



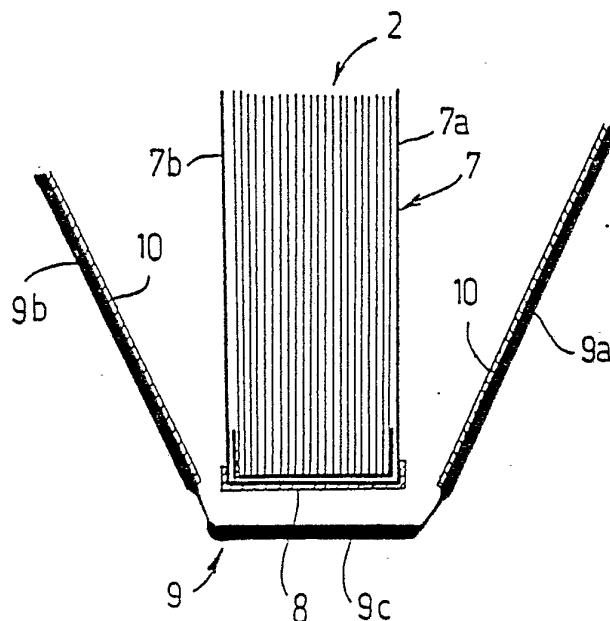
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |                                                                                                                                                                                        |
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| <b>(51) International Patent Classification <sup>3</sup>:</b><br><br>B42D 1/06; B42C 19/00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>A1</b> | <b>(11) International Publication Number:</b> WO 81/03644<br><br><b>(43) International Publication Date:</b> 24 December 1981 (24.12.81)                                               |
| <b>(21) International Application Number:</b> PCT/FI81/00047<br><b>(22) International Filing Date:</b> 16 June 1981 (16.06.81)<br><br><b>(31) Priority Application Number:</b> 801961<br><b>(32) Priority Date:</b> 18 June 1980 (18.06.80)<br><b>(33) Priority Country:</b> FI<br><br><b>(71) Applicant (for all designated States except US):</b> KUSTAN-<br>NUSOSAKEYHTIÖ OTAVA [FI/FI]; Uudenmaan-<br>katu 8-12, SF-00120 Helsinki 12 (FI).<br><br><b>(72) Inventor; and</b><br><b>(75) Inventor/Applicant (for US only):</b> JUKOLA, Eero [FI/FI];<br>Karjoportintie 20, SF-42700 Keuruu (FI).<br><br><b>(74) Agent:</b> OYKOLSTER AB; Lönnrotinkatu 19B, P. O. Box<br>148, SF-00121 Helsinki 12 (FI). |           | <b>(81) Designated States:</b> CH, DE, DE (Utility model), GB, JP,<br>NL, NO, SE, US.<br><br><b>Published</b><br><i>With international search report</i><br><i>With amended claims</i> |

**(54) Title:** HARD-COVER PAPERBACK BOOK AND PROCEDURE FOR THE MANUFACTURE OF SAME

**(57) Abstract**

A hard-cover paperback book comprising a book block (2) consisting of a plurality of leaves (1) joined together at their spine edges and a hard cover fastened to the block. The hard cover is made of two parts. The first part is a soft inner cover (7) extending around the spine of the block but not over the edges of the block. The inner cover is at its front and back portions (7a, 7b) fastened to the block along fastening stripes (6) positioned along the edge of the first and last leaf (1a, 1b) of the block so that the spine portion of the inner cover is loose from the spine of the block. The second part is a hard outer cover (9) extending around the spine of the block and extending over the edges of the inner cover and the block. The outer cover is at its front and back parts (9a, 9b) and its spine (9c) throughout fastened to the corresponding portions of the inner cover (7). In this way the hard-cover book can be manufactured by means of a technique hitherto used only in the manufacture of soft-cover books. The invention also covers a method of manufacturing such a hard-cover book.



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|    |                              |    |                                       |
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Hard-cover paperback book and procedure for the manufacture of same

5 The subject of the present invention is a hard-cover paperback book which comprises a book block consisting of leaves joined together at their spine edges as well as a hard cover fastened to the book block.

10 When a conventional hard-cover book is manufactured, the cover is glued, both at the front cover and at the back cover, onto the first and the last leaf of a ready-cut book block over the entire faces of these leaves, whereby the crepe layer glued onto the spine of the block is, by means of its edge stripes, glued between the front cover and the first leaf and between the back cover and the last leaf, respectively. In this way the  
15 cover can be connected with the book block firmly by the intermediate of the crepe. The leaves of the book block glued onto the front and the rear cover cover the inside face of the front and the rear cover and thereby give the cover a tidy appearance. The spine part of the cover is  
20 loose from the spine part of the book block and from the crepe fastened to same. It is also possible to provide the book block with particular foreleaves, to which the front and the rear cover are fastened in stead of being fastened to the first and last page of the book block.

