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(71) Applicants:
• **ASK**
06250 Mougins (FR)
• **De La Rue International Limited**
Basingstoke, Hampshire RG22 4BS (GB)

(72) Inventors:
• **BENATO, Pierre**
06330 Roquefort Les Pins (FR)
• **NAULLET, Hervé**
06600 Antibes (FR)
• **QUANTON, Simon**
Wokingham, Berkshire RG40 4PA (GB)

(74) Representative: **Decobert, Jean-Pascal et al**
Cabinet Hautier
Office Méditerranéen de Brevets d'Invention
20, rue de la Liberté
06000 Nice (FR)

(54) **DATAPAGE FOR AN IDENTIFICATION BOOKLET AND METHOD FOR MANUFACTURING THE SAME**

(57) The present invention relates to a datapage 1 intended to be attached to an identification booklet. The datapage comprises a data sheet 2 and a connecting element 3. An edge 30 of the connecting element is fastened side by side to an edge 20 of the data sheet, the edges being perpendicular to the main surfaces 21, 22, 33, 34. As a result, the datapage 1 is free of overlapping region between the data sheet 2 and the connecting el-

ement 3. Thus, the data sheet does not need to be structured in a specific manner for attaching the connecting element to it. The data sheet is not modified by processing the attachment of the connecting element to it. The integrity of the data sheet is fully respected. Furthermore, the data sheet is fully exploitable and its security features can be shown without any compromise.

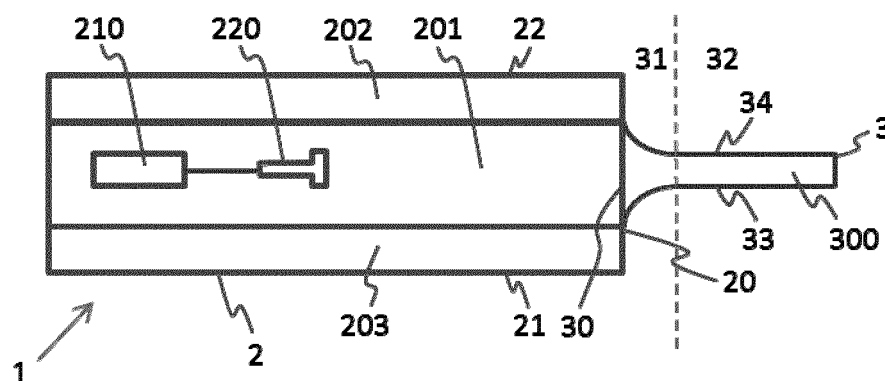


FIG. 1

Description**FIELD OF THE INVENTION**

[0001] The present invention relates generally to electronic passports. The present invention relates more particularly to datapage intended to be attached to an identification booklet.

BACKGROUND OF THE INVENTION

[0002] In order to achieve a book-like security and/or value document such as a passport booklet, datapages comprise usually a data sheet which contains personal information along with security features, and a hinge dedicated to the book binding.

[0003] Notably to ensure good readable features, the data sheet must be manufactured from material having poor bending properties. On the contrary, the hinge must have good bending properties and must be compatible with book binding process.

[0004] As a consequence, there is a need to attach a flexible connecting element to the data sheet to achieve a suitable insertion into a booklet.

[0005] Several datapages have been proposed in order to overcome this need.

[0006] As a first instance, such a datapage is known from document US 2014/0326789 A1 which discloses a multi-layered personalized datapage comprising a PET mesh/PU hinge layer inserted among multiple PC layers of a data sheet. A portion of the PET mesh/PU hinge layer extends out from the data sheet to form a hinge.

[0007] Document US 2016/0144651 A1 further discloses a method for producing a recess or a shoulder in an edge of the data sheet into which a connecting element is subsequently introduced and bound to form the hinge.

[0008] Another way to attach the connecting element to the data sheet is known from the document WO 2014/23482 A1 according to which a partial overlap of the data sheet by the connecting element is performed prior to locally merge both the data sheet and the connecting element.

[0009] These known datapages and methods to make the same are based on a partial overlap between the data sheet and the connecting element.

[0010] As a result, the data sheet must be structured for attaching a particular hinge to it and/or is modified by processing the attachment of the hinge to it. The design of the data sheet is not self-sufficient and the integrity of the data sheet is not fully respected. Furthermore, a part of the data sheet in the overlapping region cannot be fully exploited, either masking the embedded data or impacting security features. The initial exploitable area of the data sheet is reduced.

[0011] It is thus an overall object of the invention to overcome the drawbacks of such datapages.

[0012] It is another object of the invention to provide a

manufacturing method to make the same.

SUMMARY OF THE INVENTION

[0013] Such a problem is solved by providing a datapage for an identification booklet comprising a data sheet and a connecting element fastened to the data sheet. The connecting element is intended to connect the data sheet with the identification booklet.

