

Description

The present invention relates to a collapsible box formed from a generally planar material comprising a bottom and sidewalls and including a lid if desired wherein the sidewalls are hinged or otherwise connected to the bottom such that they can be folded relative to the bottom and wherein the corners of the box are joined by means of a releasable connection comprising a vertical slot or hole in one, the first, sidewall and an extending fastening tongue in the other, second, sidewall's end edge.

Known in the art are collapsible boxes of the type aforesaid. One example is given in DE Patent application No. 3,444,477 of a box having a shape amenable to a tongue and groove design in which the end edge of one side extends into a groove on the opposite side of each of the box's corners. The end edge is retained in the groove by the action of projections which correspond to depressions in the groove. This design is mechanically weak and will not survive serious impacts. Furthermore it will be difficult to assemble since the projections must be pressed past the "opening" in the groove.

DE Patent application No. 3,046,954 shows another collapsible transport box in which the corner connection includes hook-shaped latches which extend from the end edge of one sidewall to grooves in the other sidewall. This design is also mechanically weak since the latch hooks will yield to loads and will be pulled out of the grooves. Also the latches are in an exposed position and can be released from the grooves by inept handling of the box.

US-A-1,242,160 discloses a poultry crate comprising each a tongue extending from the end edge of one, first sidewall, around the corner of the second, adjacent sidewall and from the outside through a slot and into the inside of said adjacent sidewall. Such connection where the locking tongue is relatively long and stretches all the way around the corner will easily be stretched out and disconnected if the material is resilient. Besides, the connection as revealed in this US citation does not provide any securing means to prevent the tongue from being withdrawn from the slot.

The present invention discloses a collapsible transport box of the type already mentioned in which the connection between the sides at the box's corners are of simple design and simultaneously cheap to produce. Further the invention discloses a design which is mechanically strong and which cannot be released by unfortunate handling of the box.

The invention is characterised in that the tongue extends through the slot from the inside and is bent sideways so that its external part ex-

tends across an external region of the first sidewall, as defined in the attached claim 1.

The independent claims 2-5 define advantageous features of the present invention.

The invention will now be described in more detail by means of examples and with reference to the drawings in which:

Figure 1 shows a material blank which the box according to the invention is formed from;

Figure 2 shows a box formed from the material blank shown in figure 1;

Figure 3 shows in larger scale a horizontal section through a corner of the box shown in figure 2 (along line A-A);

Figure 4 shows in larger scale a corner of the box shown in figure 2 seen in partial side and top view.

As already mentioned figure 1 depicts a material blank 1 from which the box according to the invention is fabricated. The blank comprises a bottom section 2 and four side sections 3-6 which are hinged or otherwise joined to the bottom section 2. The material blank can if appropriate be fabricated from a double-walled hollow body of thermoplastic material as further described and shown in the applicant's own Norwegian patent no. 162335, though it can also be of single-wall design and be made of basically any suitable material.

Figure 2 depicts a box formed from the material blank of figure 1. The walls at the box corners are joined by means of releasable connections 7. These will be described in further detail with reference to figures 3 and 4.

As will be understood from these two figures, one of the sidewalls 6 is provided with a vertical slot or opening 8 while the other sidewall 5 at its end is provided with an outwardly extending fastening tongue 9. The fastening tongue 9 extends through the slot 8 and is bent sideways so as to extend over an external part of the other sidewall 6. The end edge 10 of the sidewall 5 is of bevelled shape and rests against a complementary, bevelled part of the opposite sidewall 6. A locking wedge 11 retains the fastening tongue 9 in the slot 8. The locking wedge is "hinged" to the opening 8 via a thin material connection in the region 12 as indicated in figures 3 and 4 and is kept in its locking position as shown in Fig. 3 by means of a small vertical groove or elevated parties on the tongue 9 opposite the end of the wedge (not further shown). The wedge 11 is used to prevent slack from developing in the corner connection and to avoid the fastening tongue from being withdrawn from the slot. This is particularly useful when the box is empty. As soon as payload is filled in the box and the sides are pressed outward the fastening tongue will be forced against the edge of the slot and will

be self-locking.

