

Booklet with personalized data page

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The invention relates to a method of producing a booklet, in particular identity papers, this booklet having a plurality of sheets between a cover and each
10 sheet having a front side and a reverse side, and at least one data page being provided, which is firmly connected to the cover.

The invention additionally relates to a data page,
15 manufactured according to this method and a booklet manufactured according to this method.

Identity papers and, in particular, passports contain personal data which should be integrated as securely as
20 possible into the booklet or passport. In order to increase the security, it is known to introduce data pages as data carriers into passports. As a result, security against manipulations can also be increased substantially. These data pages contain at least one
25 personalization page and can be made of comparatively rigid plastic, for example polycarbonate. If such rigid data pages are bound in, for example sewn in, then under certain circumstances the passport or the booklet can no longer be closed completely. In addition, given
30 frequent use and, in particular, frequent bending of the booklet, fractures can arise in the plastic of the data page.

In the prior art, a plurality of solutions have already
35 been presented as to how data pages which are intrinsically difficult to bend could be bound into the booklet.

For example, EP 1 008 459 A discloses a method of producing a booklet which has a plurality of paper sheets and a cover and a plate as data carrier. In order to bind the plate in, a band is provided, which
5 is connected mechanically to the plate. In order to connect the band to the plate, a plastic strip is provided which has studs which engage in corresponding apertures in the band and therefore connect the band mechanically to the strip. In addition, the strip is
10 adhesively bonded or welded to the band. Connecting the band to the plate is comparatively complicated, and the strip needed for the connection represents an additional part, which has to be produced and mounted and increases the thickness of the data page.

15 WO 98/19870 discloses a passport having a data page made of thermoplastic material, which has an opaque core layer (inlet layer) and a flexible thermoplastic layer. The flexible thermoplastic layer is sewn
20 directly into the book. Here, too, there is the problem of the brittleness of the thermoplastic material.

The invention is based on the object of providing a method of the type cited which avoids the
25 aforementioned difficulties. The method is to permit the production of a booklet in which the data carrier is bound in more simply and nevertheless securely.

The object is achieved in a generic method according to
30 Claim 1.

In the method according to the invention, a flexible layer is connected directly to the data carrier, the flexible layer having further connecting means which
35 connect the said layer substantially non-detachably to the data carrier. The apertures are formed in particular by mesh openings of a textile. In particular during lamination, material of the data carrier

penetrates into the apertures or mesh openings. An additional part for a mechanical connection is not required in this method. The region of the flexible layer projecting out of the data carrier is, for
5 example, sewn in directly.

The flexible layer according the invention is a textile, for example a woven fabric or a thin sheet that is flexible and provided with apertures. According
10 to a development of the invention, it forms a central layer between two outer layers, which contain the data provided for personalization. This results in a particularly durable connection. According to a development of the invention, the data carrier forms an
15 inner layer or an inner region between two flexible layers. These two layers are produced in particular from a woven fabric or a textile.

According to a development of the invention, the
20 flexible layer is bound in by lamination. As a result, a particularly intimate and substantially non-detachable connection between the flexible layer and the data carrier can be achieved. This results in particularly high security against forgery and
25 manipulation. This is the case even when the flexible layer is bound into the data carrier only in some regions. Here, too, the flexible layer can be on the inside or outside.

30 According to a development of the invention, the flexible layer has mesh openings or other apertures or cutouts. The two outer layers are connected to each other through these apertures, in particular laminated, adhesively bonded or welded to each other. The security
35 against manipulation can therefore be increased still further.

According to a development of the invention, the flexible layer extends over the entire region of the data carrier. The flexible layer preferably has the mesh openings or apertures in the entire region of the data carrier, through which the laminated layers are connected to each other, for example laminated, welded or adhesively bonded.

According to a development of the invention, the laminated layers of the data carrier are produced from polycarbonate. By using this material, for example, a very permanent and substantially non-detachable connection through a fabric can be produced by means of lamination, adhesive bonding or welding. In this case, too, the data carrier can be an inner layer which is bound into flexible layers.

According to a development of the invention, the flexible layer, in particular in the protruding region, is provided with security features, in particular with embossing, printing, pigmentations or threads woven in. The security against manipulation is increased still further as a result. This means that it is virtually impossible to replace the data carrier by another without being noticed, in that the connection to the flexible material is detached. The threads woven in or bound in can also be loose. As a result, it is virtually impossible to replace the data carrier or the data page without being noticed.

