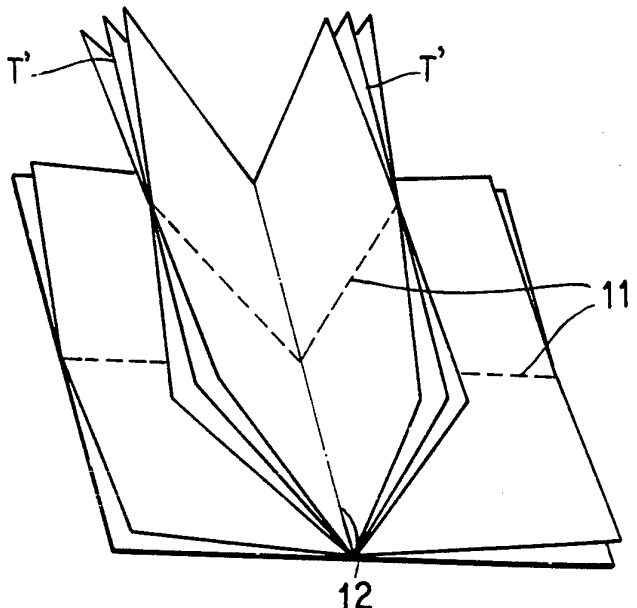




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(21) International Application Number: PCT/KR93/00077 (22) International Filing Date: 30 August 1993 (30.08.93) (30) Priority data: 1992/15924 2 September 1992 (02.09.92) KR (71)(72) Applicant and Inventor: KIM, Yang, Ho [KR/KR]; Ga-305, Kangseo Apt., Hwajok 6-dong, Kangseo-gu, Seoul 157-016 (KR). (74) Agent: LEE, Young, Pil; 2nd and 3rd Floors, Cheonghwa Bldg., 1571-18, Seocho-dong, Seocho-gu, Seoul 137-073 (KR).		(81) Designated States: AT, AU, BB, BG, BR, CA, CH, CZ, DE, DK, ES, FI, GB, HU, JP, KP, LK, LU, MG, MN, MW, NL, NO, NZ, PL, PT, RO, RU, SD, SE, SK, UA, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i>
(54) Title: BOOK WITH HORIZONTALLY AND VERTICALLY TURNABLE PAGES AND ITS BINDING METHOD 		
(57) Abstract A book (20) is designed so as to be capable of turning the pages thereof in the vertical and horizontal directions and the binding method therefor. A diagram is partitioned into a predetermined number of rectangular sections each of which has a uniform width and length, with portions of the contents being printed on both faces of a plurality of sheets of paper. Afterwards, the sheets for each column are piled upon to thereby be located on the basis of the sequence of the contents and sewed along a horizontal line (11) traversing through the middle of the sheets. Next, each booklet is folded in half along a vertical line (12), and the outermost pages of each booklet are adhered to those of the adjacent booklets.		

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**BOOK WITH HORIZONTALLY AND VERTICALLY TURNABLE
PAGES AND ITS BINDING METHOD**

5

Technical Field

The present invention relates to a book designed so as to be capable of turning pages thereof horizontally and vertically and the binding method thereof, and more particularly, to a book having a plurality of pages which are bound in horizontal and
10 vertical directions and can be turned vertically or horizontally, and the binding method thereof, in which a large map or drawing is partitioned into a plurality of blocks by a plurality of columns and rows, and then blocks in the same column direction among the partitioned blocks are put in type, printed and bound.

15

Background Art

In general, maps or drawings which show a continuous illustration on one page are overly large and thus should be carried in a folded state and must be unfolded to be referenced. Therefore, when referring to such maps or drawings, it is cumbersome to search a desired portion by unfolding the folded sheet, which hinders the overall view.
20 Moreover, in the inconvenience of limited space too narrow to unfold the entire sheet, the illustration as a whole is difficult to be read and accurately understood. Further, even if a user wants to refer to only a portion thereof, the entire sheet should be spread out and then refolded, which thereby wears away the folded edge and lends to the map or drawing becoming easily damaged and/or soiled.