[0014] The data sheet has a conventional parallelepiped shape with two main surfaces and a smallest dimension corresponding to the thickness of the data sheet. Surfaces including the thickness of the data sheet correspond to edges of the data sheet. Such edges are generally rectangular and flat.

[0015] The connecting element has a film shape with two main surfaces and a smallest dimension corresponding to the thickness of the connecting element. Surfaces including the thickness of the connecting element correspond to edges of the connecting element. Such edges may be flat.

[0016] An edge of the connecting element is fastened side by side to an edge of the data sheet.

[0017] The resulting technical effect is a datapage free of overlapping region between the data sheet and the connecting element. Thus, the data sheet does not need to be structured in a specific manner for attaching the connecting element to it. More particularly, the data sheet, or even the edge of the data sheet, may show neither a recess, nor a shoulder, which would be dedicated to enable its fastening to the connecting element. The data sheet is not modified by processing the attachment of the connecting element to it. The design of the data sheet is self-sufficient. The integrity of the data sheet is fully respected.

[0018] In this respect the data sheet remains anyhow customizable for instance by laser engraving. As a result, all the security features can be shown without any compromise.

[0019] The invention relates as well to a method of manufacturing a datapage comprising the following steps:

- providing a pre-laminated data sheet,
- providing a hinge material,
- providing forming tools,
- accommodating said pre-laminated data sheet between said forming tools,
- accommodating said hinge material between said forming tools,

said pre-laminated data sheet and said hinge material being adjacent to each other,

- pressurizing and heating said pre-laminated data sheet and said hinge material in order to laminate said pre-laminated data sheet and to melt said hinge material such as an edge of said hinge material gets

into contact with an adjacent edge of said pre-laminated data sheet, then

- cooling down and removing the forming tools.

[0020] Optionally, the invention has any of the following facultative features that can be used separately or in combination.

[0021] According to an embodiment, at least one forming tool is a lamination plate.

[0022] According to another embodiment, at least one lamination plate comprises a shoulder. This shoulder may be intended to accommodate the difference in thicknesses between the pre-laminated data sheet and the hinge material. The thickness of the hinge material is usually smaller than the one of the pre-laminated data sheet.

[0023] According to an embodiment, at least one lamination plate includes recesses and/or protrusions on its face intended to get in contact with the pre-laminated data sheet during the pressurizing and heating step, so as generic tactile features can be transferred onto the data sheet.

[0024] One advantage of the manufacturing method according to the invention is an easy assembly process. A single pressurizing and heating step is required to perform in the same time the lamination of the pre-laminated data sheet (possibly with engraving generic security features) and the flowing of the hinge material.

[0025] It is worth to highlight said single step may require a single uniform temperature of lamination plates, avoiding complex temperature gradients to manage.

[0026] Further objects, features and advantages of the present invention will become apparent to a person skilled in the art upon examination of the following description in reference to the accompanying drawings. It is intended that any additional advantages be incorporated herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027]

FIGURE 1 shows schematically a datapage comprising a data sheet and a connecting element according to an embodiment of the invention.

FIGURE 2 is a scheme of an identification booklet in which a datapage is bound.

FIGURE 3 shows the pre-laminated data sheet and the hinge material accommodated between the lamination plates according to an embodiment of the invention.

FIGURE 4 is a manufacturing diagram of a datapage according to an embodiment of the invention.

FIGURE 5 shows schematically a datapage comprising a data sheet and a connecting element according to another embodiment of the invention.

[0028] The figures are given as examples and are not

restrictive to the invention. They are principle schematic representations intended to facilitate the understanding of the invention and are thus not necessarily at the same scale as the practical applications. More particularly, the relative thicknesses of the various layers and films, particularly as illustrated on Figures 1 and 3, are not representative of reality.

DETAILED DESCRIPTION

[0029] The present invention may be understood more readily by reference to the following detailed description of certain embodiments of the invention.

[0030] The following detailed description of the invention refers to the accompanying drawings. While the description includes exemplary embodiments, other embodiments are possible, and changes may be made to the embodiments described without departing from the scope of the invention.

[0031] As discussed previously in the background of the invention and as illustrative in figure 2, a datapage 1 intended to be attached in an identification booklet 0, such as a passport, comprises two main parts: a data sheet 2 which carries information and a connecting element 3 which allows the datapage 1 to be bound in the identification booklet 0. The identification booklet 0 may further comprise a plurality of sheets 4, for instance made of paper.

[0032] Figure 1 shows an illustrative cross-sectional view of the datapage 1 in accordance with one embodiment of the invention. In this preferred embodiment referred as eDatapage, the data sheet 2 comprises a sheet 201 in which an integrated circuit 210 and a RF antenna 220 are embedded, and two layers 202, 203 in such a manner that said sheet 201 is in between said two layers 202, 203. Said two layers 202, 203 may be made of polycarbonate (PC). Said sheet 201 may comprise at least one PC layer.