According to a development of the invention, the flexible layer is a folded sheet, which is connected to the booklet at a fold, for example sewn in. The protruding flexible region can in this case be comparatively narrow and, for example, can have a size of a few millimetres, for example 2-3 mm. The data carrier is laid in between the two parts of the sheet and firmly connected to these parts. The connection can

be made by lamination. The data carrier can be a thin sheet or an injection-moulded part and can contain an electronic component, in particular a chip. Likewise, an antenna, which permits the non-contact transmission of data, can be arranged between the parts of the sheet.

The invention additionally relates to a data page and a booklet and, in particular, a passport which contains such a data page and is produced by this method.

An exemplary embodiment of the invention will be explained in more detail below using the drawing, in which:

Figures 1-5 each show a section through a data page according to the invention,

Figure 6 shows a view of the data page according to Figure 5,

Figure 7 shows, in schematic form, a three-dimensional view of a booklet according to the invention, this being open,

Figure 8 shows a section through the booklet according to Figure 7,

Figure 9 shows, in schematic form, a section through a variant of a booklet according to the invention and

Figure 10 shows, in schematic form, the mounting of the data carrier.

The booklet 1 shown in Figures 7 and 8 represents identity papers and, in particular, a passport and has a conventional cover 23, conventional sheets 31 bound

into the cover 23 and a data page 2, which is personalized and is produced in the form of a plate from comparatively rigid plastic. The data page 2 has, for example, a portrait 28 applied in the laser process and further data 29 which are necessary for the usual personalization. For instance, these data 29 include the date of birth, the home town and a person number. The data page 2 thus identifies the authorized carrier of the booklet 1 and is secured against manipulation.

The data page 2 shown in Figure 1 is produced by lamination. Two data carriers 9 are produced from polycarbonate, for example, and can be provided with the aforementioned data 28 and 29. Likewise, data can be contained in a chip 42 or another suitable electronic component. The chip 42 is arranged in one of the data carriers 9, for example laminated in. Laminated in between these two data carriers 9 is a flexible layer 3, which is bound into the data page 2 by a region 3a and, for example, is produced from polyethylene terephthalate. The binding is carried out by means of a lamination process, in which the two data carriers 9 are connected to the flexible layer 3 in the region 3a. The region 3a, as can be seen, extends over the entire region of the two data carriers 9. The flexible layer 3 has a region 3b which protrudes from the two data carriers 9. This region 3b is strip-like and substantially narrower than the two data carriers 9. In this region 3b there extends a sewing point 8, at which the flexible layer 3 is sewn into the booklet 1. This sewing point 8 correspondingly forms a bending point, according to Figure 8. A design with only one data carrier 9 is also conceivable. On the opposite side of the flexible layer 3 there can then be a layer without data. This is also true of the following designs, in which a flexible layer is arranged between two outer layers.

The flexible layer 3 is, for example, a textile, for example a woven fabric or knitted fabric or a thin flexible sheet provided with cutouts or apertures, in particular a thin flexible plastic film. The flexibility of the layer 8 is comparable with that of conventional sheets of a passport or is even higher. In the protruding region 3b, security embossments 32 or else other security features are provided, for example security imprints or pigmentations. If the flexible layer is a woven fabric, then security threads, not shown here, can be introduced into the region 3b, for example woven in loosely. The two data carriers 9 are thus firmly connected to the flexible layer 3 and cannot be separated from the matter without being noticed. The thickness D of the data page 2 preferably lies in the range of the usual standards and stipulations, in particular in accordance with ICAO, Doc. 9303.

Figure 2 shows the data page 24 according to a variant. In the latter, a flexible layer 4 is provided which is likewise a thin flexible sheet or a woven fabric, for example. The flexible layer 4 has a region 4a which is bound in between two data carriers 11 and which extends over these data carriers 11 only in some regions. In this region 4a there are provided apertures 15, in which connecting points 10 are formed. The apertures 15 can also be mesh openings of a textile. The two outer data carriers 11 are connected, for example by means of lamination, to a central layer 11b, which substantially has the same thickness as the flexible layer 4. The two outer data carriers 11 are, for example, connected substantially non-detachably to the central layer 11b and to the flexible layer 4, for example by means of welding, lamination or by means of adhesive bonding. The flexible layer 4 is therefore bound into the data page 24 substantially non-detachably. A protruding region 4b of the flexible layer 4 is used to bind or

sew the data page 24 into the booklet 1 or into the passport.