25 A method for folding a large sheet has been suggested, in which the entire sheet

is folded along with the vertical and horizontal lines, to provide a small folded booklet, folded portions of which can be thumbed through horizontally or vertically. However, since the folded portions are formed in various positions of the respective pages, it also has the drawback of the folded edge being easily damaged or tearing apart altogether.

5 There has been also suggested a book, each page of which shows a part of the entire diagram, e.g., map or construction drawing, providing in an index page the information on how the entire diagram is partitioned and how the partitioned sections are arranged. However, such books lack convenience because they do not provide sequentially continuous parts, to the point that referencing these is less than accurate. In
10 this case, when referring to the edge of any page, if a user wants to identify the adjacent parts thereof, he should refer to the index page for the information directing him to which page the adjacent diagram is shown. Accordingly, the desired material cannot be quickly searched, and discontinuous portions are not easily grasped.

Still another method has been suggested for folding the whole sheet a
15 predetermined number of times in the form of rectangular boxes each of being the same size vertically and horizontally, thereby turning the folded pages left and right or up and down, so as to refer to a desired page. This method, however, cannot prevent the above-mentioned soiling and tearing of the folded edges. Also, a book according to this method creates a relatively thick volume because the sheets are folded in half several times,
20 which detracts from the appearance of the book. For the above-described reasons, the conventional booklets and methods for folding a large sheet are unsatisfactory for practical use.

Disclosure of the Invention

25 An object of the present invention, for solving the above-described problems, is

to provide a book equipped with pages which can be turned horizontally and vertically, each page being connected with the adjacent pages in both the left-and-right direction and the up-and-down direction.

Another object of the present invention, for solving the above-described problems,
5 is to provide a binding method for a book, such that its pages can be horizontally and vertically.

For accomplishing the above-mentioned object, the present invention provides a book designed so as to be capable of turning the pages thereof horizontally and vertically, comprising a plurality of booklets, of which sheets of paper show a continuous illustration
10 on both faces thereof and are put upon one after the other, and each of which is bound along a horizontal line traversing the middle of each sheet and folded in half along a vertical line, the plurality of booklets bound by adhesion between the outermost sheets thereof.

For accomplishing the above-mentioned second object, the present invention
15 provides a method for binding a book designed so as to be capable of turning over the pages horizontally and vertically, comprising the steps of:

partitioning and composing a diagram in a predetermined number of columns and rows so as to provide a plurality of rectangular sections each of which has a uniform size;

printing continuous sections of the diagram on both faces of a predetermined
20 number of sheets so as to be connected with the adjacent sheet in sequence;

piling up sheets of paper for the sections of one column to thereby be located and folded in half along a horizontal line based on the sequence for the succession of the diagram;

sewing sheets of paper belonging to one column, along said horizontal line
25 traversing through the middle of each sheet to thereby provide a plurality of booklets;

vertically folding the booklets in two along a vertical line, respectively; and
adhering the booklets each other, with the outermost page of each booklet being
glued to those of adjacent column booklets.

5 Brief Description of the Drawings

The above objects and other advantages of the present invention will become more
apparent by describing in detail a preferred embodiment thereof with reference to the
attached drawings in which:

FIG.1 illustrates the partitioning of a whole sheet of diagram into a plurality of
10 rectangular sections each of which has a uniform width and length, and each of which
is denoted by a reference numeral therefor, according to the present invention;

FIGs.2A, 2B and 2C show sheets of paper being put upon one after the other,
after printing the respective column direction's partitions shown in FIG.1, on both faces
of paper so as to be connected with the adjacent sheet in sequence;

15 FIGs.3A, 3B and 3C show a plurality of booklets each of which is sewed along
with a transverse line through the middle of the sheets shown in FIGs.2A, 2B and 2C;

