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## (54) A box folded from a blank as well as such a blank

(57) A box folded from a blank, said box having a bottom comprising a bottom part and side walls, a cover comprising a cover part and side walls, as well as a connecting wall that is pivotally connected to the bottom part and to the cover part, at least one side wall being provided with two panels that can be positioned opposite each other via a fold line. The side wall can be connected to the associated bottom part or cover part by means of at least one recess and a projection that engages in said recess. The recess is closed on the side that faces towards an outer side of the box.

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## Description

**[0001]** The invention relates to a box folded from a blank, said box having a bottom comprising a bottom part and side walls, a cover comprising a cover part and side walls, as well as a connecting wall that is pivotally connected to the bottom part and to the cover part, at least one side wall being provided with two panels that can be positioned opposite each other via a fold line, which side wall can be connected to the associated bottom part or cover part by means of at least one recess and a projection that engages in said recess.

**[0002]** The invention further relates to such a blank.

**[0003]** Such a box, which is known from the prior art, is suitable for packaging a book, for example, so as to protect the book against external influences. Preferably, the dimensions of the box are adapted to the size of the book to be packaged. When books of varying sizes are to be stored in this manner, this means that a separate box needs to be produced for practically every book. Consequently, such boxes are usually made of cardboard or paper, from which a blank of a desired dimension and with fold lines can be made, using a machine that is suitable for that purpose.

**[0004]** The material composition of the paper or cardboard must be selected so that the materials will not affect the book. Consequently, no glue is used in the manufacture of such boxes for interconnecting various parts of the box. The box is preferably held together by means of projections engaging in recesses.

**[0005]** A drawback of the known boxes is the fact that the recesses extend from the interior of the box to the exterior of the box. This enables the ingress of air, the associated atmospheric humidity as well as dust into the box through said recesses, which will eventually affect the book that is packaged in the box.

**[0006]** The object of the invention is to provide a box that is relatively air and dust-tight.

**[0007]** This object is accomplished with the box according to the invention in that the recess is closed on the side that faces towards an outer side of the box.

**[0008]** Since the recess is closed on the side that faces towards an outer side of the box, air and dust cannot easily enter the box any more. The recess is closed in that the recess is, for example, formed in a panel that abuts against another panel, the bottom part or the cover part on an outer side facing away from the inner side of the box.

**[0009]** One embodiment of the box according to the invention is characterized in that the side wall in the blank is provided, on a side facing away from the bottom part and/or the cover part, with an abutment surface that is pivotally connected to a panel, which surface extends parallel to and at least partially abuts against the associated bottom part or cover part after the box has been folded.

**[0010]** As a result of the abutment of the abutment surface against the associated bottom part or cover part, a strong box is obtained. Moreover, it is possible to form recesses in the panel, near the abutment surface and thus close to the bottom part or the cover part.

**[0011]** Another embodiment of the box according to the invention is characterized in that the abutment surface is practically the same size as the associated bottom part or cover part.

**[0012]** In this way said abutment surface covers substantially the entire bottom part or cover part, so that a double-walled bottom part or cover part is obtained, as it were. This makes the box relatively strong.

**[0013]** Yet another embodiment of the box according to the invention is characterized in that the abutment surface, which is practically the same size as the associated bottom part or cover part, is provided with at least one projection that can be connected to a recess located near another abutment surface.

**[0014]** In this way a connection between a projection associated with a first side wall and a recess associated with a second side wall is effected in a relatively simple manner. The recess is closed on the side that faces towards the outer side of the box by the bottom part or the cover part and the panel of the second side wall that joins said bottom part or said cover part.

**[0015]** Yet another embodiment of the box according to the invention is characterized in that the connecting wall that is pivotally connected to the bottom part and the cover part is provided at one end with a closing flap that is pivotally connected to the connecting wall, which closing flap is positioned between the panels of a side wall in the folded position of a box.

**[0016]** The closing flap effectively closes a passage from the inside of the box between the connecting wall and the side wall of the bottom and between the connecting wall and the side wall of the cover, so that the ingress of air and/or dust into the interior of the box through this passage is not possible, either.

**[0017]** One embodiment of this box according to the invention is characterized in that the closing flap is quarter-circular in shape.

**[0018]** The quarter-circular shape enables the cover and the bottom to pivot relative to each other, upon which pivoting the closing flap is partially moved out of the space between the panels of a side wall.

**[0019]** Yet another embodiment of the box according to the invention is characterized in that at least one panel of a first side wall is provided with a connecting flap that is pivotally connected to the panel, which flap is positioned between panels of a second side wall extending transversely to the first side wall in the folded position of a box.