Figure 3 shows a data page 25 which is formed in a similar way to that according to Figure 2. A flexible layer 5 has a region 5a which, on its two surfaces, has adhesive areas 12, at which two outer data carriers 13 are connected to the flexible layer 5. Likewise, a protruding region 5b is provided here for sewing the data page 25 into the booklet 1. Here, too, the flexible layer 5 is a central layer between the two outer data carriers 13. The data carriers 13 can be multi-layer laminates.

Figure 4 shows a data page 26 which has a flexible layer 6 which is bound in between two data carriers 14. Arranged between the data carriers 14 is a central layer 14b, whose thickness corresponds to that of the flexible layer 6. The flexible layer 6 has a region 6a which is arranged between the two outer data carriers 14 and is connected to the latter. This region 6a is strip-like and extends only to some extent over the two outer data carriers 14. The central layer 14b is likewise connected to the two data carriers 14 and to the flexible layer 6. The connection can be made by lamination, welding or by adhesive bonding. As can be seen, the flexible layer 6 has no apertures. However, it can also consist of a woven fabric which has security features, for example security threads drawn in or woven in, in a protruding region 6b. The data carriers 14 and the layer 14b can have one layer or many layers.

The data page 27 shown in Figures 5 and 6 has a flexible layer 7 which has a plurality of apertures 17 which, according to Figure 6, are distributed over the entire region of two thin sheets. At these apertures 17, adhesive bonding, welding or lamination connecting

points 16 are formed, which connect the data carriers 18 to each other and to the flexible layer 7 in the region 7a. The apertures 17 can be distributed regularly or irregularly. The data carriers 18 can be
5 transparent or partially transparent, so that these connecting points 16 or apertures 17, according to Figure 6, are visible as a pattern. The apertures 17 are circular here, but non-round, for example polygonal or oval apertures, are also conceivable. In this case,
10 too, the apertures 17 can be mesh openings of a textile.

Figure 8 shows how the data page 27 can be bound into a booklet. In the region of a sewing-in point 8, the data
15 page 27 is connected to the cover 23 and further sheets 31, in particular sewn in. At this point, a bend 30 is formed. Since the flexible layer 7 in the protruding region 7b is very thin and flexible, the data page 27 behaves substantially like a conventional sheet 31. It
20 is also important that the data page 27 can be produced with a comparatively thin wall thickness D in its entire region, in particular by means of lamination.

Figure 9 shows a booklet, in particular a passport,
25 according to a variant. The booklet 33 has a cover 34 which is folded as usual at a spine 35 and into which a plurality of sheets 36 are bound in a known manner. The booklet 33 additionally has a data page 37 which has a flexible layer 38 having a fold 39 which runs parallel
30 to the spine 35. Arranged between two parts 38a and 38b of the layer 38 is a data carrier 41, which can be a plastic film or else an injection-moulded part.

Embedded in the data carrier 41 is an electronic
35 component and, in particular, an electronic chip 42, which is connected to the antenna 43 indicated in Figure 10. The chip 42 contains data which can be read without contact. The chip 42 can also have a contact

interface. The antenna 43 can also be located completely in the data carrier 27. Also conceivable is the integration of a dual chip module into the data carrier 27, which can be addressed by a contact area and without contact via an antenna. A chip 42 is also possible in the data carriers according to Figures 1 - 5 and 8. The layer 41 preferably also contains data that can be detected visually and which, for example, are applied in a known manner by means of a laser.

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The flexible layer 38 is firmly connected to the data carrier 41 according to the invention by means of lamination. During lamination, the data carrier 41 is softened and fuses to the flexible layer 38. The flexible layer 38 is a plastic film or a textile, in particular a woven fabric. A textile or a woven fabric permits an intimate and substantially non-detachable connection between the flexible layer 38 and the data carrier 41. As can be seen in Figure 9, a strip-like region 38c protrudes from the data carrier 41, and this region 38c is thus flexible and at least substantially more flexible than the other region of the data page 37. Provided in the fold 39 of this flexible region 38c is a sewing-in point 40, which extends along the fold 39 and at which the data page 37 is firmly committed to the sheets 36 and the cover 34.

