5 with a thickness of 250 μm and a layer 6 with a thickness of 75 μm , for instance.

[0019] In a preferred embodiment, a tool which is pressed against the surface of the attachment part 2 at the location of the arrows 7 in order to apply heat to the attachment part 2 may be shaped in a predetermined shape. In such a case, a predetermined surface pattern is created on the surface of the attachment part 2, which makes forgery even more difficult.

[0020] After step E, the manufacturing process may end, as the information page is ready to be attached to a security document. However, in a preferred embodiment, a surface layer 8 may still be attached to the information page in an additional step F. One alternative is to use a surface layer made of a transparent or non-transparent polyester (PET), for instance. The surface layer 8 preferably covers at least a seam 9 between the information part 3 and the attachment part 2. If a transparent material is used for the surface layer 8, one advantage is that a forgery attempt to break the seam 9 between the information part 3 and the attachment part 2 is easier to detect, since the seam 9 is visible through the transparent surface layer.

[0021] In a preferred embodiment of the invention a surface 10 of the information part 3 to which the attachment part 2 is to be attached may be shaped to have a predetermined shape including protrusions, grooves or cavities, for instance. This improves the attachment of the attachment part 2 to this surface during welding, for instance.

[0022] Figure 3 illustrates a second embodiment of the invention. More precisely, Figure 3 shows an information page 1', which is very similar to the one shown in connection with step F in Figure 2 and which is manufactured in a way similar to that shown in Figure 2.

[0023] A difference between the embodiment in Figure 3 and the embodiment of Figure 2 is that the layers 5 and 6 are arranged in a different order. In this embodiment, the material 5 having a net-like structure is on top

of the support layer 6 while in the embodiment of Figure 2 the order is opposite. The information page 1' can be manufactured exactly as explained in connection with Figure 2, with the exception that in step E the attachment part 2 is arranged in an upside down position, as compared to that illustrated in connection with step E in Figure 2.

[0024] The information page 1' in Figure 3 is shown to have a similar surface layer 8 to that shown in Figure 2. However, as in Figure 2, it is not absolutely necessary to have such a surface layer 8 in the embodiment of Figure 3.

10 [0025] Figure 4 illustrates a third embodiment of the invention. The embodiment of Figure 4 is in several ways similar to the one explained in connection with Figure 2, and therefore the embodiment of Figure 4 is mainly explained by pointing out the differences between these embodiments.

[0026] Steps A' and B' for manufacturing the information part 3 correspond to steps A and B described in connection with Figure 2.

[0027] In step C', the attachment part consists of the material 5 having a net-like structure alone, and this material is attached to the information part 3. The attachment can be carried out by laminating or welding, for instance.

[0028] In step D', a support layer 6 is attached to the material 5 having a net-like structure. The attachment can be carried out by laminating or welding, for instance.

[0029] In step E', layers 5 and 6 are cut in order to obtain an attachment part with a predetermined shape. The support layer 6 supports the material 5 having a net-like structure during cutting in order to ensure that the layer 5 does not change its shape or break during the cutting. In addition, step E' may include attachment of a surface layer 8 to cover at least the seam 9 between the attachment part and the information part 1'. However, such a surface layer is not absolutely necessary.

[0030] Figure 5 illustrates a fourth embodiment of the invention. The information page 1" shown in Figure 5 mainly corresponds to the previously described embodiments. However, in the case of Figure 5, the attachment part 2 is arranged to penetrate into the material of the information part 3, instead of laying against the top or bottom surface of the information part as in the previous embodiments. The layers 5 and 6 of the attachment part can be

arranged as shown in Figure 5 or, alternatively, in an opposite order, in which case the layer 6 is on top of the layer 5.

[0031] The manufacture of the information page 1" of Figure 5 can be carried out by first producing the attachment part 2 as shown in steps C and D of Figure 2, for instance. Then, the attachment part 2 is arranged to penetrate
5 between sheets which, after lamination, form the information part 3. In that position, the sheets are laminated to each other and to the attachment part 2.

[0032] It is to be understood that the above description and the accompanying figures are only intended to illustrate the present invention. It
10 will be obvious to those skilled in the art that the invention can be varied and modified also in other ways without departing from the scope of the invention.

CLAIMS:

1. A method for producing an information page (1, 1', 1'') for a
5 security document, said method comprising:
 producing an information part (3) for said information page,
 producing a flexible and bending resistant attachment part (2) by
utilizing a material (5) having a net-like structure,
 attaching said attachment part to said information part (3), and
10 supporting, during manufacture of said information page (1, 1', 1''),
said material (5) having a net-like structure by attaching (D, D') a support layer
(6) to the material (5) having a net-like structure, characterized in
 attaching (F, E') a surface layer (8) of a transparent material to said
information page (1, 1') to cover at least a seam (9) between said information
15 part (3) and said attachment part (2).
2. A method according to claim 1, characterized in that said support
layer (6) is attached (D) to the material (5) having a net-like structure prior to
attaching (E) said attachment part (2) to the information part (3).
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3. A method according to claim 1, characterized in that
 said attachment part with a material (5) having a net-like structure is
attached (C') to the information part (3) prior to attaching (D') said support
layer (6) to the material (5) having a net-like structure, and
25 said attachment part is cut (E') into a predetermined shape after
said support layer (6) is attached (D') to the material (5) having a net-like
structure.
4. A method as claimed in any one of claims 1 to 3, characterized in
30 that said method comprises printing a predetermined pattern or text on said
material (5) having a net-like structure or on said support layer (6).
5. A method as claimed in any one of claims 1 to 4, characterized in
that said attachment part (2) is attached to said information part (3) by
35 ultrasonic welding.

6. An information page (1, 1', 1'') for a security document, said information page comprising:

an information part (3), and

5 an attachment part (2) for attaching said information page to said security document, and which attachment part (2) is attached to said information part (3), said attachment part (2) comprising a material (5) having a net-like structure, and a support layer (6) which is attached to said material (5) having a net-like structure and which is of substantially the same size as said material (5) having a net-like structure, characterized in that

10 said information page (1) comprises a surface layer (8) of a transparent material covering at least a seam (9) between said information part (3) and said attachment part (2).

7. An information part as claimed in claim 6, characterized in that
15 said attachment part (2) is provided with a predetermined pattern or text.