FIGs.4A, 4B and 4C show booklets each of which is vertically folded in half after
sewing of booklets shown in FIGs.3A, 3B and 3C;

FIG.5 shows a completed book having a plurality of booklets each of which is
20 adhered to the adjacent booklets, according to the present invention;

FIG.6 is a perspective view showing the completed book;

FIG.7 shows first pages for each booklet of the completed book according to the
present invention;

FIG.8 shows a book which can turn the pages in the left-and-right direction,
25 according to the present invention; and

FIGs.9 and 10 show the completed book of the present invention, which can turn the pages in the up-and-down direction.

Best Mode for Carrying out the Invention

5 The present invention will be described, hereinafter, via a preferred embodiment thereof and with reference to the attached drawings.

FIG.1 shows an overall diagram which is partitioned by a plurality of rectangular blocks. In an embodiment of the present invention, the number of columns is three. Accordingly, the diagram is sectioned by three columns A, B and C. The number of rows
10 is set to six in this embodiment, which are denoted as A1 through A6, B1 through B6 and C1 through C6, respectively, according to the columns A, B and C. A large sheet 10 for presenting a diagram such as map or drawing is firstly partitioned by a number of rows and columns so as to produce a predetermined number of rectangular blocks and then typeset according to the sequence of blocks each column. At this time, the number of
15 columns is not restricted, but the number of rows should be restricted satisfying the following relationship:

$$P=2+4(n-1)$$

wherein P is the number of pages excluding the two outermost pages for a booklet each column and n is the number of sheets in a booklet, with P and n both being positive integers. Here, the number n represents the number of sheets to be used for each column.

20 Each sheet provides two blocks on one face and another two blocks on the opposite face.

Therefore, all sheets are printed on both faces, excluding the outermost sheets each of which provide only one face on which the illustration is printed. In other words, if the whole illustration is partitioned into six blocks for each column, two sheets of paper are

necessary for each column. In the present embodiment, two sheets of paper are used for each column, so that the number of blocks for each column results in six. Further, if the number of sheets increases to three, four, five or more, accordingly, the number of blocks for each column increases to ten, fourteen, eighteen etc., by the arithmetic series of $2+4(n-1)$, which is described above.

FIGs.2A, 2B and 2C show a plurality of sheets of paper which are laid over one another in order to turn over the pages in the column direction. Since each block of the whole diagram should be seen in connection with the adjacent blocks in the column direction, all sheets are printed on both surfaces thereof and have two pages for one side.

10 In the case of two sheets of paper in the column direction, column blocks A1 and A2 are printed on one side of sheet number 1, and column blocks A2, A3, A4 and A5 are printed on both faces of sheet number 2, as shown in FIG.2A. Although not illustrated in the drawings, in the case of three sheets for each column, the number of blocks in column is ten, i.e., providing column blocks of A1 through A10, so that column blocks

15 A1 and A10 are printed on sheet number 1, column blocks A2, A3, A8 and A9 are printed on sheet number 2, and A4, A5, A6 and A7 are printed on sheet number 3.

FIGs.3A, 3B and 3C show booklets having a plurality of sheets sewed along the middle lines thereof. The sheets of paper shown in FIGs.2A, 2B and 2C are bound by sewing along horizontal sewing line 11, so as to be folded in half, horizontally and

20 vertically, thereby providing a booklet whose pages can be turned in the up-and-down direction. Here, if the number of sheets for each booklet is not large, it is desirable that the sheets of paper be bound by sewing along the horizontal line 11. However, if the number of sheets is large, any method which is convenient for binding the sheets along a horizontal line and then folding the respective sheets in a vertical direction would be

25 sufficiently applicable to the present invention.

FIGs.4A, 4B and 4C show booklets folded in half horizontally, to provide two pages on one face for each sheet. The booklets which are provided for each column are folded in half with the fold of vertical middle line 12, respectively.

