



(11) Publication number : **0 306 093 B1**

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification :
13.11.91 Bulletin 91/46

(51) Int. Cl.⁵ : **B42D 15/00**, B42D 15/04,
G09F 11/00

(21) Application number : **88201838.5**

(22) Date of filing : **29.08.88**

(54) **Composite folding sheet.**

(30) Priority : **03.09.87 NL 8702077**

(43) Date of publication of application :
08.03.89 Bulletin 89/10

(45) Publication of the grant of the patent :
13.11.91 Bulletin 91/46

(84) Designated Contracting States :
BE DE ES FR GB IT NL

(56) References cited :
DE-B- 1 203 112
GB-A- 128 508
GB-A- 164 812
US-A- 3 758 693

(73) Proprietor : **ALPHENAAR STANSEN BV.**
Industrieweg 13
Wormerveer (NL)

(72) Inventor : **Alphenaar, Gerrit**
Industrieweg 13
Wormerveer (NL)
Inventor : **Aafjes, Reindert**
Industrieweg 13
Wormerveer (NL)

(74) Representative : **Koomen, Jan, Ir.**
Kennemerstraatweg 35
NL-1814 GB Alkmaar (NL)

EP 0 306 093 B1

Note : Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid (Art. 99(1) European patent convention).

Description

The present invention relates to a composite folding sheet, which may be folded open or over from bordering- or separating lines to successively expose text and/or pictures present on the surfaces of the sheet.

Such a composite folding sheet is disclosed in the DE-B-1203112, and in which the composite folding sheet comprises a number of panels or cards which at bordering lines or edges are connected to each other by means of flexible strips and the like, such, that by rotating one panel, the other panels will be rotated too, to successively expose the front sides and the back sides of the panels.

It is an object of the present invention to improve the known composite folding sheet, so that more different text and/or pictures may be displayed when manipulating the sheet.

According to the invention, the composite folding sheet thereto is characterized, in that the bordering- or separating lines in the succeeding folding positions have been rotated alternately over an angle of 90 degrees in respect to each other, while further the composite sheet is formed out of four conform, hexagonal parts, with each two middle lines of symmetry extending perpendicularly in respect to each other, in which each part consists of a rectangular middle part, to which over two rectangular sides, which are located opposite each other and which are formed as folding lines, two triangular parts connect, while the four hexagonal parts are placed in two pairs next to each other and in which the one pair is placed as being rotated over an angle of 90 degrees in respect to and over the other pair, and the four hexagonal parts are adhered to each other at the outwardly directed halves of the triangular parts, such, that the two, next to each other located hexagonal parts of each pair from the common, bordering- or separating line located in the middle of the folding sheet may be rotated in a direction perpendicular thereon over an angle of 180 degrees around the middle symmetry line, extending parallel to the bordering or separating line. In this embodiment of the composite folding sheet according to the invention, four folding positions may be obtained by going through the folding sheet, that is to say, by folding the folding sheet on and on, in which for instance a stripcartoon may be reproduced.

After folding on the fourth folding position, the first, initial folding position is gotten back.

The invention will be further explained by way of example with reference to the accompanying drawing.

In the drawing the figures 1, 2, 3, and 4 show four succeeding folding positions of the composite folding sheet according to the invention.

As is shown more in particular in Fig. 1 and Fig. 4, the composite folding sheet is formed by a, in Fig.

1 upperlying first pair of two, conform hexagonal parts, placed next to each other, and underneath which, as being rotated over an angle of 90 degrees in respect to the first pair, a corresponding second pair of hexagonal parts is arranged, and which is shown more in particular in Fig. 4. The first pair (a) is, in respective the front or back side of the parts, shown darkly tinted, while the second pair (b) has remained untinted.

Further the corresponding elements of both pairs are indicated with the same reference numbers, however with this difference, that the reference numbers of the first pair has been completed with the character -a- and those of the second pair with the character -b-.

As more in particular is shown in Fig. 1 and Fig. 4, each hexagonal part consists of a rectangular middle part 1a, resp. 1b, to which over the folding lines 2a, resp. 2b, the triangular parts 3a, resp. 3b, are connected.

Both pairs are connected to each other at the outwardly directed halves of the parts 3a and 3b, as is shown by little crosses in Fig. 1 and in Fig. 4, such as by means of glueing of these halves to each other.

Starting from the initial position according to Fig. 1, both upperlying hexagonal parts 1a, 3a may be rotated from the common separating line 4a in the direction of the arrows around the middle symmetry lines 5a to abutment with the underlying parts pair, and by which then the folding position according to Fig. 2 arises, in which the rectangular middle parts 1b of the second pair have come on top.