**[0020]** The connecting flap effects a connection between two side walls whilst in addition the passage between the side walls is closed in a simple manner.

**[0021]** Yet another embodiment of the box according to the invention is characterized in that at least one panel of the bottom or the cover is provided with a projection near the fold line with another panel that is pivotally con-

nected thereto, which projection can be connected to a recess in a panel of the cover or the bottom that is located near an abutment surface.

**[0022]** In this way the cover can be connected to the bottom, so that unintentional opening of the box is prevented a simple manner.

**[0023]** Yet another embodiment of the box according to the invention is characterized in that at least one side wall of the cover is provided with a thumb hole near the fold line between two panels.

**[0024]** To gain access to the interior of the box, the cover can be pivoted away from the bottom in a simple manner by inserting the thumb, for example, into the thumb hole.

**[0025]** The invention will now be explained in more detail with reference to the drawing, in which:

Figure 1 is a top plan view of a blank of a box according to the invention.

**[0026]** Figure 1 shows a blank 1 of a box according to the invention, which comprises a bottom 2, a cover 3 and a rectangular connecting wall 4. The bottom 2 and the cover 3 are pivotally connected to the connecting wall 4 via fold lines 5 extending parallel to each other.

**[0027]** The bottom 2 comprises a rectangular bottom part 6, which is pivotally connected to the connecting wall 4, via the fold line 5, on one side and which is pivotally connected to side walls 11, 12, 13, via fold lines 9, 10, on three other sides. The side walls 11, 13 are each other's mirror image, each comprising a first rectangular panel 14, a second rectangular panel 16 that is pivotally connected thereto via a double fold line 15, and an abutment surface 18 that is pivotally connected thereto via a fold line 17. The fold lines 8 10, 15, 17 extend parallel to each other. The panel 16 is provided with a rectangular recess 19 near the abutment surface 18.

**[0028]** The side wall 12 comprises a first rectangular panel 20, a second rectangular panel 22, which is pivotally connected thereto via a double fold line 21, and an abutment surface 24, which is pivotally connected thereto via a fold line 23. The fold lines 9, 21 and 23 extend parallel to each other. The first panel 20 is provided with two rectangular projections 25 near the fold line 21. The abutment surface 24 is provided with rectangular projections 26 on either side thereof. The abutment surface 24 is about the same size as the bottom part 6.

**[0029]** The side wall 12 is furthermore provided with two connecting flaps 29, which are connected to the first panel 20 via fold lines 28.

**[0030]** The cover 3 comprises a rectangular cover part 7, which is pivotally connected to the connecting wall 4, via the fold line 5, on one side, and which is pivotally connected to side walls 33, 34, 35, via fold lines 30, 31, 32, on three other sides. The side walls 33, 35 are each other's mirror image, each comprising a first rectangular panel 36, a second rectangular panel 38, which is pivotally connected thereto via a double fold line 37, and an abutment surface 40, which is pivotally connected thereto via a fold line 39. The fold lines 30, 32, 37 and 39 extend parallel to each other. The panel 38 is provided with a rectangular recess 41 near the abutment surface 18.

**[0031]** The side wall 34 comprises a first rectangular panel 42, a second rectangular panel 44, which is pivotally connected thereto via a double fold line 43, and an abutment surface 46, which is pivotally connected thereto via a fold line 45. The fold lines 31, 43 and 47 extend parallel to each other. The second panel 44 is provided with two rectangular recesses 47 near the fold line 45. The abutment surface 46 is provided with rectangular projections 48 on either side thereof. The abutment surface 46 is about the same size as the cover part 7.

**[0032]** The side wall 34 is furthermore provided with two connecting flaps 51, which are connected to the first panel 20 via fold lines 50.

**[0033]** The connecting wall 4 is provided with quarter-circular closing flaps 53 at both ends, which are connected thereto via fold lines 52.

**[0034]** To form the box according to the invention from the blank 1, the side walls 11, 12, 13, 33, 34, 35 are pivoted about the respective fold lines 8, 9, 10, 30, 31, 32 to a position transversely to the associated bottom part 6 or cover part 7. Then the connecting flaps 29, 51 are pivoted in the directions indicated by the arrows P1 and P2, respectively, to positions opposite the first panels 14 and 36, respectively. In a similar manner, the closing flaps 53 are pivoted in the direction indicated by the arrow P3 to positions opposite the first panels 36.

**[0035]** Following that, the second panels 16 and 38 are pivoted in the directions indicated by the arrows P4 and P5, respectively, about the fold lines 14 and 37, respectively, to positions opposite the first panels 14 and 36, respectively. The connecting flaps 29 and 51 are positioned between the first and second panels 14, 16 and 36, 38, respectively, whilst also the closing flaps 53 are positioned between the panels 36, 38.