According to Figure 10, the flexible layer is bound in at the sewing-in point 40 before the data carrier 41 is connected to this flexible layer 38. The data carrier 41 is thus laminated to the flexible layer 38, after the flexible layer 38 has been bound into the booklet 33 and, in particular, has been sewn in. When the data carrier 41 is bound in, it is connected to the inner side 44 of the flexible layer 38, so that the data page 37 shown in Figure 9 is produced. A design in which the chip 42 and the antenna 43 are applied directly to the flexible layer 38, for example adhesively bonded on, is

conceivable. Then, the two parts 38a and 38b of the layer 38 are connected to each other, for example fused or adhesively bonded to each other. This design has the advantage that the data carrier 41 or the chip 42 and
5 the antenna 43 can also be introduced into the booklet 33 subsequently. It is thus possible for a booklet 33 to be produced which has the flexible layer 38 but still no data carrier 41. The flexible layer 38 is then sewn into the booklet 33, as shown in Figure 10. The
10 two parts 38a and 38b are thus not yet connected to each other but firmly bound in or sewn in. This permits simple and economical and intrinsically conventional production of the booklet 33. If a data carrier 41 is needed, then the layer 31 can be incorporated in the
15 flexible sheet 38 by means of lamination.

List of reference symbols

1	Booklet	26	Data page
2	Data page	27	Data page
3	Flexible layer	28	Portrait
	3a Bound-in region	29	Data
	3b Protruding region	30	Bending point
4	Flexible layer	31	Sheets
	4a Bound-in region	32	Embossments
	4b Protruding region	33	Booklet
5	Flexible layer	34	Cover
	5a Bound-in region	35	Spine
	5b Protruding region	36	Sheets
6	Flexible layer	37	Data page
	6a Bound-in region	38	Flexible layer
	6b Protruding region	38a	Part
7	Flexible layer	38b	Part
	7a Bound-in region	38c	Protruding part
	7b Protruding region	39	Fold
8	Sewing-in point	40	Sewing-in point
9	Data carrier	41	Data carrier
10	Adhesive points	42	Chip
11	Data carrier	43	Antenna
11b	Central layer	44	Inner side
12	Adhesive areas	D	Wall thickness
13	Data carrier	D1	Width
14	Data carrier		
14b	Central layer		
15	Cutouts		
16	Adhesive points		
17	Cutouts		
18	Data carrier		
19	Top edge		
20	Front edge		
21	Bottom edge		
22	Rear edge		
23	Cover		
24	Data page		
25	Data page		

Patent claims

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1. Method of producing a booklet, in particular identity papers, this booklet (1) having a plurality of sheets (31) between a cover (23) and each sheet having a front side and a reverse side,
10 and at least one data page (2, 24-27, 37) being provided, which is firmly connected to the cover (23), the data page (2, 24-27, 37) having at least one flexible layer (3-7, 38) and this flexible layer (3-7, 38) protruding with one region (3b, 4b
15 5b, 6b, 7b) from a data carrier (9, 11, 13, 14, 18, 41) and, in this region (3b, 4b, 5b, 6b, 7b), being connected to the cover (23) and the other sheets (31), characterized in that at least in one region (3a, 4a, 5a, 6a, 7a, 38a), the flexible
20 layer (3-7, 38) has means (15) which are used as further connecting means in order to connect the data carrier (9, 11, 13, 14, 18, 41) substantially non-detachably to the flexible layer (3-7, 38).
 2. Method according to claim 1, characterized in that
25 the data carrier (2) has two outer layers (13) or one inner layer.
 3. Method according to claim 1 or 2, characterized in that the flexible layer (3, 5, 7, 38) extends over the entire region of the data carrier.
 - 30 4. Method according to one of the claims 1 to 3, characterized in that the flexible layer (3-7, 38) is a textile, in particular a plastic film.
 5. Method according to one of the claims 1 to 4,
35 characterized in that the flexible layer (4, 7, 38) has apertures (15, 17) which are used as further connecting means, at which adhesive

bonding (10, 16) or welding points one formed, which non-detachably connect the flexible layer (4, 7, 38) with the data carrier.