As is apparent from figure 4 the box may preferably be provided with a lid 13. The lid may be hinged to one of the sidewalls or be attached releasable. The lid is provided with a downward edge 14 which extends outside an upward edge 15 on the box. Thus one achieves a strength enhancement of the box when the lid is in place since the sidewalls are held in place within the edge of the lid.

The present invention has disclosed a simple, collapsible box which is cheap to manufacture and simple to use and which, depending on the material from which it is made, can be used many times. It should be emphasized that the term "box" is not limited to containers for transport purposes. Thus, the invention as defined in the claims may be applied on any construction having a bottom or back with sides or side walls, for instance a bookshelf. In the case of a bookshelf, the shelves as such may be connected to the side walls by means of the same tongue and slot principle as defined in the claims.

Claims

1. A collapsible box formed by a generally planar material blank (1) comprising a bottom (2) and sidewalls (3, 4, 5, 6) and including a lid (13) if appropriate wherein the sidewalls are hinged or otherwise connected to the bottom thereby being foldable or releasable relative to the bottom and wherein the walls at the box corners are joined by means of a releasable connection, comprising a vertical slot or hole (8) in one, the first, sidewall (6) and an-extending fastening tongue (9) in the other, second, sidewall's (5) end edge,
characterized in that
the tongue extends through the slot (8) from the inside and is bent sideways so that its external part extends across an external region of the first sidewall (6) towards the adjacent end edge of said first sidewall (6).
2. Collapsible box as disclosed in claim 1,
characterized in that
in the slot (8) there is provided a locking wedge (11) which presses the fastening tongue (9) against the edge of the slot.
3. Collapsible box as disclosed in claim 2,
characterized in that
the locking wedge (11) is removably attached.
4. Collapsible box as disclosed in claim 2,
characterized in that
the locking wedge (11) is hinged to the slot (8)

via a thin material section and can be turned sideways while inserting the fastening tongue into the slot (8).

5. Collapsible box as disclosed in claims 1-4, in which the box is provided with a lid (13),
characterized in that
the lid is provided with a downward extending part (14) which extends outside an upward extending part (15) of the box's sidewalls.

Patentansprüche

1. Eine zusammenklappbare Kiste, welche aus einem im allgemeinen planaren Materialformstück (1) hergestellt wird, welche einen Boden (2) und Seitenwände (3, 4, 5, 6) aufweist sowie einen Deckel (13) umfaßt, wenn dies zweckmäßig ist, wobei die Seitenwände gelenkig angebracht oder auf eine andere Art und Weise mit dem Boden verbunden sind, wodurch sie faltbar oder lösbar gegenüber dem Boden sind und wobei die Wände an den Kistenecken mit Hilfe von lösbaren Verbindungen vereinigt sind, welche letztere einen vertikalen Schlitz oder eine Bohrung (8) in einer ersten Seitenwand (6) aufweisen, sowie eine verlängerte Befestigungszunge (9) an der Eckkante der anderen zweiten Seitenwand (5), dadurch gekennzeichnet, daß sich die Zunge ausgehend von der Innenseite her durch den Schlitz (8) hindurch erstreckt und daß sie seitwärts so abgebogen ist, daß sich ihr äußerer Teil über einen äußeren Bereich der ersten Seitenwand (6) hinweg erstreckt, dies in Richtung der benachbarten Endkante der besagten ersten Seitenwand (6).
2. Zusammenklappbare Kiste, so wie sie in dem Patentanspruch 1 dargelegt ist, dadurch gekennzeichnet, daß man in dem Schlitz (8) einen Verriegelungskeil (11) vorsieht welcher die Befestigungszunge (9) gegen die Kante des Schlitzes preßt.
3. Zusammenklappbare Kiste, so wie sie in dem Patentanspruch 2 beschrieben ist, dadurch gekennzeichnet, daß der Verriegelungskeil (11) auf entfernbarer Art und Weise angebracht ist.
4. Zusammenklappbare Kiste, so wie sie in dem Patentanspruch 2 beschrieben ist, dadurch gekennzeichnet, daß der Verriegelungskeil (11) über den Weg eines dünnen Materialbereiches gelenkig in dem Schlitz (8) einhängt und seitwärts gedreht werden kann während die Befestigungszunge in den Schlitz (8) hineingeführt wird.