[0033] In another embodiment, said sheet 201 may also keep free of electronic devices, in order to form a basic Datapage as opposed to the previous eDatapage.

[0034] As illustrated, the edge 30 of the connecting element 3 is fastened side by side to the edge 20 of the data sheet 2.

[0035] In one embodiment, the thickness of the connecting element 3 is decreasing from a part 31 extending from the edge 20 of the data sheet 2 to a part 32 of nominal and constant thickness.

[0036] The connecting element 3 is not necessarily centered on the edge 20 of the datasheet 2. In particular, one among the main surfaces 33, 34 of the connecting element 3 could be flat and coplanar with the corresponding one among the main surfaces 21, 22 of the data sheet 2.

[0037] At least one among the data sheet 2 and the connecting element 3 of the datapage 1 may be at least partially opaque or at least partially transparent. According to an embodiment, at least one among the data sheet

2 and the connecting element 3 of the datapage 1 carries some optical security features which are intended to be checked by transparency.

[0038] A datapage 1 comprising a hinge coplanar with the data sheet 2 may be particularly useful for using optical security features, for instance for authenticating purposes. Indeed, there can thus be no space between said datapage and an underlying page of the identification booklet 0. As an illustrative example, optical security feature(s) of an at least partially transparent datapage 1 can thus be controlled with a perfect overlaying with the underlying page of the identification booklet 0. Optical security features of the at least partially transparent datapage 1 can thus be controlled without occurrence of shadow effects on the underlying page of the identification booklet 0. Furthermore, the underlying page of the identification booklet 0 may carry another optical security feature(s) intended to cooperate by transparency with the optical security feature(s) of the at least partially transparent datapage 1. A datasheet with coplanar hinge thus allows avoiding occurrence of optical aberrations that may be prejudicial for reading optical data.

[0039] As shown on figure 2, the datapage 1 may also comprise a security feature 5 expanding from the data sheet 2 to the connecting element 3, and more particularly from the inside of the data sheet 2 to the inside of the connecting element 3. The coplanar nature of the datapage 1 is particularly suitable for this kind of arrangement of a security feature 5. For instance, such a security feature 5 may comprise a thread, at least one part of the thread being embedded into the data sheet 2 and at least one another part being embedded into the connecting element 3. The thread may further comprise a zigzag portion going, turn by turn, from the connecting element to the datasheet and inversely. The thread may further be placed in a randomized manner, so it will be more difficult realigning the thread segments should the hinge be cut and reassembled during a forgery attempt. The thread may be made of cotton material or similar in order to enforce the security of the assembly. Since the connecting element 3 may be at least partially transparent, each thread segment into the connecting element 3 may be visible by transparency (if the thread has not the same refractive index as the connecting element 3). Furthermore, the cotton material of the thread may be impregnated with UV responsive pigments or may comprise other secured cotton features. It is thus possible to illuminate a thread segment with UV light in order to observe the luminous response of the pigments.

[0040] As shown on figure 5, the connecting element 3 may further comprise a stitching area 35. Indeed, the connecting element 3 may be dedicated to be stitched together with a cover and other pages 4 of the identification booklet 0 and, at this end, a sewing thread (not shown on the figures) of the identification booklet 0 would pass through said stitching area 35 of the connecting element 3. More particularly, the connecting element 3 has a length approximately equal to the height of the identi-

cation booklet 0 and a width ranging from 5 mm to 15 mm, preferably from 8 mm to 12 mm; the stitching area expands all along the length of the connecting element and approximately on a bandwidth of 10 mm, preferably 5 mm, centered with respect to the width of the connecting element 3. This particular embodiment may also comprise a thread as a security feature 5. Advantageously, the thread may expand from the data sheet 2 to the connecting element 3 until going to the other side of the stitching area 35 of the connecting element 3. Alternately, the thread may expand only into the connecting element 3 from one side to the other side of the stitching area. According to both alternatives, once into the identification booklet 0, the thread may thus be visible from both sides of the hinge of the identification booklet 0, so it will be more difficult hide a forgery attempt consisting in cutting the connecting element 3 along the stitching area 35. The connecting element 3 is made of a hinge material 300. Technical features of the hinge material 300 should include at least one among:

- a softening point temperature less than the lowest softening, or even melting, point temperature of materials constituting said sheet 201 and/or said two layers 202, 203 of the data sheet. The difference in softening point temperatures should be at least 10%, preferably at least 20%;
- the ability to change of phase from solid to liquid or paste and back to solid phase. The change may be obtained through the application of temperature and/or pressure on the hinge material 300;
- the ability of a molecular adhesion during the change with adjacent material, typically PC at the edge of the pre-laminated data sheet 200;
- the ability to remain flexible at the end of the overall process;
- the compatibility with ultimate booklet manufacturing process such as, for instance, the book binding. The book binding may typically involve further stapling and/or gluing and/or stitching steps; and
- the compatibility with existing test protocol for finished products such as ISO 18745-1 for passport booklets or other identification documents.