25 When hard-cover books are manufactured, the aligning and the fastening of the hard cover to the book block requires special machinery, which is slow-moving in view of ensuring adequate precision of work. Thus, the step of providing the hard-cover books with covers  
30 makes the operation of the production line considerably slower.

35 On the contrary, when a soft-cover book is manufactured, the step of providing the book with covers does not cause any retardation, but the soft cover and the book block can be aligned rapidly and precisely in the



glue-binding machine. The soft cover is then fastened by glueing onto the spine of the book block, and usually also onto the first and last leaf of the book block along narrow glue stripes placed at the spine edges of  
5 the said leaves.

In the Finnish Patent Application No. 791516, a procedure is suggested according to which it is possible to manufacture a soft-cover book that can be opened easily and without being broken. It is characteristic of  
10 that procedure that, in order to hold the book block together, a crepe is glued onto the spine of the book block, whereby it is no longer necessary to fasten the spine of the soft cover by glueing onto the spine of the book block, but it can be allowed to remain loose from  
15 the spine. The soft cover is glued onto the first and last leaf of the book block only along narrow glue stripes which are placed at the spine edges of these leaves.

If attempts are made to apply the procedure suggested in the said Finnish patent application also to  
20 the manufacture of hard-cover books, it must be ascertained that a substitution of the soft cover by a hard cover again causes cover problems which retard the production. It has been noticed that a hard cover is to such an extent heavier and stiffer than a soft cover that the  
25 hard cover cannot adhere along to the book block at the production speed. This obviously also results from the fact that, in the procedure in accordance with the said patent application, the cover is glued onto the book block only along two narrow glue stripes, which are placed at  
30 the spine edges of the first and last page of the book block and whose adhesive capacity is not sufficient to keep the hard cover fixed to the book block. Moreover, the inside faces of the cover cannot be hidden, because the first leaf and the last leaf of the book block are  
35 fastened to the cover by glueing only along their spine edges.

The object of the present invention is to



provide a hard-cover paperback book which eliminates the above drawbacks and which permits the manufacture of a hard-cover book by means of the glue-binding technique that has been so far used only in the manufacture of soft-cover books.

This object is achieved by means of the book in accordance with the present invention, which is characterized in

- that the hard cover is made of two parts and comprises

- a) an inner, soft inner cover, which extends around the spine of the book block and which is, at its front and back portions, fastened to the book block along fastening stripes placed along the spine edges of the first and last leaf of the block so that the spine portion of the inner cover between the said fastening stripes is loose from the spine of the book block, and
- b) an outer, hard outer cover, which extends around the spine of the inner cover and whose edges extend beyond the edges of the inner cover and which is, at its front and back parts and at its spine, throughout fastened to the corresponding portions of the inner cover.

According to the invention, a hard-cover paperback book is provided which can be manufactured at a high production speed by using the glue-binding technique.

Owing to the fact that the soft inner cover is fastened to the book block before fastening the hard outer cover, it is possible to use the outer face of the spine of the inner cover as glueing face for the hard outer cover. In this way a sufficiently large adhering face is obtained for the hard outer cover so that the hard outer cover is fastened reliably to the inner cover and, by its intermediate, to the entire book block even at high production



rates. Since the soft inner cover is fastened to the book block only at its front and back cover but not at its spine, in the finished book the spine of the hard cover is loose from the book block in spite of the fact  
5 that the spine of the hard cover is fastened to the spine of the soft cover.

Another subject of the present invention is a procedure for the manufacture of a book in accordance with the invention, and this procedure is characterized  
10 in what is stated in claim 5. In this way a hard-cover book can be manufactured simply and rapidly in a glue-binding machine, which has been so far suitable only for the manufacture of soft-cover books.

The invention will be described more closely  
15 below with reference to the attached drawings, wherein Figures 1A to 1F schematically illustrate various steps of manufacture of a book in accordance with a preferred embodiment of the invention,

Figure 2 shows a finished book as viewed from  
20 the end and as spread open,

Figures 3A to 3F illustrate the steps of manufacture of a book in accordance with a second embodiment of the invention, and

Figure 4 shows a finished book as viewed from  
25 the end and as spread open.

Figures 1A to 1F in the drawings illustrate the working steps taking place in a glue-binding machine for the manufacture of a hard-cover paperback book. First, a number of separate sheets or leaves 1 are  
30 assembled together to make a bundle (Fig. 1A), of which the spine edge is opened by cutting (Fig. 1B) so that a block or book block 2 consisting of bundled leaves is obtained, the spine 2a of the said block being plane. Hereupon a cold glue layer 3 is spread onto the spine of  
35 the book block, as well as narrow glue stripes 4 onto the first page 1a and last page 1b of the book block alongside the spine edges of the leaves. A crepe strip 5

is pressed against the glue layer and the glue stripes (Fig. 1C), said crepe strip functioning as a support layer and binding the leaves firmly together at the spine.