FIGs.5 and 6 show a book 20 having a plurality of booklets each of which is 5 adhered to the adjacent booklets shown in FIGs.4A, 4B and 4C. A contact sheet T of each booklet of FIG.5 is glued with other contact sheets T of the adjacent column's booklets, to thereby provide an adhered sheet T', so that book 20 is completed combining a plurality of booklets each page of which can be turned in the up-and-down direction.

FIG.7 shows a condition of book 20 which is opened so as to expose the first 10 pages A1, B1 and C1 for each column. The number of pages in the latitudinal direction is determined by the number of columns, and the number of pages in the longitudinal direction is determined by the number of blocks for each column.

FIG.8 shows a condition of the book of FIG.7, illustrating of the thumbing of pages in the succession of the A, B and C columns. If a user wishes to look through the 15 book leftward or rightward with the diagram continued in succession latitudinally, the book should be arranged so that each of column booklet has the same number, i.e., the book should match the page numbers in a fashion of A1, B1 & C1, A2, B2 & C2, or A3, B3 & C3.

FIG.9 shows a condition of the book, illustrating the thumbing of pages in up-and- 20 down direction. If the user wants to see the more of the upper or lower illustration, he can turn the leaves of the book, upward or downward. Referring to FIG.9, the book is opened so as to expose pages B3 and B4 which are in succession with pages B1 and B2, which are the first pages in column B shown in FIGs.7 and 8. Here, the lower edge of page B2 is smoothly connected with the upper edge of page B3.

25 FIG.10 shows a condition of the book after turning one more leaf thereof in the

upward direction. In turning a page to reach B5 and B6, the lower edge of page B4 remains smoothly connected with the upper edge of page B5.

According to the present invention, a completely expanded sheet of illustration is partitioned by a proper number of columns and a predetermined number of blocks for 5 each column, the number of blocks for each column is determined by the arithmetic series of:

$$P-2+4(n-1)$$

wherein a common difference is four and the initial term is two. Therefore, the number of horizontal and vertical pages are determined.

10 Industrial Applicability

Accordingly, as described above, the present invention furnishes a large sheet of a drawing or map as a compact book, to thereby provide portability and a convenient searching capability for desired sections of pages. Therefore, the present invention can be used for a variety of publications, e.g., small-scale maps showing real-scale 15 landscapes, construction drawings, and other types of printed material which demonstrate a continuous diagram, e.g., children's books containing large illustrations.

While the present invention has been particularly shown and described with reference to particular embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be effected therein without departing 20 from the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

1. A book (20) designed so as to be capable of turning the pages thereof horizontally and vertically, comprising a plurality of booklets, of which sheets of paper show a continuous illustration on both faces thereof and are put upon one after the other, 5 and each of which is bound along a horizontal line (11) traversing the middle of said sheets and folded in half along a vertical line (12), said plurality of booklets being bound by adhesion between the outermost sheets thereof.

2. The book (20) as claimed in claim 1, wherein the number of sheets of said booklets and the number of pages excluding the two outermost pages are in a relationship 10 as follows:

$$P=2+4(n-1)$$

where P is the number of pages excluding the two outermost pages of said booklet and n is the number of sheets of said booklet, with said P and n both being positive integers.

3. A method for manufacturing a book (20) designed so as to be capable of turning pages horizontally and vertically, comprising the steps of: 15 partitioning and composing a diagram into a predetermined number of columns (A, B and C) and rows (1, 2, 3, 4, 5 and 6) so as to provide a plurality of rectangular sections each of which has a uniform size;

printing continuous sections of said diagram on both faces of a predetermined number of sheets so as to be connected with the adjacent sheet in sequence;

20 piling up said sheets of paper for said sections of one column, to thereby be located and folded in half along a horizontal line (11) based on the sequence for the succession of said diagram;

sewing said predetermined number of sheets belonging to one column, along said

horizontal line (11) traversing through the middle of said sheets, to thereby provide a plurality of booklets;

vertically folding said booklets in half along a vertical line (12), respectively; and

adhering said booklets to each other, the outermost pages of each of said booklets

5 being glued to those of adjacent booklets.