[0041] A temperature at which deformation and therefore fusion is possible at a certain pressure can be ascertained using the Vicat softening point test using the ASTM D 1525 and ISO 306 standards. The Vicat softening point may be the temperature at which a specimen is penetrated to a depth of 1 mm by a flat-ended needle with a 1 mm² circular or square cross-section.

[0042] A stitch-able material may be defined as being soft enough to be punctured during a standard book binding process while being able to maintain its integrity when absorbing energy due to the deformation of the stitching as well as being able to ensuring its integrity after durability tests such as the ISO 18745-1.

[0043] Polyurethane (PU) is an example of a suitable

material providing extended durability and mechanical performance. More particularly, PU is a material which is stitch-able to the identification booklet 0 in accordance with several known book binding processes while showing extended durability and mechanical performance. Other hinge materials may be chosen among PVC, PET, silicon polymers/fibers composites and a mixture of such materials.

[0044] Said edge 20 of the data sheet 2 may thus comprise a material different from the connecting element and different from a mixture of said material with the connecting element. Small inclusions of hinge material 300 into the edge 20 of the data sheet 2 may occur without degrading, or even influencing, the mechanical fastening between them. In one embodiment, said edge 20 is made of polycarbonate (PC).

[0045] Another aspect of the present invention is to provide a manufacturing method 100 to make such a datapage 1.

[0046] Figures 3 and 4 show an embodiment of the manufacturing method 100.

[0047] According to the invention, a pre-laminated data sheet 200 is firstly provided in step 110. Step 110 may involve providing in sub-step 111 at least one sheet 201 and providing in sub-step 112 at least two layers 202, 203. Said sheet 201 may also be a pre-laminated stack of several sheets. At least one among said at least one sheet 201 and said at least two layers 202, 203 may be made of PC. Said sheet 201 may embed an integrated circuit 210 and a RF antenna 220. Said sheet 201 is disposed in between said two layers 202, 203. Hinge material 300 is also provided in step 120. The hinge material 300 may be provided in the form of a film or a powder.

[0048] As illustrated in the preferred embodiment of figure 3, two lamination plates 1000, 1100 are provided in step 130 as forming tools.

[0049] The two lamination plates may be made of steel or aluminum, potentially with respective suitable nonstick coatings.

[0050] The following steps 140, 150 consist in accommodating the pre-laminated data sheet 200 adjacent to the hinge material 300 between said two lamination plates 1000, 1100.

[0051] In order to arrange a thread as a security feature 5 into the datapage 1, as discussed previously, at least one segment of the thread may be disposed between two sheets of the pre-laminated data sheet 200 and expands by at least one another segment outside said pre-laminated data sheet 200 until going into the area in which the hinge material 300 is accommodated.

[0052] Finally, a step 160 allows to laminate the pre-laminated data sheet 200 and to melt the hinge material 300 in the same time by pressurizing and heating the lamination plates 1000, 1100. Pressure parameter may be in the range 2 to 30 bars, preferably in the range 15 to 30 bars. Temperature parameter may be in the range 100°C to 250°C, preferably in the range 170°C to 220°C. A time parameter may be considered which defines the

duration of said step 160. Said time parameter depends on the quantity of material to be transformed. The time parameter is deemed adjustable by a person skilled in the art without making significant effort or without implying inventiveness.

[0053] Said step 160 should enable the hinge material 300 to flow so that it gets in contact with the edge 20 of the pre-laminated data sheet 200, for instance by capillary phenomenon.

[0054] After cooling down to room temperature and removing the lamination plates in step 170, the edge of the connecting element 3 is fastened side by side to the edge of the data sheet 2, so as to make a datapage 1 according to an aspect of the present invention.

[0055] Although the prior art leads the man skilled in the art towards solutions involving systematically an overlapping between the data sheet and the hinge of the datapage, it has been surprisingly found that a side-by-side assembly according to the present invention shows efficient mechanical fastening between the data sheet and the hinge.

[0056] It is worth to note that melting the hinge material 300 and laminating the pre-laminated data sheet 200 can be done with a single and uniform temperature applied to at least one of the lamination plates 1000, 1100. In this case, the softening point temperature of the hinge material 300 should be strictly less than the softening or melting point temperature of the material constituting said sheet 201 and said two layers 202, 203 of the data sheet.