As the next step, hot glue stripes 6 are spread  
5 onto both edge portions of the crepe strip, said edge portions being fastened by glueing onto the first and last leaf of the book block. Hereupon a soft inner cover 7 is placed onto the book block and, by means of its front and back portions 7a, 7b, pressed into contact  
10 with the glue stripes (Fig. 1D). The unit formed in this way is cut at its upper, lower and front edges to the desired size (Fig. 1E). The spine portion 7c of the inner cover is loose from the crepe strip 5.

After cutting, a hot glue layer 8 is spread  
15 onto the outer face of the spine of the inner cover and cold glue layers 10 are spread onto the inner faces of the front and back covers 9a, 9b of a prefabricated hard outer cover 9. Finally, the hard outer cover is placed onto the book block half provided with covers,  
20 and the hard outer cover is, by means of its glue layers, pressed into contact with the inner cover (1F). As a result, a hard-cover paperback book is obtained wherein the cover extends, in the same way as in a hard-cover book, slightly beyond the book block at its upper, lower  
25 and front edges.

It is noticed that, thus, an auxiliary cover is first fixed to the book block, said auxiliary cover forming the inside portion of the finished cover and extending around the front and back sides and the spine  
30 of the book block, and that it is only hereinafter that the outer cover forming the hard cover proper is fixed. Owing to this, the entire outer face of the inner cover, including the spine, is available for glueing the hard outer cover and, nevertheless, the spine 9c of the finished  
35 cover can be made to remain loose from the book block. In this way the hard outer cover can be made to adhere so precisely and reliably that the book block can be



provided with hard cover in a glue-binding machine. The front and back sides of the inner cover, which was in advance fastened to the book block, said front and back sides being at the final stage glued onto the inner  
5 sides of the front and back covers of the hard cover, thereby function as portions covering the inner sides of the hard cover.

In the book shown in Figure 2, the inner cover 7 is made of an integral soft sheet, but it is also  
10 possible to assemble the soft inner cover in advance out of separate components to make an integral piece which is then fastened to the book block by glueing, or to assemble the inner cover out of separate parts which are as individual working steps fastened to the book block  
15 by glueing to make a ready inner cover.

The steps of manufacture of the book shown in Fig. 4 are essentially the same as those described above in connection with Figures 1A to 1F. The only difference lies therein that the inner cover 17 is composed of three  
20 separate parts, viz. a front-side folded foreleaf 18, a back-side folded foreleaf 19, and a spine strip 20. In such a case the spine strip is fastened by means of hot glue stripes 21 at its edges to the outer face of both foreleaves, as is shown in Fig. 3D. The soft inner  
25 cover assembled in this way in advance is treated exactly in the same way as is shown in Figures 1D, 1E and 1F. In the book in accordance with this embodiment, the foreleaves forming the inner cover may be utilized as coloured leaves, map leaves or equivalent, and integral foreleaves  
30 additionally form a tidier joint between the cover and the book block.

The drawings and the related description are only supposed to illustrate the idea of the invention. In their details the book in accordance with the invention  
35 and the procedure for the manufacture of same may show even considerable variation within the scope of the patent claims.





## WHAT IS CLAIMED IS:

1. A hard-cover paperback book which comprises a book block (2) consisting of leaves (1) joined together at their spine edges as well as a hard cover (9) fastened to the book block, c h a r a c t e r i z e d in
- 5 - that the hard cover is made of two parts and comprises
- a) an inner, soft inner cover (7; 17), which extends around the spine of the book block (2) and which is, at its front and back portions (7a, 7b; 18) fastened to the book block along fastening stripes (6) placed along the spine edges of the first and last leaf (1a, 1b) of the block so that the spine portion (7c, 20) of the inner cover between the said fastening stripes is loose from the spine of the book block, and
- 10 b) an outer, hard outer cover (9), which extends around the spine of the inner cover and whose edges extend beyond the edges of the inner cover and which is, at its front and back parts (9a, 9b) and at its spine (9c), through-out fastened to the corresponding portions of the inner cover (7; 17).
- 15
2. A book as claimed in claim 1, c h a r - a c t e r i z e d in that the inner cover (7) consists of an integral soft sheet.
- 20
3. A book as claimed in claim 1, c h a r - a c t e r i z e d in that the inner cover (17) consists of two folded foreleaves (18) and of a spine strip (20) connecting them.
- 25
- 30
4. A book as claimed in any of claims 1 to 3, c h a r a c t e r i z e d in that the inner cover (7; 17) is, at its front and back portion (7a, 7b; 18), fastened to the first and last leaf (1a, 1b) of the book block (2)
- 35 by means of hot glue (6) and the outer cover (9) is, at



its front and back portions (9a, 9b), fastened by means of cold glue (10) and, at its spine portion (9c), by means of hot glue (8) to the spine portion (7c; 20) of the inner cover.