- 5 6. Method according to one of the claims 1 to 5, characterized in that the data carrier (2) has two outer layers (13), which at an inner side in each case an adhesive area (12), which connect these two layers (13) to the flexible layer (5).
- 10 7. Method according to one of claims 1 to 6, characterized in that security features and, in particular, embossments (32) and/or security threads, security prints or pigmentations are arranged in the protruding region (3b, 4b, 5b, 6b, 7b).
- 15 8. Data page produced according to claim 1, characterized in that it has a flexible layer (3-7, 38) which has apertures (15, 17) which are used as further connecting means.
- 20 9. Data page according to claim 8, characterized in that the flexible layer (3-7) is bound into the data carrier (9, 11, 13, 14, 18, 41) by means of lamination.
- 25 10. Data page according to claim 8 or 9, characterized in that the flexible layer (3-7, 38) is bound by means of lamination, gluing and/or welding.
11. Data page according to one of claims 8 to 10, characterized in that the flexible layer (3-7, 38) is a textile, in particular a woven fabric, a knitted fabric or a thin sheet.
- 30 12. Data page according to one of claims 8 to 11, characterized in that the flexible layer (4, 7, 38) or the textile has apertures (15, 17), at which connecting points (10, 16) are formed, which connect the data carrier (9, 11, 13, 14, 18, 41)

with the flexible layer (4, 7, 38) and especially connects two data carrier (9, 11, 13, 14, 18) with each other.

- 5 13. Data page according to one of claims 8 to 12, characterized in that the flexible layer (3-7, 38) has a protruding free region (3b, 4b, 5b, 6b, 7b) which can be bound into a booklet (1), in particular sewn in.
- 10 14. Data page according to claim 8, characterized in that the protruding region (3b, 4b, 5b, 6b, 7b) has security features (32) and, in particular, embossments and/or security threads woven in or drawn in.
- 15 15. Booklet produced by the method according to Claim 1, characterized in that this has at least one data page (2, 24-27, 38), which is bound into the booklet and, in particular, sewn in by a flexible layer (3-7, 38) laminated directly to the data carrier (9, 11, 13, 14, 18, 41).
- 20 16. Booklet according to claim 15, characterized in that the data page (2, 25-27) has at least one outer data carrier (9, 11, 13, 14, 18, 41) which is produced from plastic and, in particular, polycarbonate and which is provided with data for
25 personalization of the booklet and which is connected flatly to the flexible layer (3-7).
- 30 17. Booklet according to claim 15, characterized in that the data page (37) has a flexible layer (38) which is connected to the data carrier (37) on both outer sides of the latter.
18. Booklet according to claim 17, characterized in that the flexible layer (38) is folded and has a fold (39) in which a sewing-in point (40) is formed.

19. Booklet according to one of Claims 15 to 18, characterized in that the data carrier (9, 11, 13, 14, 18, 41) has an addressable electronic component, in particular a chip (42).
- 5 20. Booklet according to Claim 14, characterized in that the electronic component (42) is integrated into the data carrier (9, 11, 13, 14, 18, 41) and, in particular, is laminated in.

Amended claims

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1. Method of producing a booklet, in particular identity papers, this booklet (1) having a plurality of sheets (31) between a cover (23) and each sheet having a front side and a reverse side, and at least one data page (2, 24-27, 37) being provided, which is firmly connected to the cover (23), the data page (2, 24-27, 37) having at least one flexible layer (3-7, 38) and this flexible layer (3-7, 38) protruding with one region (3b, 4b 5b, 6b, 7b) from a data carrier (9, 11, 13, 14, 18, 41) and, in this region (3b, 4b, 5b, 6b, 7b), being connected to the cover (23) and the other sheets (31), wherein at least in one region (3a, 4a, 5a, 6a, 7a, 38a), the flexible layer (3-7, 38) has means (15) which are used as further connecting means in order to connect the data carrier (9, 11, 13, 14, 18, 41) substantially non-detachably to the flexible layer (3-7, 38) and wherein the flexible layer (2-7, 38) is a textile or a thin sheet, in particular a plastic film, characterized in that the flexible layer (3-7, 38) forms two outer layers (38a, 38b) or one inner layer, that the flexible layer (3-7, 38) is bound into the data carrier (9, 11, 13, 14, 18, 41) by means of lamination, wherein at the apertures (15, 17) welding points are formed, which connect the flexible layer (3-7, 38) or the flexible layers substantially non-detachably to the data carrier.
2. Method according to claim 1, characterized in that the data carrier (2) has two outer layers (13), which on the inside in each case have an adhesive area (12) which connects these two layers (13) to the flexible layer (5).