**[0036]** When the panels 14, 16 and 36, 38, respectively, are being folded to positions in which they face each other, the abutment flaps 18 and 40, respectively, are automatically placed into abutment with the bottom part 6 and the cover part 7, respectively.

**[0037]** Then the second panels 22 and 44, respectively, of the side walls 12 and 34, respectively, are pivoted in the directions indicated by the arrows P6, P7 until the second panels 22 and 24 are positioned opposite the first panels 20 and 42, respectively. The abutment surfaces 24 and 34 are automatically pivoted in the directions indicated by the arrows P8 and P9, respectively, until the abutment surfaces 24 and 34, respectively, abut against the bottom part 6 and the cover part 7, respectively. The abutment surfaces 18 are enclosed between the bottom part 6 and the abutment surface 24 in that position. In a similar manner, the abutment surfaces 40 are enclosed between the cover part 7 and the abutment surface 46. When the abutment surface 24 is placed into abutment with the bottom part 6, the projections 26 of the side wall

12 are pushed into the recesses 19 in the side walls 11, 13. In this way a connection between the various side walls has been effected in a simple manner, so that unintentional detachment of the side walls from each other is prevented in a simple manner.

**[0038]** In a similar manner, the projections 48 of the side wall 34 are moved into engagement with the recesses 41 in the side walls 33, 35 when the abutment surface 46 is placed into abutment with the cover part 7.

**[0039]** The box is now ready for use. To package an object, for example a book, the book is placed on the bottom part 6, between the side walls 11, 12, 13 and the connecting walls. Then the slightly larger cover 3 is pivoted over the slightly smaller bottom 2 via the fold lines 5, thus positioning the side walls 11, 33; 12, 34 and 13, 35, respectively, opposite each other. Once the cover part 7 extends parallel to the bottom part 6, the projections 25 of the bottom 2 will come into engagement with the recesses 47 in the cover 3, thus connecting the cover 3 to the bottom 2, as it were, so that unintentional detachment of the cover 3 from the cover 2 is prevented in a simple manner.

**[0040]** The box thus formed has walls that are built up of a number of layers, as a result of which a relatively strong box is obtained. All the recesses are positioned inside the box, so that the ingress of air and dust into the box is practically excluded. If a person wishes to open the box, he or she can insert a thumb into the thumb hole 49 present in the outer side of the box and pivot the cover 3 in a direction away from the bottom 2. Said pivoting causes the projections 25 to be pulled out of the recesses 47.

**[0041]** The box is preferably made of a special, acid-free cardboard, which is known per se in relation to the production of boxes for the prolonged storage of books, for example.

**[0042]** It is also possible to fold the closing flap 53 between the panels 14, 16 rather than between the panels 36, 38. In that case the flap 53 will have to be configured so that the quarter-circular shape thereof extends away from the panels 14, 16, of course.

**[0043]** The quarter-circular shape of the closing flap is a preferred embodiment. It is also possible, however, to select a different shape for the closing flap.

**[0044]** It stands to reason that it is also possible to store other objects in the box.

## Claims

1. A box folded from a blank, said box having a bottom comprising a bottom part and side walls, a cover comprising a cover part and side walls, as well as a connecting wall that is pivotally connected to the bottom part and to the cover part, at least one side wall being provided with two panels that can be positioned opposite each other via a fold line, which side wall can be connected to the associated bottom part or cover part by means of at least one recess and a projection that engages in said recess, **characterized in that** the recess is closed on the side that faces towards an outer side of the box.

2. A box according to claim 1, **characterized in that** the side wall in the blank is provided, on a side facing away from the bottom part and/or the cover part, with an abutment surface that is pivotally connected to a panel, which surface extends parallel to and at least partially abuts against the associated bottom part or cover part after the box has been folded.

3. A box according to claim 2, **characterized in that** the abutment surface is practically the same size as the associated bottom part or cover part.

4. A box according to claim 2 or 3, **characterized in that** the abutment surface, which is practically the same size as the associated bottom part or cover part, is provided with at least one projection that can be connected to a recess located near another abutment surface.

5. A box according to any one of the preceding claims, **characterized in that** the connecting wall that is pivotally connected to the bottom part and the cover part is provided at one end with a closing flap that is pivotally connected to the connecting wall, which closing flap is positioned between the panels of a side wall in the folded position of a box.