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As is apparent from figure 4 the box may preferably be provided with a lid 13. The lid may be hinged to one of the sidewalls or be attached releasable. The lid is provided with a downward edge 14 which extends outside an upward edge 15 on the box. Thus one achieves a strength enhancement of the box when the lid is in place since the sidewalls are held in place within the edge of the lid.

The present invention has disclosed a simple, collapsible box which is cheap to manufacture and simple to use and which, depending on the material from which it is made, can be used many times. It should be emphasized that the term "box" is not limited to containers for transport purposes. Thus, the invention as defined in the claims may be applied on any construction having a bottom or back with sides or side walls, for instance a bookshelf. In the case of a bookshelf, the shelves as such may be connected to the side walls by means of the same tongue and slot principle as defined in the claims.

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3. Collapsible box as disclosed in claim 2, **characterized in that** the locking wedge (11) is removably attached.
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via a thin material section and can be turned sideways while inserting the fastening tongue into the slot (8).

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4. Zusammenklappbare Kiste, so wie sie in dem Patentanspruch 2 beschrieben ist, dadurch gekennzeichnet, daß der Verriegelungskeil (11) über den Weg eines dünnen Materialbereiches gelenkig in dem Schlitz (8) einhängt und seitwärts gedreht werden kann während die Befestigungszunge in den Schlitz (8) hineingeführt wird.



5. Zusammenklappbare Kiste, so wie sie in den Patentansprüchen 1-4 beschrieben ist, wobei die Kiste mit einem Deckel (13) versehen ist, dadurch gekennzeichnet, daß der Deckel mit einem sich nach unten erstreckenden Teil (14) ausgestattet ist und sich derselbe außerhalb eines sich nach oben ausdehnenden Teiles (15) der Seitenwände der Kiste erstreckt.

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Revendications

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1. Coffre pliant formé d'une ébauche de matière (1) de forme générale plane et comprenant un fond (2) et des parois latérales (3, 4, 5, 6) et un couvercle (13), si cela s'avère approprié, coffre dans lequel les parois latérales sont articulées ou autrement connectées au fond de telle sorte qu'elles puissent être repliées ou dégagées par rapport au fond, et dans lequel les parois latérales aux coins du coffre sont jointes par une liaison amovible comprenant une fente ou orifice vertical(e) (8) sur une paroi latérale (6), la première, et une languette de fixation en extension (9) dans le bord terminal de l'autre paroi latérale (5), la deuxième, caractérisé en ce que la languette s'étend à travers la fente (8) depuis l'intérieur et est pliée latéralement de telle sorte que sa partie externe s'étende en travers d'une région externe de la première paroi latérale (6) vers le bord terminal voisin de ladite première paroi latérale (6).
2. Coffre pliant selon la revendication 1, caractérisé en ce qu'il est prévu dans la fente (8) une cale de blocage (11) qui presse la languette de fixation (9) contre le bord de la fente.
3. Coffre pliant selon la revendication 2, caractérisé en ce que la cale de blocage (11) est fixée de manière amovible.
4. Coffre pliant selon la revendication 2, caractérisé en ce que la cale de blocage (11) est articulée sur la fente (8) via une section de matière mince et peut tourner latéralement tandis que l'on insère la languette de fixation dans la fente (8).
5. Coffre pliant selon les revendications 1 à 4, dans lequel le coffre est équipé d'un couvercle (13), caractérisé en ce que le couvercle est pourvu d'une partie descendante (14) qui s'étend à l'extérieur d'une partie ascendante (15) des parois latérales du coffre.

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