5                    5. A book as claimed in any of claims 1 to 4, characterized in that the inner cover (7; 17) is fastened to the book block (2) by the intermediate of a support layer in itself known, such as a crepe strip (5), which support layer is fastened to the spine (2a) of the  
10 book block and, at its edge portions, to the first and last leaf (1a, 1b) of the book block.

6. A procedure for the manufacture of a hard-cover paperback book as claimed in claim 1, according to which procedure a number of leaves (1) are glue-bound  
15 at their spine edges into a book block (2) and the hard cover (9) is fastened to the book block by glueing, characterized in

- 20                    a) that the cover is composed of a soft inner cover (7; 17) extending around the spine (2a) of the book block (2) and of a hard outer cover (9), likewise extending around the spine and fastened to the inner cover, the edges of the said outer cover extending beyond the edges of the inner cover and of the book block,
- 25                    b) that the inner cover (7; 17) is first glued at its front and back portions (7a, 7b; 18) onto the book block (2), before the block is cut, by means of a glue stripe (6) spread onto the first and last page (1a, 1b) of the book block and  
30 parallel to the spine, and
- 35                    c) that the outer cover (9) is fastened to the inner cover after cutting of the book block (2) and of the inner cover (7; 17) by means of glue layers (8) spread over the front and back portions (7a, 7b; 18) and the spine portion (7c; 20) of the inner cover.

7. A procedure as claimed in claim 6,  
c h a r a c t e r i z e d in that the inner cover (7)  
is made as an integral piece out of a soft sheet material.

8. A procedure as claimed in claim 6,  
5 c h a r a c t e r i z e d in that the inner cover (17)  
is composed out of two separate folded foreleaves (18)  
made of a soft sheet material and out of a soft spine  
strip (20) connecting them.

9. A procedure as claimed in any of claims  
10 6 to 8, c h a r a c t e r i z e d in that the inner  
cover (7; 17) is glued onto the book block (2) by means  
of hot glue stripes (6) spread onto the first and last  
leaf (1a, 1b) of the book block and parallel to the  
spine, and the outer cover (9) is glued onto the inner  
15 cover by means of hot glue layer (8) covering its spine  
(7c; 20) and by means of cold glue layers (10) covering  
the front and back portions (9a, 9b) of the outer cover.

10. A procedure as claimed in any of claims  
6 to 9, c h a r a c t e r i z e d in that the inner  
20 cover (7; 17) is fastened to the book block (2) by means  
of a support layer, such as a crepe strip (5), which is  
fastened to the spine (2a) of the book block by means of  
a cold glue layer (3) and, at its edge portions, to the spine  
edges of the first and last leaf (1a, 1b) of the book  
25 block by means of a hot glue stripe (4).

## AMENDED CLAIMS

(received by the International Bureau on 23 November 1981 (23.11.81))

## 1. (amended)

A hard-cover paperback book which comprises a book block (2) consisting of leaves (1) joined together at their spine edges as well as a hard cover (9) fastened to the book block, said hard cover extending over the edges of said block, c h a r a c t e r i z e d i n

- that the hard cover is made of two parts and comprises

- 10 a) an inner, soft inner cover (7;17), which extends around the spine of the book block (2) and terminates at the edges of said block and which is, at its front and back portions (7a,7b;18) fastened to the book block along fastening stripes (6) placed  
15 along the spine edges of the first and last leaf (1a,1b) of the block so that the spine portion (7c,20) of the inner cover between the said fastening stripes is loose from the spine of the book block, and
- 20 b) an outer, hard outer cover (9), which extends around the spine of the inner cover and whose edges extend beyond the edges of the inner cover and which is, at its front and back parts (9a,9b) and at its spine (9c), throughout fastened to  
25 the corresponding portions of the inner cover (7;17).

2. A book as claimed in claim 1, c h a r a c t e r i z e d i n that the inner cover (7) consists of an integral soft sheet.

30 3. A book as claimed in claim 1, c h a r a c t e r i z e d i n that the inner cover (17) consists of two folded foreleaves (18) and of a spine strip (20) connecting them.

35 4. A book as claimed in any of claims 1 to 3, c h a r a c t e r i z e d i n that the inner cover (7;17) is, at its front and back portion (7a,7b;18), fastened to the first and last leaf (1a,1b) of the book block (2) by means of hot glue (6) and the outer cover (9) is, at

its front and back portions (9a, 9b), fastened by means of cold glue (10) and, at its spine portion (9c), by means of hot glue (8) to the spine portion (7c; 20) of the inner cover.