[0057] As shown in figure 3, for a specific embodiment of the invention, the laminations plates 1000, 1100 may comprise a shoulder 1010. This shoulder is intended to allow accommodation of hinge material 300 and pre-laminated data sheet 200 having different thicknesses from each other.

[0058] Typically, the hinge material thickness and/or the connecting element thickness could range from 50 μm to 400 μm , while the pre-laminated data sheet thickness and/or the data sheet thickness could range from 100 μm to 800 μm , preferably 200 μm to 600 μm . For information, PU may be deemed to have a softening point temperature in the range 130 to 140°C.

[0059] The laminating plates 1000, 1100 are designed such as a first area 11 accommodates the pre-laminated data sheet 200 while a second area 12 adjacent to the first one 11 is dedicated to the accommodation of the hinge material 300 (usually thinner than the pre-laminated data sheet 200). Accordingly the shoulder height is ranging from 50 μm to 400 μm .

[0060] The hinge material 300 is intended to flow in the second area 12 so that it gets in contact with the edge 20 of the pre-laminated data sheet 200. The shoulder 1010 may be slightly shifted apart from the edge 20 of the pre-laminated data sheet 200 when the latter is accommodated into the shoulder in order to accommodate the hinge material overflow. In practice, a sufficient space allowing the overflow of the hinge material 300 is naturally arranged between the pre-laminated data sheet 200 and

a stop face 1111 of the shoulder 1010. Indeed, it is not intended to maintain the pre-laminated data sheet 200 against the stop face 1111 of the shoulder 1010 in order to avoid any even slight shift of the pre-laminated data sheet 200.

[0061] In another embodiment of the invention, at least one of the lamination plates 1000, 1100 may comprise a face 1001 which is patterned with protrusions 1011 and/or recesses 1012. This patterned face 1001 is intended to transfer generic tactile features onto the pre-laminated data sheet 200 during the pressurizing and heating step 160. Said generic tactile features may take part in the aforementioned optical security features.

[0062] While the present invention has been described with reference to particular embodiments, it will be understood that the embodiments are illustrative and that the invention scope is not so limited. Alternative embodiments of the present invention will become apparent to those having ordinary skill in the art to which the present invention pertains. Such alternate embodiments are considered to be encompassed within the scope of the present invention.

[0063] For instance, in step 120, the hinge material 300 may result from a plastic injection process which is not detailed hereof. In this case, the forming tools may comprise at least one mold or piece of mold. Optionally, the forming tools may comprise a combination of at least one lamination plate and at least one piece of mold.

[0064] For instance, the thickness of the connecting element 3 may be equal to the thickness of the data sheet 2. The forming tools 1000, 1100, and more particularly the laminations plates, may thus be flat in order to accommodate a thickness of hinge material 300 equal to the thickness of said pre-laminated data sheet 200.

[0065] For another example, the integrated circuit and the RF antenna may be embedded in a surface-flush manner.

[0066] For another example, the shoulder 1010 may exhibit a bevel. This bevel may be provided in order to accommodate the overflow of the hinge material when melting or molding.

[0067] Accordingly, the scope of the present invention is defined by the appended claims and is supported by the foregoing description.

Claims

1. A datapage (1) for an identification booklet (0) comprising a data sheet (2) and a connecting element (3) fastened to the data sheet (2), wherein an edge (30) of the connecting element (3) is fastened side by side to an edge (20) of the data sheet (2).
2. Datapage (1) according to claim 1, wherein the connecting element (3) has a thickness less than or equal to a thickness of the data sheet (2).

3. Datapage (1) according to claim 1, wherein the connecting element (3) has a thickness which decreases from a part (31) extending from the edge (20) of the data sheet (2) to a part (32) of nominal thickness of the connecting element (3).
4. Datapage (1) according to any one of the previous claims, wherein one among a main surface (33, 34) of the connecting element (3) is flat and coplanar with a corresponding one among a main surface (21, 22) of the data sheet (2).
5. Datapage (1) according to anyone of the previous claims, wherein the connecting element (3) is made of a hinge material (300) with a softening point temperature lower than the lowest softening point temperature of materials constituting the edge (20) of the data sheet (2).
6. Datapage (1) according to anyone of the previous claims, wherein the connecting element (3) is made of a material chosen among: PU, PVC, PET, a composite material such as silicon polymers/fibers and a mixture of such materials.
7. Datapage (1) according to anyone of the previous claims, wherein the connecting element (3) is made of a material which is stitch-able to the identification booklet (0).
8. Datapage (1) according to anyone of the previous claims, wherein the data sheet (2) comprises at least one sheet (201), an integrated circuit (210) and a RF antenna (220) embedded in said at least one sheet (201).
9. Datapage (1) according to anyone of the claims 1 to 7, wherein the data sheet (2) is free from an integrated circuit (210) and a RF antenna (220).
10. Datapage (1) according to anyone of the previous claims, further comprising a security feature (5) expanding from the data sheet (2) to the connecting element (3), even going to the other side of a stitching area (35) of the connecting element (3).
11. An identification booklet (0) comprising a plurality of sheets (4) and at least one datapage according to anyone of claims 1 to 10.
12. A method (100) for manufacturing a datapage (1) comprising the following steps:
 - providing (110) a pre-laminated data sheet (200),
 - providing (120) a hinge material (300),
 - providing (130) forming tools (1000, 1100),
 - accommodating (140) said pre-laminated data