6. A box according to claim 5, **characterized in that** the closing flap is quarter-circular in shape.

7. A box according to any one of the preceding claims, **characterized in that** at least one panel of a first side wall is provided with a connecting flap that is pivotally connected to the panel, which flap is positioned between panels of a second side wall extending transversely to the first side wall in the folded position of a box.

8. A box according to any one of the preceding claims, **characterized in that** at least one panel of the bottom or the cover is provided with a projection near the fold line with another panel that is pivotally connected thereto, which projection can be connected to a recess in a panel of the cover or the bottom that is located near an abutment surface.

9. A box according to any one of the preceding claims, **characterized in that** at least one side wall of the cover is provided with a thumb hole near the fold line between two panels.

10. A blank for forming a box according to any one of the preceding claims.

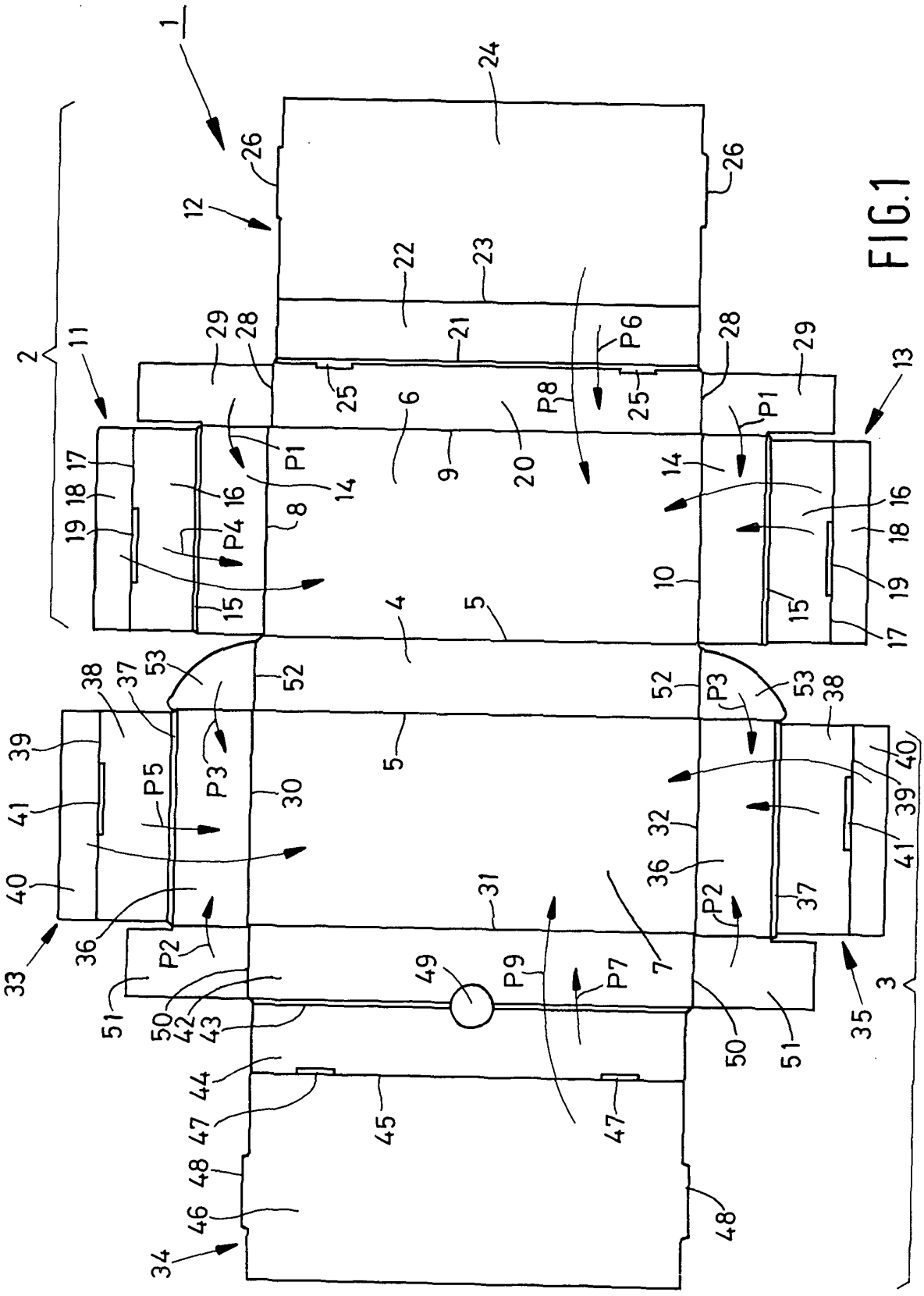
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FIG.1