5                    5. A book as claimed in any of claims 1 to 4, characterized in that the inner cover (7; 17) is fastened to the book block (2) by the intermediate of a support layer in itself known, such as a crepe strip (5), which support layer is fastened to the spine (2a) of the  
10 book block and, at its edge portions, to the first and last leaf (1a, 1b) of the book block.

6. A procedure for the manufacture of a hard-cover paperback book as claimed in claim 1, according to which procedure a number of leaves (1) are glue-bound  
15 at their spine edges into a book block (2) and the hard cover (9) is fastened to the book block by glueing, characterized in

- a) that the cover is composed of a soft inner cover (7; 17) extending around the spine (2a) of the  
20 book block (2) and of a hard outer cover (9), likewise extending around the spine and fastened to the inner cover; the edges of the said outer cover extending beyond the edges of the inner cover and of the book block,
- 25 b) that the inner cover (7; 17) is first glued at its front and back portions (7a, 7b; 18) onto the book block (2), before the block is cut, by means of a glue stripe (6) spread onto the first and last page (1a, 1b) of the book block and  
30 parallel to the spine, and
- c) that the outer cover (9) is fastened to the inner cover after cutting of the book block (2) and of the inner cover (7; 17) by means of glue layers (8) spread over the front and back portions (7a, 7b; 18) and the spine portion (7c; 20) of the  
35 inner cover.



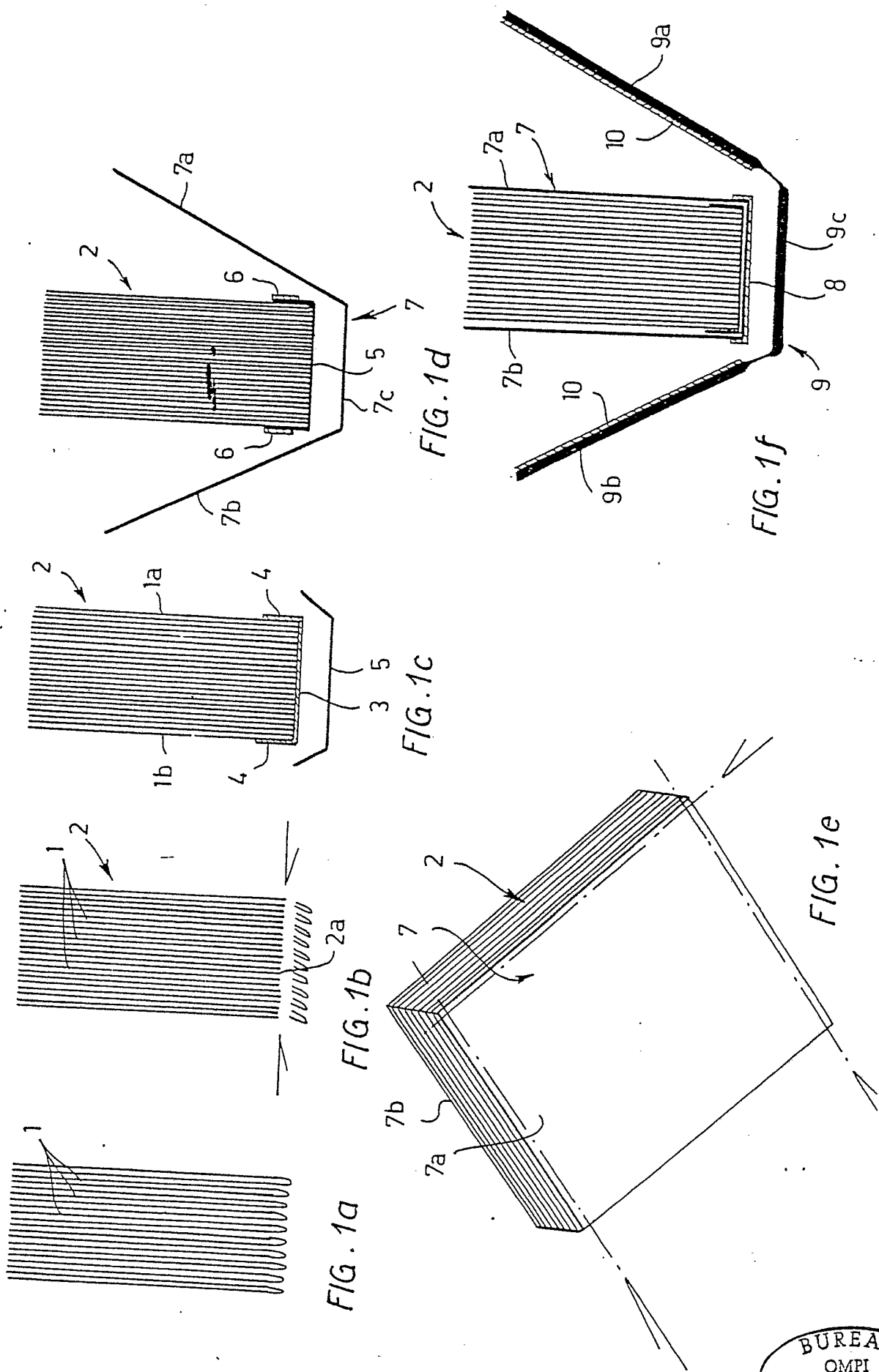
7. A procedure as claimed in claim 6, characterized in that the inner cover (7) is made as an integral piece out of a soft sheet material.