4. The method for manufacturing a book (20) designed so as to be capable of turning pages thereof horizontally and vertically as claimed in claim 3, wherein the number of sheets of said booklets and the number of pages excluding the two outermost pages for each of said booklets are in a relationship as follows:

$$P-2+4(n-1)$$

10 where P is the number of pages excluding the two outermost pages of said booklet and n is the number of sheets of said booklet, with said P and n both being positive integers.

5. The method for manufacturing a book (20) designed so as to be capable of turning the pages thereof horizontally and vertically as claimed in claim 4, wherein said diagram is printed on both faces of a sheet, and then each said sheet is divided by
15 said predetermined number of columns.

6. The method for manufacturing a book (20) designed so as to be capable of turning pages thereof horizontally and vertically as claimed in claim 4, wherein said diagram is printed on a plurality of sheets of paper, and then said sheets of paper are assembled to be turned while showing a consecutive view for each of said columns.

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FIG. 1

	A	B	C
1	A 1	B 1	C 1
2	A 2	B 2	C 2
3	A 3	B 3	C 3
4	A 4	B 4	C 4
5	A 5	B 5	C 5
6	A 6	B 6	C 6

10

12

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FIG. 2A

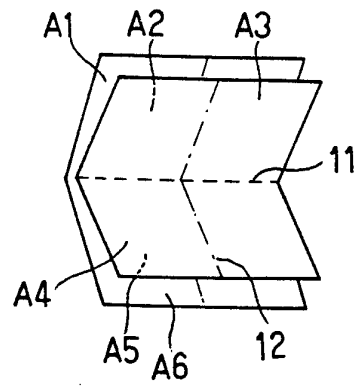


FIG. 2B

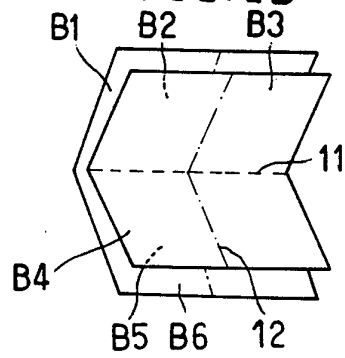
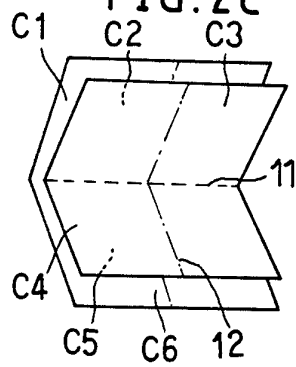


