Title: PERSONAL DOCUMENT IN FORM OF A BOOKLET

Abstract: A document in form of a booklet consists of a centrally folded cover page (1) as well as of a desired number of paper sheets (2, 3), which are interconnected by means of a seam (4). Furthermore, such document includes a page (20), which contains data, which need to be secured against falsification. A protective layer (5) is placed over the page (6) and just above the said sheet (2) there is a band (6), which consists of a bending-resistant material and is also attached to the document by means of the seam (4). The internal edge (50) of the protective layer (5) may therefore be brought into contact with the said band (6), but not also with the neighboring sheet (2, 3).
PERSONAL DOCUMENT IN FORM OF A BOOKLET

The invention belongs to the technical field of printing and is in particular related to manufacturing of personal or identification documents, which are secured against falsification and/or forging.

By this, the invention is based on the problem, how to provide a personal document in form of a booklet, by which a non-problematic sewing of at least one sheet covered with a protective layer, consisting of a relatively hard material like e.g. polypropylene, among the other sheets should be enabled by simultaneously excluding any possibility, that the internal edge of the said protective layer, which is faced towards the neighboring sheet, could damage the last mentioned sheet by rubbing thereto.

One of such documents is described in EP 1 008 459 B1 together with a method of manufacturing thereof. As stated therein, by manufacturing of such document, e.g. a passport or the like, there should be taken into account, that at least a page, on which the desired personal data are printed, needs to be secured and should consist of appropriate
material, which enables applying of various protective elements, which may be either mounted therein or printed or also punched or even manufactured by means of a laser beam. Although for example the polycarbonate seems to be a very suitable material for such purposes, the hardness thereof is essentially higher than the hardness of paper and in addition, the resistance of this material with respect to repeated bending is really pure. Furthermore, recent requirements by manufacturing such documents may also relate to compulsory including of various electronic or magnetic data carriers, so that the thickness of the layer of such material may also be relatively huge. Accordingly, upon establishing appropriate interconnection of a sheet made of such material, e.g. by means of sewing or the like, with the cover page and the other available sheets, the problems would occur either due to permanent tendency of opening the document or also due to cracking of such bound sheet. In order to avoid this problem, in the above specified patent letter it has been suggested, that the sheet, i.e. the so-called polycarbonate plate, is connected with a band, which consists of a flexible and easily bending material like e.g. a polypropylene. Such band can be then easily sewed into the document together with the other sheets and is moreover resistant in a sufficient extent with respect to bending, so that during the regular period of use of the document the said cracking or breaking should not to be expected. Another problem, which might occur by establishing a required interconnection between two parts of materials, which are difficult to be interconnected, may then be solved by means of perforating the said band i.e. by providing it with appropriate passages, so that the said band is placed over the said sheet i.e. the plate, and after that over the said band an additional band is placed, which includes appropriate protrusions, which are adapted to the said passages with respect to position and dimensions. In such a way the said protrusions extend through the said passages of the said band towards the surface of the protective layer, by which appropriate connection of the said band with the belonging sheet i.e. the polycarbonate plate in the area of the said perforation i.e. protrusions is enabled, so that each band is at the one hand held between the said band and protective
layer, and on the other hand sewed into the document. In such a way is - according to the said patent - the polycarbonate plate mechanically i.e. in thanks to the shape thereof connected to the said band, which is sewed into the document. Such connecting technology is moreover also described in the Slovenian (SI) patent No. 20369A, which is however limited exclusively to connecting the polycarbonate materials with the connecting bands, which consist of various other materials. In such a way it should be possible - at least theoretically - to attach a sheet or plate of polycarbonate into appropriate document in form of a booklet.

However, in the practice, by manufacturing documents in form of a booklet, in particular of passports or the like, such manner of interconnecting the constituent parts may lead to certain problems. When manufacturing such documents, the said band is placed over the previously prepared cover plate and after that the required sheets are placed thereto, whereupon these parts are sewed together. The sheet, which is covered by the protective layer, is often arranged quite adjacent to the cover page. Starting from the internal side of the rear cover page, the said band extends beyond the seam towards the internal side of the front cover page, where the perforated portion thereof is placed. The internal edge of the protective layer, which is positioned adjacent to the said seam, is faced towards to the front page of the neighboring sheet. Since the material of the protective layer is essentially harder than the material of the paper of this neighboring sheet, and since moreover the thickness of the protective layer is also relatively large, the said internal edge of the protective layer is pretty sharp and exposed. Although the users are normally not aware of this phenomena at all, by opening or closing the document this hard edge is always rubbed against the essentially softer neighboring paper sheet, so that during the time serious damages may occur on this sheet. Consequently, even by quite regular use of such document, these damages may result in essentially reducing the thickness of the
neighboring paper sheet in the said area of rubbing, so that after certain period of use the sheet may be torn out and removed from the document.

According to the invention it is therefore suggested, that the polycarbonate material is used exclusively as a protective and data-carrying layer, by means of which a desired sheet of paper or similar material is coated, where in such a document immediately above the sheet, which includes a page equipped with such protective layer, a band is sewed, which consists of a bending-resistant material, in particularly of polypropylene, polyvinyl chloride (PVC) or the like, and is preferably smooth and non-perforated. The protective layer, which preferably consists of polycarbonate or other similar material, is placed over at least a major portion, preferably over the complete page of the corresponding sheet, and simultaneously also over at least a portion of the said band, by which the internal edge of the protective layer is placed in abutment at a desired distance from the seam, so that by opening or closing the document the said edge is not rubbed against the sheet of paper or similar material, but against the said band. The said protective layer is furthermore attached onto the corresponding page and simultaneously also onto the said band by means of appropriate adhesive means, in particularly by means of a temperature resistant adhesive, namely an adhesive, which is at least within a predetermined temperature range a duroplastic i.e. a non-melting adhesive, namely at least below a such temperature value, at which the consequences of over-heating become obvious and visible at least by one of the other protective elements of the document. Furthermore, in one of possible embodiments, the thickness of the protective layer in the area of the band is smaller than the thickness in the other areas of the belonging page of the sheet, over which the said layer is placed.

