

PATENT SPECIFICATION (11)

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(54) ERECTING BOXES OR CASES

(71) I, FRANCIS EDWARD TATTAM, a British subject, of Neild House, Beaumont End, near Amersham, Buckinghamshire, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention concerns erecting boxes or cases. More particularly, it concerns an improved method and means for erecting cases which are preferably of the type having parallelepipedal sides, base and lid and which makes use of inter-engageable element pairs, such as projections and recesses, for lockingly engaging adjacent sides.

The invention is particularly applicable to the erection of boxes and cases but its use extends to all fields where it is necessary to make parallelepipedal structures and accordingly its field of usefulness extends to furniture making and many other fields as well. Although the invention is in no way so limited, it is particularly useful for boxes or cases or trays as disclosed in my British Patent Specification No. 1,437,719 and my co-pending Applications Nos. 17100/75 and 840/76 (Serial Nos. 1,517,312 and 1,518,381), respectively.

As far as I am aware, in all fields where parallelepipedal structures have to be erected from wall panel elements and wherein inter-engaging projection-recess pairs have been used, the hitherto unsolved problem exists of fitting the final side of the structure to the already erected sides to complete a parallelepipedal structure without forcing, bending or twisting the walls of the interengaging elements.

The present invention seeks to provide an extremely simple, economic yet highly reliable expedient for enabling such structures to be erected and completed without any undue effort and without any risk of damaging by twisting or forcing any of the elements concerned.

The invention consists in one broad aspect in a container of parallelepipedal configuration adapted to be erected from wall elements which include pairs of interengage-

able projections and recesses, wherein one wall element has a portion displaceable relative to the remainder of that wall element, and contains one element of a projection-recess pair wherein the said portion is a) either a completely removable discrete piece; or b) the said portion is movably attached either to the wall element it is destined to form a part of or to a wall element destined to co-operate with the first mentioned wall element; and in either case the said portion is shaped for an interlocking and wedging fit into a complementarily shaped recess formed in the remainder of said wall element.

In either case, the said portion may carry a recess adapted to receive a projection from the adjacent wall, or the situation may be reversed and it may have a projection to fit into a recess of the adjacent wall.

Preferably, of course, the invention is particularly suitable for fitting a lid to an open box, in which case at least one side wall has at least one relatively movable portion. If so desired, each side wall can have one or more of such portions. This depends entirely on the intended use and the convenience of the user.

In a preferred embodiment, the lid of the box is provided with a projection adapted to fit into a recess formed into the relatively movable portion. The latter in the preferred embodiment is a trapezoidal member adapted to fit in a complementary trapezoidal recess in a side wall of the case or box.

In a particular preferred laminar construction, the relatively movable member consists of two unequally dimensioned parts across its thickness, each such part being expediently trapezoidal, and so formed that on three of the four sides of the larger part a margin is formed to serve as an abutment surface. Complementarily, the recess in the associated side wall of the box or case is formed in two parts across its thickness thereby to provide a margin corresponding to the margin on the removable portion, and on assembly these margins will bear against each other.

Preferably the inter-engaging projections

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and recesses are formed from metallic strip material attached to the material of the box or case by usual means, such as stapling, riveting or screwing.

It will be appreciated that once the removable or movable portion, hereafter also referred to as the flap, is pushed home, it provides an extremely strong connecting element and the more force or pressure is used in a sense trying to dislodge it the tighter is its connection to resist such dislodgement.

The invention will now be described, mainly by way of example, with reference to the accompanying drawings, wherein

Figure 1 is an "exploded" fragmentary perspective view of a box or case embodying the invention,

Figure 2 is a side elevation of the elements shown in Figure 1,

Figure 3 is a plan view of an interlocked pair of adjacent walls utilizing the present invention and with certain details omitted for simplicity,

Figure 4 is a vertical cross-section along the plane 4-4 in Figure 3, and

Figure 5 is a view somewhat similar to Figure 2 but illustrating in full lines an embodiment where the relatively movable portion is pivotally attached to the lid of a box or case and shows in dotted lines the position of the movable portion when it is pivoted downwardly against the side wall thereof.