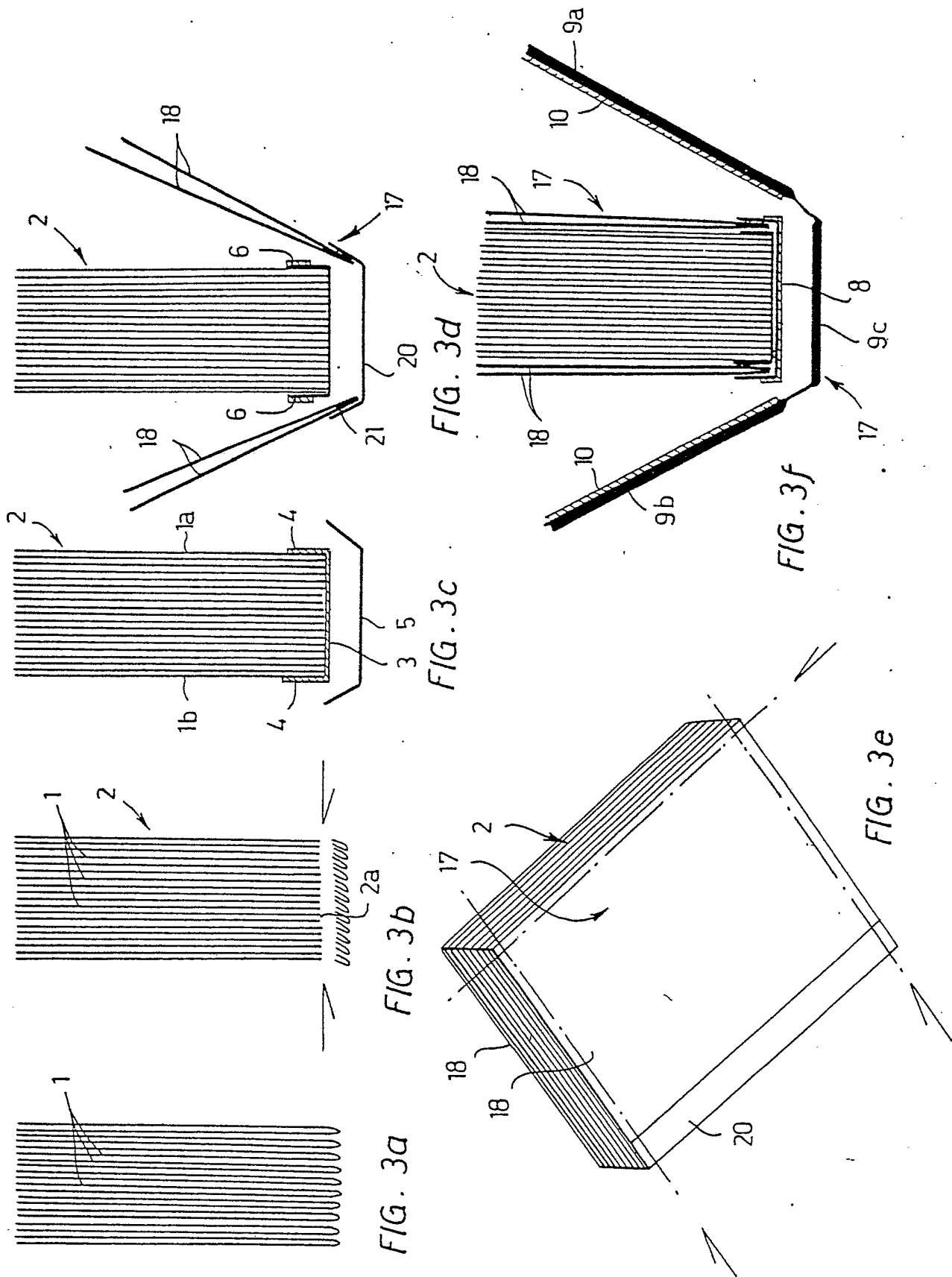
8. A procedure as claimed in claim 6, characterized in that the inner cover (17) is composed out of two separate folded foreleaves (18) made of a soft sheet material and out of a soft spine strip (20) connecting them.