Now the invention will be explained in more detail on the basis of an embodiment of a document in form of a booklet as shown in Fig. 1 in opened state and in perspective view.
The document consists of a cover page 1 as well as of separate sheets 2, 3, which are in this embodiment centrally folded, which means folded along the central line thereof, and interconnected by means of seam 4. One page 20 of the sheet 2 is covered by a protective layer and personalized, which means, that on the one hand personal data is printed thereon, and on the other hand it is also equipped with all required protective elements, which are however not separately shown in the said drawing. A band 6 is placed over the sheet 2 in the area of the said seam 4. In order to maintain the drawing as clear as possible, only one sheet 3 is shown in addition to the previously mentioned sheet 2, by which this sheet 3 extends above the said band 6 and is also centrally folded along and connected thereby with the said sheet 2 and also with the cover page 1 by means of the said seam 4.

The said band 6 consists of a material, which is bending-resistant i.e. sufficiently resistant with respect to bending in the area of the seam 4. Materials, which fulfill such requirements are e.g. a polyethylene or also a polyvinyl chloride (PVC) or similar plastics, while in this particular case a polyethylene was used. By this particular document according to Fig. 1 the protective layer 5 is placed over the page 20 of the sheet 2, which consists of paper or synthetic paper or similar material, where the said layer includes personal data, which are in particularly exposed to falsification or misuse, which should be - depending on the nature or the purpose of the document - according to the present invention made impossible.

The said protective layer 5 in this shown embodiment consists of a polycarbonate, but in common may also consist of another similar material, and is attached onto the page 20 of the sheet 2 by means of appropriate adhesive layer 7, by which it protrudes at least partially over the band 6, on which it is attached on essentially the same manner as it is actually attached onto the page 20.
The said adhesive layer 7 consists of appropriate adhesive means, in this particular embodiment of an adhesive, which may not be softened and remains hard at least below a pre-determined maximum temperature limit, so that the layer 5 cannot be removed without obvious damages. Whenever the document is exposed to a temperature above the said maximum temperature limit, at least one of security elements available on the document is then activated, so that an obvious indication, that the document might be falsified or forged, is then obtained in such a way.

An internal edge 50 of the layer 5, which is faced towards the seam 4, is placed in abutment to the band 6, so that the sheet 2 is placed below the band 6 and protected against damages, which might otherwise occur due to rubbing by the edge 50.

In the one of possible embodiments the thickness of the protective layer 5 in the area of the said band 6 is smaller than the thickness of the protective layer 5 on the other areas on the data-carrying page 20.
PATENT CLAIMS

1. Personal document in form of booklet, consisting of at least centrally, namely along the central line folded cover page (1) as well as of a desired number of sheets (2, 3), which are folded at least essentially in the same manner and interconnected in the folded area by means of a seam (4), and at least one personalized page (20) is available in the document, which needs to be efficiently secured against falsification or forgery, characterized in that a protective layer (5) with appropriate data, which are secured against falsification or misuse, is placed on a sheet (2) consisting of paper or similar material, while just above the said sheet (2) there is band (6), which consists of a bending-resistant material and is also connected by means of the said seam (4) with the cover page (1) and the sheets (2, 3), and wherein the said protective layer (5) extends over at least the major portion of the belonging page (20) of the sheet (2) and simultaneously also over at least a portion of the said band (6), so that the internal edge (50) of the protective layer (5), which is faced towards the seam (4), is then placed in abutment to the said band (6).

2. Document according to Claim 1, characterized in that the protective layer (5) is attached onto the belonging page (20) of the sheet (2) of paper by means of an adhesive layer (7), and in the same manner also over the belonging area of the band (6).

3. Document according to Claim 2, characterized in that the adhesive layer (7) consists of a sufficiently resistant means, and the resistance of which is at least such, that any attempt of removing the protective layer (7) becomes visually obvious as a consequence of damages either on the layer (5) or on the sheet (2) or also due to activation of any other available security elements on the document.
4. Document according to Claim 3, characterized in that the adhesive layer (7) consists of a resilient duroplastic adhesive, which cannot be softened or melted at least below a pre-determined temperature limit, at which the consequences of over-heating become obvious by means of at least one of the other security elements available on the document.

5. Document according to one of the preceding Claims, characterized in that the protective layer (5), which is placed over a desired page (2) of the page (2), consists of polycarbonate or other similar material.

6. Document according to one of the preceding Claims, characterized in that the band (6), which is sewed between the cover page (1) and the sheets (2, 3), is a smooth and non-perforated band of polyethylene or other similar material, with exception of polyvinyl chloride (PVC).

7. Document according to one Claims 1 to 5, characterized in that the band (6), which is sewed between the cover page (1) and the sheets (2, 3), is a smooth and non-perforated band of polyvinyl chloride (PVC) or other similar material, with exception of polyethylene.

8. Document according to one of the preceding claims, characterized in that the thickness of the protective layer (5) in the area of the band (6) is smaller than the thickness (5) in the other areas of the belonging page (20) of the sheet (2), over which the said layer (5) is placed.