Referring to the drawings, there is shown a laminar box or case 10 of which only one side wall 12 and the lid 14 are shown. For interengagement of the sides, base and lid of the case, metallic strips are secured by any suitable means to these parts so that they extend at least partly around the edges to be joined. One such strip 16 on the side wall carries an upstanding projection or tongue 18 adapted to cooperate with a strip 20 bent around the edge of the lid and formed on the underside of the lid with a tongue-receiving recess or slit 24. Another metallic strip 26 on the lid carries a substantially horizontally extending tongue 28.

It has been found in use that fitting a lid to an already erected box is very difficult and indeed impossible without twisting and forcing the sides in order to fit the tongue 28 into its complementary recess in the side wall 12.

In the present invention, however, this problem is overcome by making a portion of the side wall either a relatively movable attached member or a discrete member. In the Figure 1 embodiment this portion is in fact a discrete member 30 carrying a metallic strip or clip 32 formed with a recess 34 for cooperating with the tongue 28. This member is of trapezoidal shape and fits into a complementarily formed recess 36 in the wall 12. Moreover, both the recess and the

member 30 are made in two different but still complementary sizes which in the illustrated embodiment respectively extend across half the thickness of the side wall. In this way an abutment surface 40 is formed between the member 30 and the recess in the side wall 12.

To provide for good inter-locking abutments, the lid is formed with a horizontally extending recess 50 which on assembly inter-engages with a complementary shaped raised portion 52 on the side wall 12.

When the lid has been fitted on the side wall, the relatively movable member 30 is pressed home into its recess and the slit or recess in its clip will snugly receive the tongue 28 on the lid. Thereafter, the relatively movable portion may be disguised, if so desired, by sticking a covering layer over it, or may be lightly secured by adhesive tape, depending on circumstances. As shown in Figure 5 the member 30 need not be a discrete member but may instead be a flap connected by a hinge connection either to the lid or the side wall.

It will be appreciated that the trapezoidal shape of the recess and the relatively movable member provide for good wedging inter-engagement, but of course such a shape is not essential but merely preferred. Other complementary shapes are preferably possible, whether wedging or not. Moreover, the relatively movable member need not be provided in the form of two different cross-sections but may instead be a unitary member of constant cross-section. In that case, of course, the recess would be complementarily formed. It should be appreciated that in use of the illustrated embodiment any upward or lateral forces acting on the flap or removable member will merely increase its wedging interengagement with the recess while downward forces are also accommodated. Horizontal forces in the direction of the strip on the lid from the outside would also be easily taken up by virtue of the abutment between the marginal portions of the outer surface of the recess and the inner surface of the flap and any internal forces outwardly in the same plane would be resisted by the frictional engagement between the edges of the recess and of the flap or removable member aided if necessary by any adhesive tape secured on the outside or any adhesively secured cover, as previously mentioned.

WHAT I CLAIM IS:—

1. A container of parallelepipedal configuration adapted to be erected from wall elements which include pairs of interengageable projections and recesses, wherein one wall element has a portion displaceable relative to the remainder of that wall element, and contains one element of a projection-



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and recesses are formed from metallic strip material attached to the material of the box or case by usual means, such as stapling, riveting or screwing.

5 It will be appreciated that once the removable or movable portion, hereafter also referred to as the flap, is pushed home, it provides an extremely strong connecting element and the more force or pressure is used in a sense trying to dislodge it the tighter is its connection to resist such dislodgement.

The invention will now be described, mainly by way of example, with reference to the accompanying drawings, wherein

15 Figure 1 is an "exploded" fragmentary perspective view of a box or case embodying the invention,

Figure 2 is a side elevation of the elements shown in Figure 1,

20 Figure 3 is a plan view of an interlocked pair of adjacent walls utilizing the present invention and with certain details omitted for simplicity,

Figure 4 is a vertical cross-section along the plane 4—4 in Figure 3, and

25 Figure 5 is a view somewhat similar to Figure 2 but illustrating in full lines an embodiment where the relatively movable portion is pivotally attached to the lid of a box or case and shows in dotted lines the position of the movable portion when it is pivoted downwardly against the side wall thereof.