9. A procedure as claimed in any of claims 6 to 8, characterized in that the inner cover (7; 17) is glued onto the book block (2) by means of hot glue stripes (6) spread onto the first and last leaf (1a, 1b) of the book block and parallel to the spine, and the outer cover (9) is glued onto the inner cover by means of hot glue layer (8) covering its spine (7c; 20) and by means of cold glue layers (10) covering the front and back portions (9a, 9b) of the outer cover.

10. A procedure as claimed in any of claims 6 to 9, characterized in that the inner cover (7; 17) is fastened to the book block (2) by means of a support layer, such as a crepe strip (5), which is fastened to the spine (2a) of the book block by means of a cold glue layer (3) and, at its edge portions, to the spine edges of the first and last leaf (1a, 1b) of the book block by means of a hot glue stripe (4).









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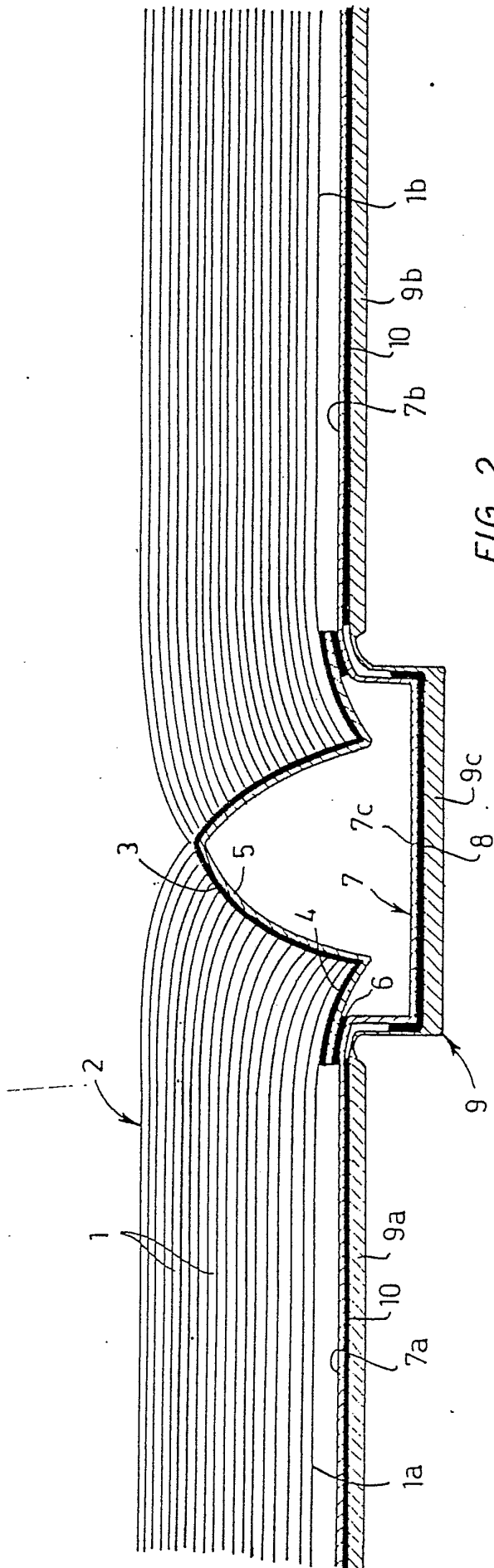