FIG. 2C



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FIG. 3A

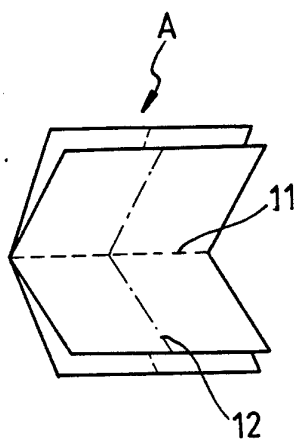


FIG. 3B

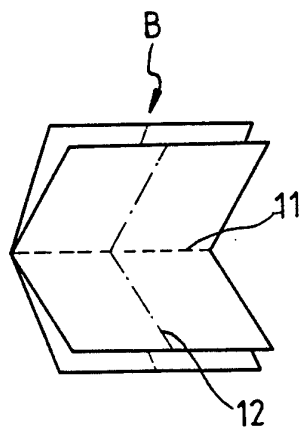


FIG. 3C

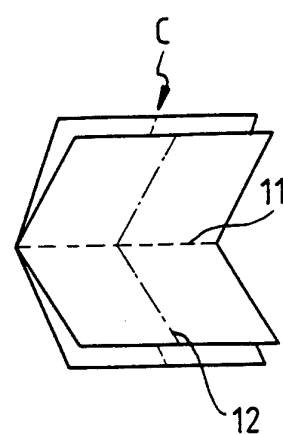


FIG. 4A

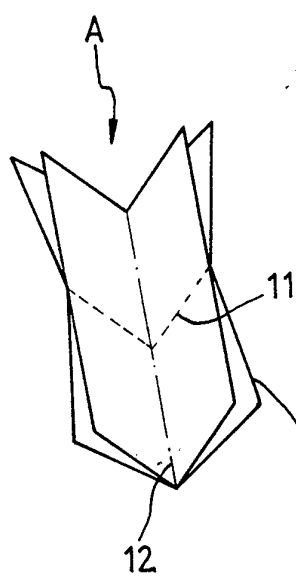


FIG. 4B

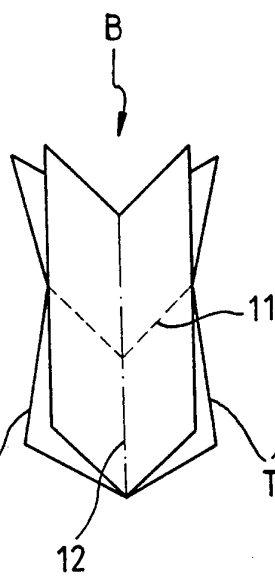
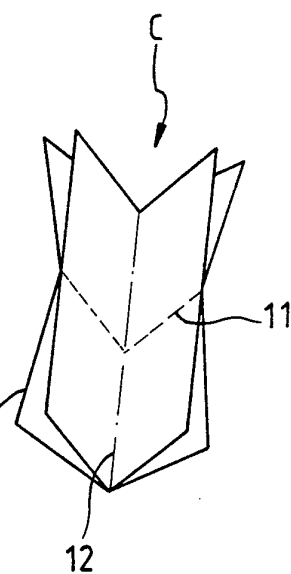


FIG. 4C



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FIG.5

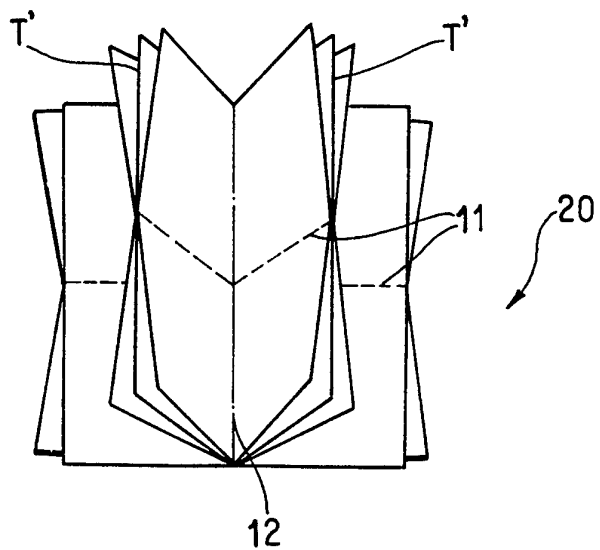
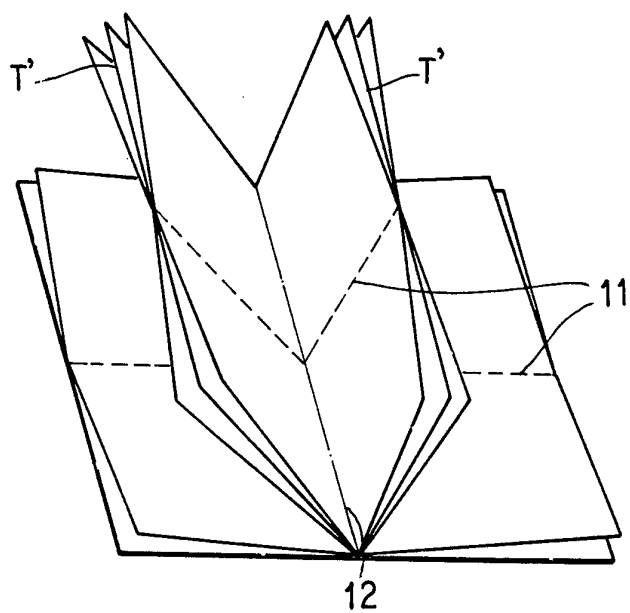