30 Referring to the drawings, there is shown a laminar box or case 10 of which only one side wall 12 and the lid 14 are shown. For interengagement of the sides, base and lid of the case, metallic strips are secured by any suitable means to these parts so that they extend at least partly around the edges to be joined. One such strip 16 on the side wall carries an upstanding projection or tongue 18 adapted to cooperate with a strip 20 bent around the edge of the lid and formed on the underside of the lid with a tongue-receiving recess or slit 24. Another metallic strip 26 on the lid carries a substantially horizontally extending tongue 28.

35 It has been found in use that fitting a lid to an already erected box is very difficult and indeed impossible without twisting and forcing the sides in order to fit the tongue 28 into its complementary recess in the side wall 12.

40 In the present invention, however, this problem is overcome by making a portion of the side wall either a relatively movable attached member or a discrete member. In the Figure 1 embodiment this portion is in fact a discrete member 30 carrying a metallic strip or clip 32 formed with a recess 34 for cooperating with the tongue 28. This member is of trapezoidal shape and fits into a complementarily formed recess 36 in the wall 12. Moreover, both the recess and the

member 30 are made in two different but still complementary sizes which in the illustrated embodiment respectively extend across half the thickness of the side wall. In this way an abutment surface 40 is formed between the member 30 and the recess in the side wall 12.

To provide for good inter-locking abutments, the lid is formed with a horizontally extending recess 50 which on assembly inter-engages with a complementary shaped raised portion 52 on the side wall 12.

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80 It will be appreciated that the trapezoidal shape of the recess and the relatively movable member provide for good wedging inter-engagement, but of course such a shape is not essential but merely preferred. Other complementary shapes are preferably possible, whether wedging or not. Moreover, the relatively movable member need not be provided in the form of two different cross-sections but may instead be a unitary member of constant cross-section. In that case, of course, the recess would be complementarily formed. It should be appreciated that in use of the illustrated embodiment any upward or lateral forces acting on the flap or removable member will merely increase its wedging interengagement with the recess while downward forces are also accommodated. Horizontal forces in the direction of the strip on the lid from the outside would also be easily taken up by virtue of the abutment between the marginal portions of the outer surface of the recess and the inner surface of the flap and any internal forces outwardly in the same plane would be resisted by the frictional engagement between the edges of the recess and of the flap or removable member aided if necessary by any adhesive tape secured on the outside or any adhesively secured cover, as previously mentioned.

WHAT I CLAIM IS:—

1. A container of parallelepipedal configuration adapted to be erected from wall elements which include pairs of interengageable projections and recesses, wherein one wall element has a portion displaceable relative to the remainder of that wall element, and contains one element of a projection-

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recess pair wherein the said portion is a) either a completely removable discrete piece; or b) the said portion is movably attached either to the wall element it is destined to form a part of or to a wall element destined to co-operate with the first mentioned wall element; and in either case the said portion is shaped for an interlocking and wedging fit into a complementarily shaped recess formed in the remainder of said wall element.

2. A container according to claim 1 wherein the said portion is provided with a recess adapted to receive a projection from the adjacent wall, or vice versa.

3. A container according to claim 1 or claim 2, for fitting a lid to an open container wherein at least one side wall has at least one relatively movable portion.

4. A container according to claim 3 wherein the lid of the container is provided with a projection adapted to fit into a recess formed into the relatively movable portion.

5. A container according to any preceding claim wherein the said portion is a trapezoidal member adapted to fit in a complementary trapezoidal recess in a side wall of the container.

6. A container according to any preceding claim wherein the said portion is of

laminar construction and consists of two unequally dimensioned parts across its thickness, each such part being preferably trapezoidal, and so formed that on three of the four sides of the larger part a margin is formed to serve as an abutment surface; complementarily, the recess in the associated side wall of the container is formed in two parts across its thickness thereby to provide a margin corresponding to the margin on the said portion so that on assembly these margins will bear against each other.

7. A container according to any preceding claim wherein the inter-engaging projections and recesses are formed from metallic strip material attached to the material of the container by usual means, such as stapling, riveting or screwing.

8. A container according to claim 1 substantially as herein described with reference to and as shown in the accompanying drawings.

T. Z. GOLD & COMPANY,
Agents for the Applicant,
Chartered Patent Agents,
9, Staple Inn,
London WC1V 7QH,
and
2 Fawley Road,
London NW6 1SH.

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