3. Method according to claim 1 or 2, characterized in that the flexible layer (3, 5, 7, 38) extends over the entire region of the data carrier.
- 5 4. Method according to one of the claims 1 to 3, characterized in that the flexible layer (3-7, 38) is a textile, in particular a plasticfilm.
- 10 5. Method according to one of the claims 1 to 4, characterized in that the flexible layer (4, 7, 38) has apertures (15, 17) which are used as further connecting means, at which adhesive bonding (10, 16) or welding points are formed, which non-detachably connect the flexible layer (4, 7, 38) with the data carrier.
- 15 6. Method according to one of the claims 1 to 5, characterized in that the data carrier (2) has two outer layers (13), which at an inner side in each case have an adhesive area (12), which connect these two layers (13) to the flexible layer (5).
- 20 7. Method according to one of claims 1 to 6, characterized in that security features and, in particular, embossments (32) and/or security threads, security prints or pigmentations are arranged in the protruding region (3b, 4b, 5b, 6b, 7b).
- 25 8. Data page produced according to claim 1, characterized in that it has a flexible layer (3-7, 38) which has apertures (15, 17) which are used as further connecting means.
- 30 9. Data page according to claim 8, characterized in that the flexible layer (3-7) is bound into the data carrier (9, 11, 13, 14, 18, 41) by means of lamination.

10. Data page according to claim 8 or 9, characterized in that the flexible layer (3-7, 38) is bound by means of lamination, gluing and/or welding.
- 5 11. Data page according to one of claims 8 to 10, characterized in that the flexible layer (3-7, 38) is a textile, in particular a woven fabric, a knitted fabric or a thin sheet.
- 10 12. Data page according to one of claims 8 to 11, characterized in that the flexible layer (4, 7, 38) or the textile has apertures (15, 17), at which connecting points (10, 16) are formed, which connect the data carrier (9, 11, 13, 14, 18, 41) with the flexible layer (4, 7, 38) and especially connects two data carrier (9, 11, 13, 14, 18) with
15 each other.
- 20 13. Data page according to one of claims 8 to 12, characterized in that the flexible layer (3-7, 38) has a protruding free region (3b, 4b, 5b, 6b, 7b) which can be bound into a booklet (1), in particular sewn in.
- 25 14. Data page according to claim 8, characterized in that the protruding region (3b, 4b, 5b, 6b, 7b) has security features (32) and, in particular, embossments and/or security threads woven in or drawn in.
- 30 15. Booklet produced by the method according to Claim 1, characterized in that this has at least one data page (2, 24-27, 38), which is bound into the booklet and, in particular, sewn in by a flexible layer (3-7, 38) laminated directly to the data carrier (9, 11, 13, 14, 18, 41).
- 35 16. Booklet according to claim 15, characterized in that the data page (2, 25-27) has at least one outer data carrier (9, 11, 13, 14, 18, 41) which is produced from plastic and, in particular,

polycarbonate and which is provided with data for personalization of the booklet and which is connected flatly to the flexible layer (3-7).

- 5 17. Booklet according to claim 15, characterized in that the data page (37) has a flexible layer (38) which is connected to the data carrier (37) on both outer sides of the latter.
- 10 18. Booklet according to claim 17, characterized in that the flexible layer (38) is folded and has a fold (39) in which a sewing-in point (40) is formed.
- 15 19. Booklet according to one of Claims 15 to 18, characterized in that the data carrier (9, 11, 13, 14, 18, 41) has an addressable electronic component, in particular a chip (42).
- 20 20. Booklet according to Claim 14, characterized in that the electronic component (42) is integrated into the data carrier (9, 11, 13, 14, 18, 41) and, in particular, is laminated in.