FIG.6



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FIG. 7

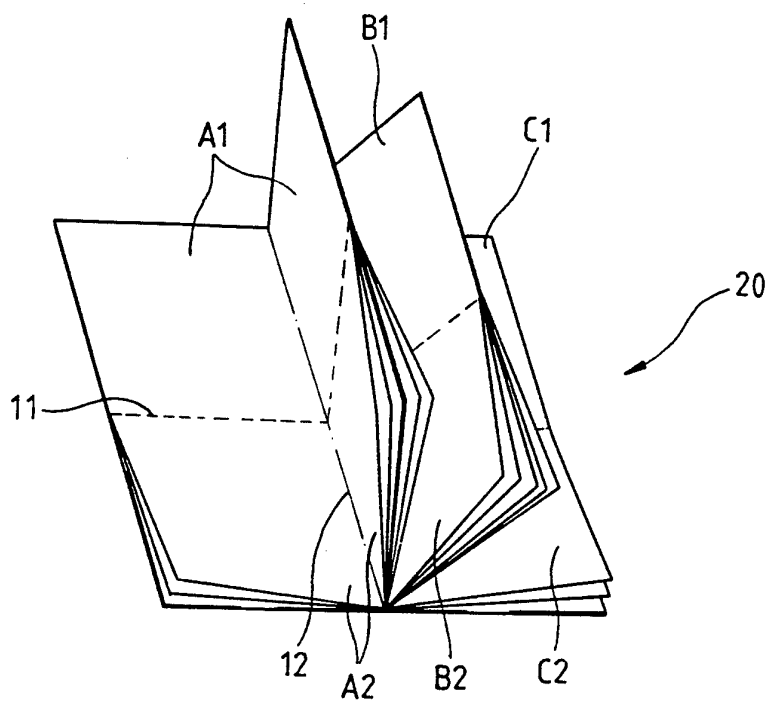
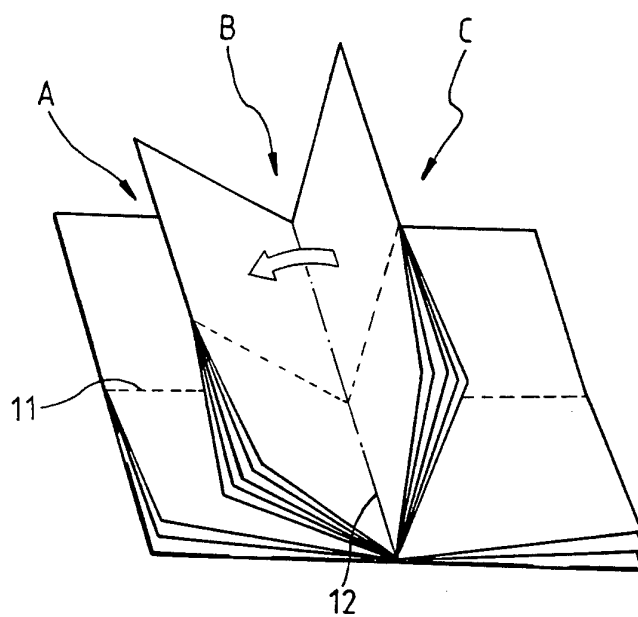