FIG. 2

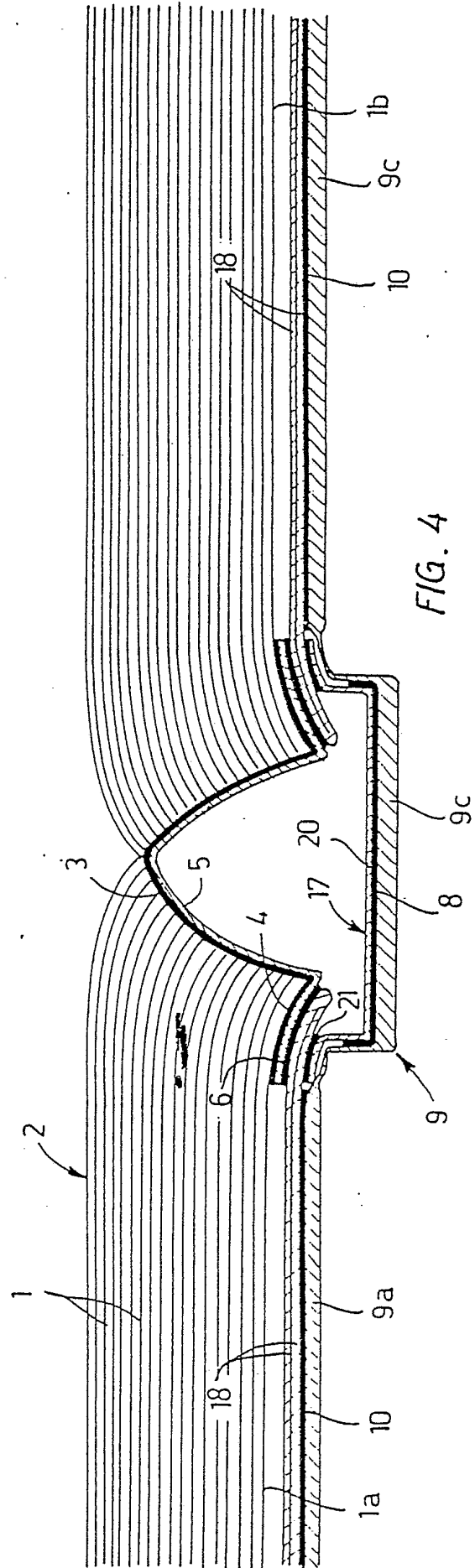


FIG. 4

# INTERNATIONAL SEARCH REPORT

International Application No PCT/FI81/00047

## I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) \*

According to International Patent Classification (IPC) or to both National Classification and IPC 3

B 42 D 1/06, B 42 C 19/00

## II. FIELDS SEARCHED

Minimum Documentation Searched \*

| Classification System | Classification Symbols                                                                        |
|-----------------------|-----------------------------------------------------------------------------------------------|
| IPC 3                 | B 42 B 5/00, B 42 C 9/00-9/02, 11/00-11/06, 19/00-19/08,<br>B 42 D 1/00-1/06, 3/00<br>.../... |

Documentation Searched other than Minimum Documentation  
to the Extent that such Documents are Included in the Fields Searched \*

SE, NO, DK, FI classes as above

## III. DOCUMENTS CONSIDERED TO BE RELEVANT <sup>14</sup>

| Category * | Citation of Document, <sup>16</sup> with indication, where appropriate, of the relevant passages <sup>17</sup> | Relevant to Claim No. <sup>18</sup> |
|------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------|
| A          | DE, A, 2 359 985 published 1975, June 12,<br>Edler & Krische                                                   | 1                                   |
| A          | DE, A, 2 540 266 published 1977, March 12,<br>Reinhard Mohn oHG                                                | 1                                   |
| A          | DE, A, 2 751 801 published 1979, May 23,<br>Steinhilber                                                        | 1                                   |
| A          | DE, A, 2 904 097 published 1979, August 9,<br>Nordson Corp                                                     | 1                                   |
| P,X        | DE, A, 2 936 674 published 1980, November 13,<br>Kustannusosakeyhtiö Otava                                     | 1                                   |
| A          | DK, C, 55 697 published 1939, January 16,<br>D J F Müller                                                      | 1                                   |

\* Special categories of cited documents: <sup>15</sup>

"A" document defining the general state of the art

"E" earlier document but published on or after the international filing date

"L" document cited for special reason other than those referred to in the other categories

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but on or after the priority date claimed

"T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention

"X" document of particular relevance

## IV. CERTIFICATION

Date of the Actual Completion of the International Search \*

1981-09-23

Date of Mailing of this International Search Report \*

1981-09-28

International Searching Authority <sup>1</sup>

Swedish Patent Office

Signature of Authorized Officer <sup>19</sup>

*[Signature]*  
Göthe Wylén

## FURTHER INFORMATION CONTINUED FROM THE SECOND SHEET

II

Fields Searched (cont)

National Cl 11c:1, 3; 11d:2

US Cl 11:1-4

V. ☐ OBSERVATIONS WHERE CERTAIN CLAIMS WERE FOUND UNSEARCHABLE <sup>10</sup>.

This international search report has not been established in respect of certain claims under Article 17(2) (a) for the following reasons:

1. ☐ Claim numbers ..... because they relate to subject matter <sup>12</sup> not required to be searched by this Authority, namely:

2. ☐ Claim numbers ..... because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out <sup>13</sup>, specifically:

VI. ☐ OBSERVATIONS WHERE UNITY OF INVENTION IS LACKING <sup>11</sup>

This International Searching Authority found multiple inventions in this international application as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims of the international application.

2. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims of the international application for which fees were paid, specifically claims:

3. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claim numbers:

## Remark on Protest

- ☐ The additional search fees were accompanied by applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.