By folding over then upwards and downwards around the middle symmetry lines 5b of the second pair (b) from the separating line 4b of this second pair, the folding position according to Fig. 3 arises, and in which then the middle parts 1a of the first pair appear at the upper side of the folding sheet.

During the succeeding rotation of the middle parts 1a of the first pair (a) around the middle symmetry lines 5a from the separating line 4a in the direction of the arrows, the folding position according to Fig. 4 arises, in which the second pair (b) has come on top.

When, at last, at the folding position according to Fig. 4 the second pair 1b, 3b from the separating line 4b in the direction of the arrows are rotated around the middle symmetry lines 5b, the folding position according to Fig. 1 arises again.

Thus, a short stripcartoon may be reproduced by the folding sheet, during which by folding the folding sheet over or on, the succeeding pictures and text of the cartoon may be exposed.

Claims

1. A composite folding sheet, which may be folded open or over from bordering- or separating lines (4a, 4b) to successively expose text and/or pictures

present on the surfaces of the sheet, characterized, in that the bordering- or separating lines (4a, 4b) in the succeeding folding positions have been rotated alternately over an angle of 90 degrees in respect to each other, while further the composite sheet is formed out of four conform, hexagonal parts, with each two middle lines of symmetry (5a, 5b) extending perpendicularly in respect to each other, in which each part consists of a rectangular middle part (1a, 1b), to which over two rectangular sides, which are located opposite each other and which are formed as folding lines (2a, 2b), two triangular parts (3a, 3b) connect, while the four hexagonal parts are placed in two pairs (a), (b) next to each other and in which the one pair is placed as being rotated over an angle of 90 degrees in respect to and over the other pair, and the four hexagonal parts are adhered to each other at the outwardly directed halves of the triangular parts (3a, 3b), such, that the two, next to each other located hexagonal parts of each pair (a), (b) from the common, bordering- or separating line (4a, 4b) located in the middle of the folding sheet may be rotated in a direction perpendicular thereon over an angle of 180 degrees around the middle symmetry line (5a, 5b), extending parallel to the bordering or separating line (4a, 4b).

Patentansprüche

1. Ein zusammengesetztes Faltblatt, welches über Rand- oder Trennlinien (4a, 4b) auseinander- oder zusammengeklappt werden kann, um schrittweise auf den Oberflächen des Blattes befindlichen Text und/oder Bilder offenzulegen, dadurch gekennzeichnet, daß die Rand- oder Trennlinien (4a, 4b) in den aufeinanderfolgenden Faltpositionen abwechselnd über einen Winkel von 90° in bezug auf die jeweils andere gedreht wurden, während des weiteren das zusammengesetzte Blatt aus vier gleichartigen, hexagonalen Teilen gebildet ist, wobei jeweils beide symmetrischen Mittellinien (5a, 5b) in bezug auf die jeweils andere senkrecht verlaufen und jedes Teil aus einem rechtwinkligen Mittelteil (1a, 1b) besteht, an welches sich über zwei rechtwinklige Seiten, die einander gegenüberliegend angeordnet und als Faltlinien (2a, 2b) ausgebildet sind, zwei dreieckige Teile (3a, 3b) anschließen, während die vier hexagonalen Teile in zwei Paaren (a), (b) nebeneinander angeordnet sind, und das eine Paar derart angeordnet ist, daß es über einen Winkel von 90° in bezug auf und über das andere Paar gedreht ist, und die vier hexagonalen Teile an den nach außen gerichteten Hälften der dreieckigen Teile (3a, 3b) miteinander verbunden sind derart, daß die beiden hexagonalen Teile jedes Paares (a), (b) der gemeinsamen, in der Mitte des Faltblattes befindlichen Rand- oder Trennlinie (4a, 4b), welche nebeneinander angeordnet sind, in einer

dazu senkrechten Richtung über einen Winkel von 180° um die mittlere Symmetrielinie (5a, 5b), die parallel zur Rand- oder Trennlinie (4a, 4b) verläuft, gedreht werden können.