FIG. 8



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FIG. 9

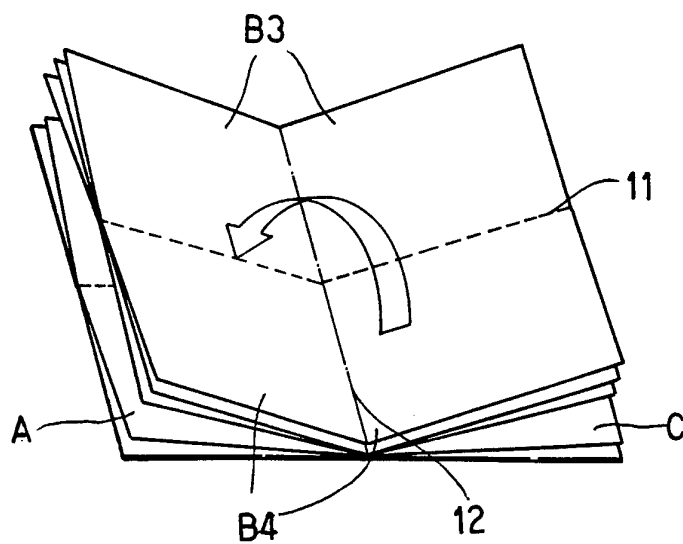
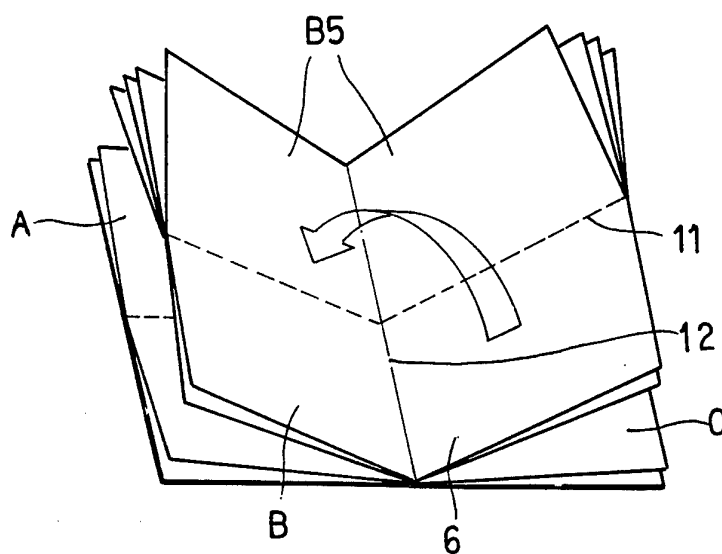


FIG. 10



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR 93/00077

A. CLASSIFICATION OF SUBJECT MATTER

IPC⁵: B 42 D 1/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC⁵: B 42 D 1/00

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE, A1, 1 944 317 (RÜGAMER) 04 March 1969 (04.03.69), fig.	1-6
A	GB, A1, 687 073 (FALK) 04 February 1953 (04.02.53), fig. 1-6.	1-6
A	FR, A1, 2 666 051 (3F INTERNATIONAL) 28 February 1992 (28.02.92), fig. 1-5.	1



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

22 October 1993 (22.10.93)

Date of mailing of the international search report

23 November 1993 (23.11.93)

Name and mailing address of the ISA/ AT

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR 93/00077

Im Recherchenbericht angeführtes Patentdokument Patent document cited in search report Document de brevet cité dans le rapport de recherche	Datum der Veröffentlichung Publication date Date de publication	Mitglied(er) der Patentfamilie Patent family member(s) Membre(s) de la famille de brevets	Datum der Veröffentlichung Publication date Date de publication
DE A 1944317	04-03-71	keine - none - rien	
GB A 687073		keine - none - rien	
FR A1 2666051	28-02-92	EP A1 472470	26-02-92