sheet (200) between said forming tools (1000, 1100),

- accommodating (150) said hinge material (300) between said forming tools (1000, 1100), said pre-laminated data sheet (200) and said hinge material (300) being adjacent to each other,

- pressurizing and heating (160) said pre-laminated data sheet (200) and said hinge material (300), then

- cooling down before removing the forming tools (170).

heating step (160) being performed for transferring generic tactile features defined by said at least one among recesses (1012) and protrusions (1011) onto the pre-laminated data sheet (200).

13. Method (100) according to claim 12, wherein providing (110) said pre-laminated data sheet (200) comprises:

- providing (111) at least one sheet (201) in which at least an integrated circuit (210) and at least a RF antenna (220) are embedded and
- providing (112) at least two layers (202, 203),

in such a manner that said sheet (201) is in between two layers (202, 203).

14. Method (100) according to any one of claims 12 and 13, wherein, with the forming tools (1000, 1100) being lamination plates, pressurizing and heating (160) the lamination plates (1000, 1100) with each other is performed according to pressure and temperature parameters suitable to perform at the same time the lamination of said pre-laminated data sheet (200) and the flowing of the hinge material (300).

15. Method (100) according to the previous claim, wherein the pressure parameter is ranging between 2 bar and 30 bar, and wherein the temperature parameter is ranging between 100°C and 250°C.

16. Method (100) according to anyone of claims 12 to 15, wherein, with at least one of the lamination plates (1000, 1100) comprising a shoulder (1010):

- accommodating (140) said pre-laminated data sheet (200) comprises disposing said pre-laminated data sheet (200) into the shoulder (1010) and

- accommodating (150) said hinge material (300) comprises disposing the hinge material (300) outside the shoulder (1010).

17. Method (100) according to anyone of claims 12 to 16, wherein, with at least one of said two lamination plates (1000, 1100) comprising a face (1001) patterned with at least one among recesses (1012) and protrusions (1011) and intended to get in contact with the pre-laminated data sheet (200) during the pressurizing and heating step (160), the pressurizing and

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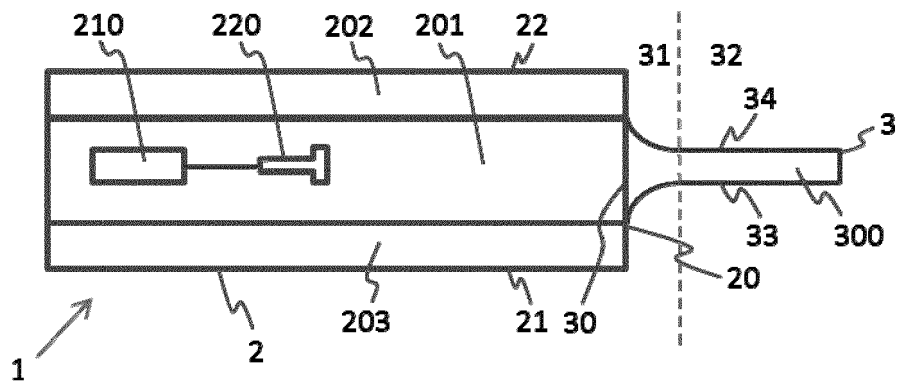