Revendications

1. Feuille pliée composite, pouvant être dépliée ouverte ou repliée à partir de lignes de bordure ou de séparation (4a, 4b) pour faire apparaître successivement des légendes et/ou des images figurant sur les faces de la feuille, caractérisée en ce que les lignes de bordure ou de séparation (4a, 4b) des positions de pliage successives présentent l'une par rapport à l'autre un décalage angulaire de 90°, la feuille composite étant en outre constituée par quatre parties hexagonales identiques, comportant deux paires de lignes médianes de symétrie (5a, 5b) qui sont perpendiculaires l'une à l'autre, chacune des parties étant constituée par une pièce médiane rectangulaire (1a, 1b) à laquelle deux pièces triangulaires (3a, 3b) sont raccordées par deux côtés opposés du rectangle qui constituent deux lignes de pliage (2a, 2b), les quatre parties hexagonales étant disposées en deux paires (a), (b) l'une à côté de l'autre, l'une de ces paires ayant une position qui correspond à une rotation d'un angle de 90° par rapport à l'autre paire et sur celle-ci, et les quatre parties hexagonales étant fixées l'une à l'autre par collage à l'endroit des moitiés des pièces triangulaires (3a, 3b) qui sont disposées vers l'extérieur, de manière à permettre de faire pivoter les parties hexagonales contigües de chaque paire (a), (b), à partir de la ligne commune de bordure ou de séparation (4a, 4b) située au milieu de la feuille pliée, ce pivotement s'effectuant dans une direction perpendiculaire à cette ligne suivant un angle de 180° autour de la ligne médiane de symétrie (5a, 5b) qui s'étend parallèlement à la ligne de bordure ou de séparation (4a, 4b).

FIG.1

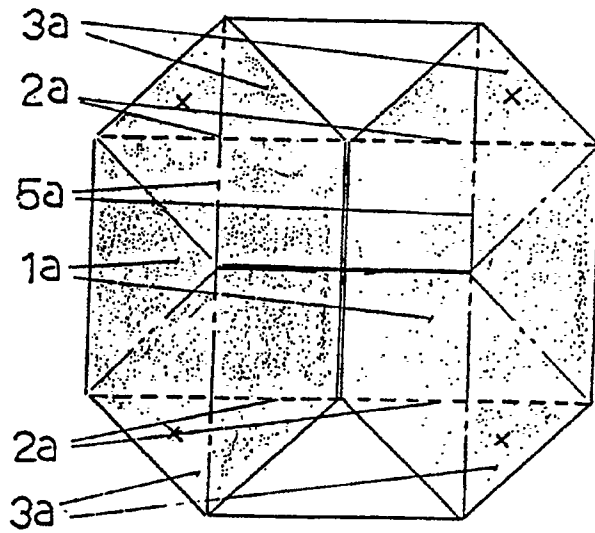


FIG.2

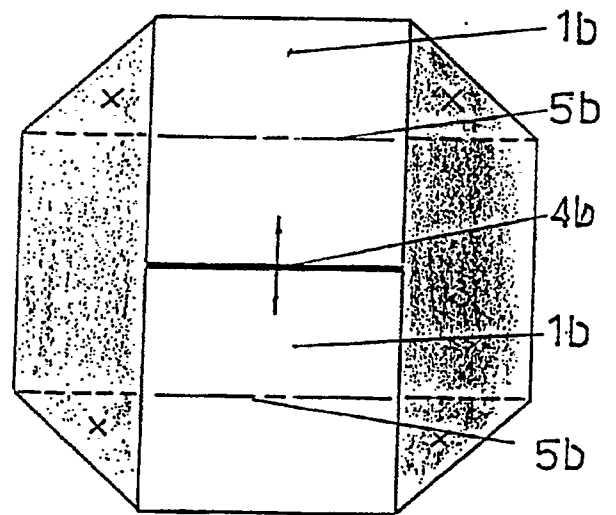


FIG.3

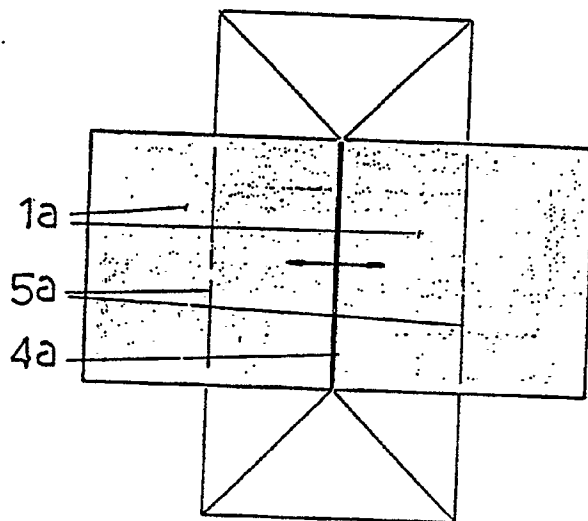


FIG.4