FIG. 1

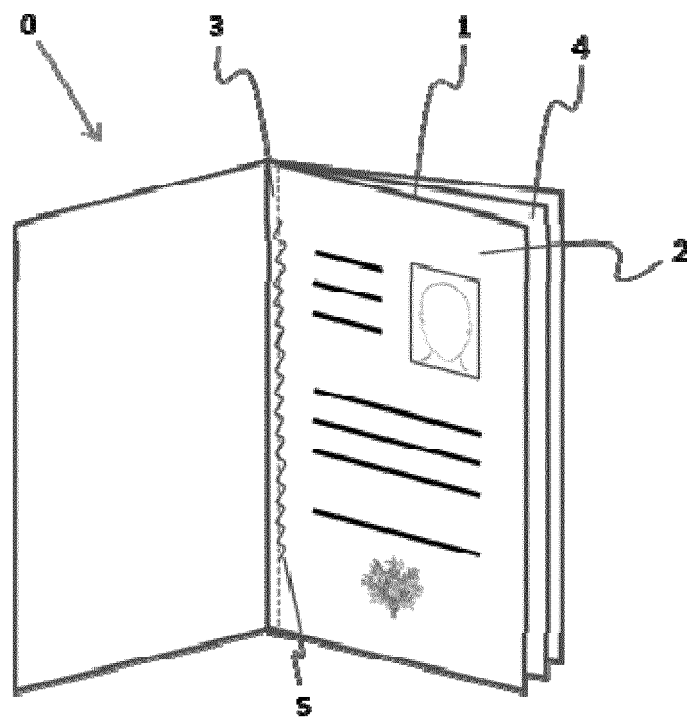


FIG. 2

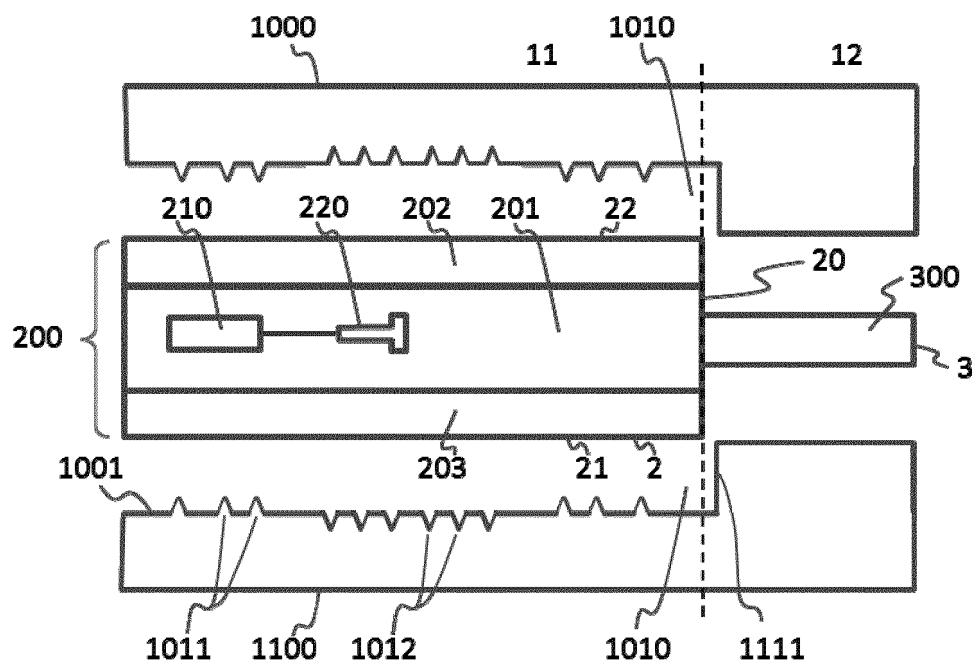


FIG. 3

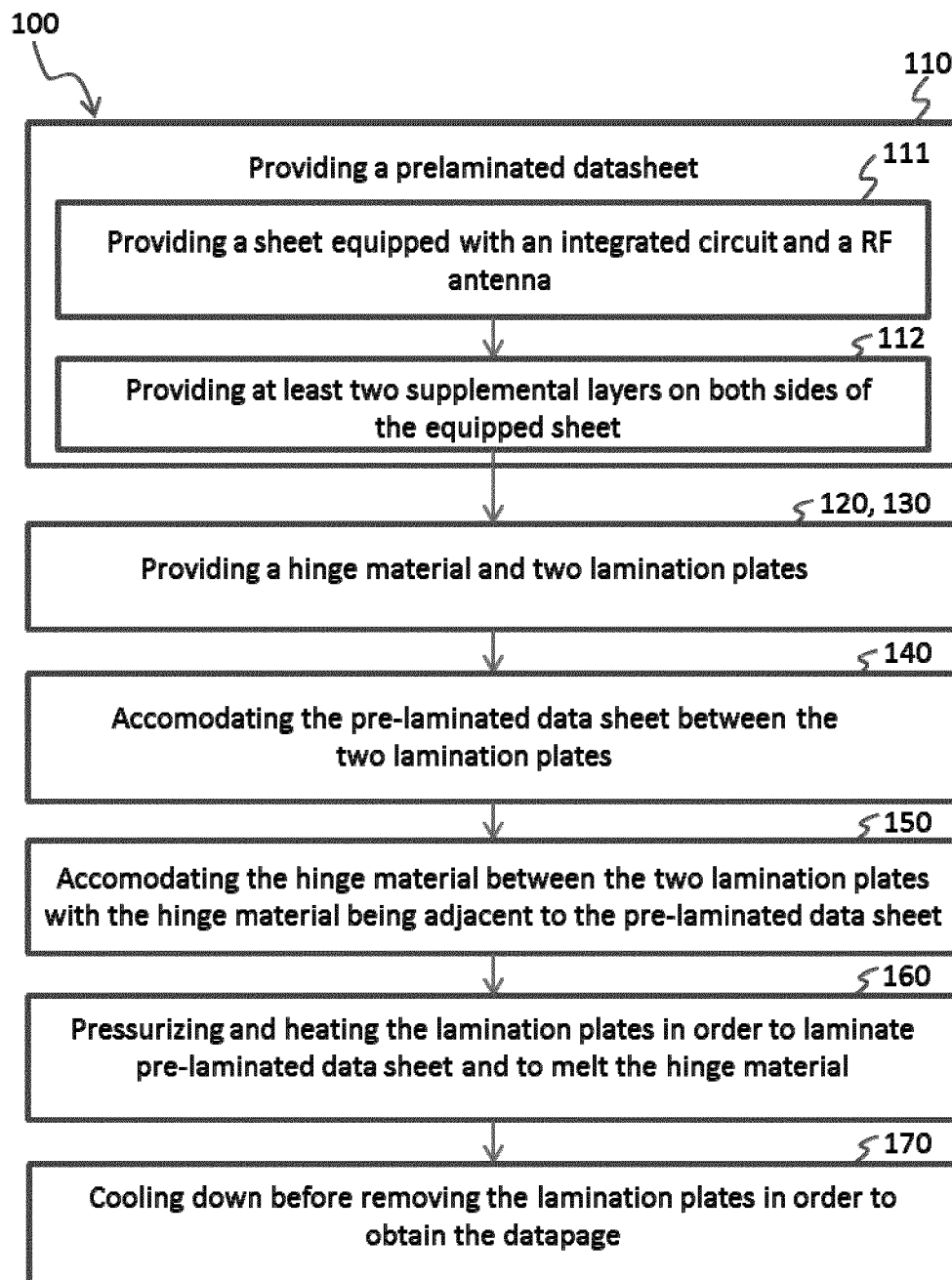


FIG. 4

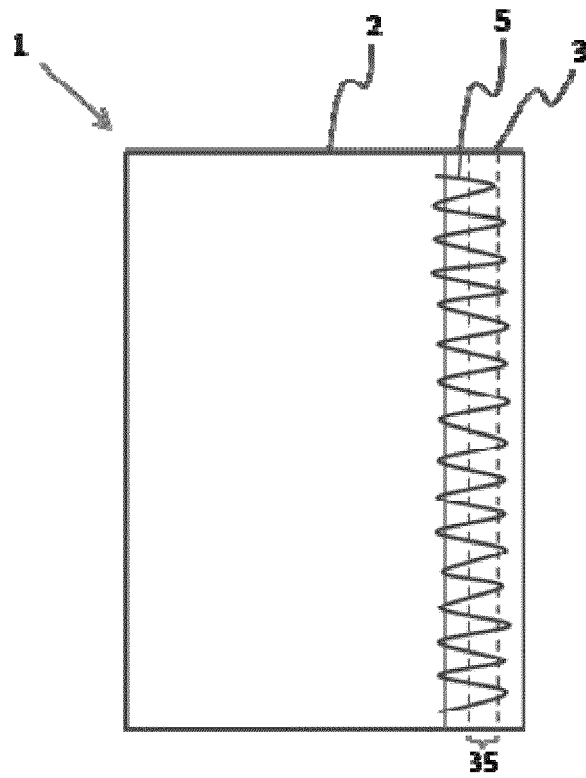


FIG. 5



EUROPEAN SEARCH REPORT

Application Number
EP 17 30 5085

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 10 2010 053640 A1 (GIESECKE & DEVRIENT GMBH [DE]) 14 June 2012 (2012-06-14)	1,2,4-9, 11	INV. B42D25/24
Y	* the whole document *	10	B42D25/455
A		3	B42D25/46
Y	WO 2016/177681 A1 (BUNDESDRUCKEREI GMBH [DE]) 10 November 2016 (2016-11-10) * claim 1; figure 9 *	10	
			TECHNICAL FIELDS SEARCHED (IPC)
			B42D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 9 May 2017	Examiner Achermann, Didier
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			

EPO FORM 1503 03.02 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 17 30 5085

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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09-05-2017

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 102010053640 A1	14-06-2012	DE 102010053640 A1	14-06-2012
		EP 2648922 A2	16-10-2013
		WO 2012076131 A2	14-06-2012

WO 2016177681 A1	10-11-2016	DE 102015208223 A1	10-11-2016
		WO 2016177681 A1	10-11-2016

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 20140326789 A1 [0006]
- US 20160144651 A1 [0007]
- WO 201423482 A1 [0008]