

PATENT SPECIFICATION (11)

1 517 312



1 517 312

(21) Application No. 17100/75 (22) Filed 24 April 1975 (19)

(61) Patent of Addition to No. 1 437 719 dated 16 May 1974

(23) Complete Specification filed 2 April 1976

(44) Complete Specification published 12 July 1978

(51) INT. CL.² B65D 5/02 5/10 5/14

(52) Index at acceptance

B8P 21B 4B 4D 5A 7X 8C1A3 8C2C 8C2D 8D2 8D3 8R

(54) IMPROVED CONTAINER

(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 relates to an improved container, and is an improvement in or modification of the invention disclosed in my British Patent Specification No. 1,437,719, hereafter referred to as the "main invention".

The main invention discloses and claims a kit of parts or a blank constructed for ready assembly into a box or case, and comprising a blank consisting of three or four juxtaposed side panels and a repeatedly deformable covering to which each of the side panels is secured; and end panels formed with projections and/or recesses for engagement with corresponding recesses and/or projections, respectively, on the side panels; the edge of each side panel nearest to the adjacent side panel also being provided with projections and/or recesses; and the kit or blank being adapted to be assembled into box form by successive folding of the covering with the side panels into engagement with the end panels, the projections and co-operating recesses of the side panels lockingly engaging one another in the assembled box or case, as well as a box or case assembled from such a kit or blank.

The present invention relates particularly to improvements which:—

enable a collapsed container (box, case, tray with sides, etc.) to be stored in a more rational manner by enabling the end panels to be permanently connected to the side panels; provide improved clips and other securing means; render the containers readily stackable; improve the configuration of said recesses; facilitate rapid collapsing of an erected container; and enable containers to be

manually carried in a convenient manner. 50

According to one aspect of the present invention there is provided a kit of parts as claimed in claim 1 of the main invention, wherein each side panel is provided with connecting means for connection to an adjacent side panel so that it is free to move to a limited extent relative to the adjacent panel, and wherein interengageable and disengageable cooperating connecting elements are provided on the end panels and on the edge regions of one of the side panels adapted to engage with the end panels, or a permanent, flexible connecting member is secured between the end panels and the edge regions of one of the side panels adapted to engage with the end panels, the said connecting elements or member allowing limited rotational and linear movement between the said one panel and each of the end panels. 55 60 65 70

Preferably, when there are three panels, one side panel is to be the base or bottom panel of the assembled container; each of the two side panels may then be connected to the base panel by one or more flexible strap(s) constituting said connecting means or, most preferably, by a "lost motion" coupling made up of said elements. 75

Similarly, the connecting member, between each end panel and the base panel may be constituted by flexible strap(s) or, most preferably, a "lost motion" coupling. 80

If the container is to have a lid panel i.e. a fourth panel, then that panel would be expediently connected to one of said two side panels by flexible strap(s) or, most preferably, a "lost motion" coupling. 85

In a preferred embodiment, each end panel is connectable to the said two side panels by engaging a slotted projection on one panel in a slit of the other panel such that on engagement the slotted part of the projection extends through and beyond the slot of the other panel, whereby to make the slot on the one panel available for external additional fastening means. 90 95

The lost-motion coupling between a side panel and each end panel may advantage-

ously consist of at least one inverted U-shaped resilient metal clip fittable at its ends to, and readily removable from, the opposite sides of an elongated recess in the edge region of the side panel so that the base of U is upstanding from the recess and straddles it; a projection on the end panel, which projection is capable of engaging as a good fit in the recess of the side panel, is then formed with an opening closed at the mouth by a metal strip extending between the limbs of the U-shaped clip, the height of the U and the depth of the opening respectively defining the limits of relative movement between the base panel and the end panel in two mutually perpendicular direction, while preventing disengagement. As will be seen, the height of the U-shaped clip is chosen so as to allow the end panels to be laid flat on the panel which form the base panel of a box or case, whether or not the other two side panels have already been laid on the base panel.

The preferred lost motion coupling between adjacent side panels takes a different form. Here the projection of one (e.g. the base) panel lies opposite a complementarily shaped recess of the other panel, and the leading edge of the projection as well as the bottom edge of the recess are each provided with an opening fixedly to receive a respective clip of generally J-shaped cross-section, the base and adjacent portion of the limbs of which are apertured in a manner capable of loosely but captively engaging the stems of an H-shaped flat plate.

In an advantageous embodiment, external fastening means are provided for the container. The fastening means may comprise a generally U-shaped resilient clip having an extended base and two upstanding limbs each of which has a slot adjacent the free end thereof, each slot being adapted to have a slotted projection from a side or end panel extend therethrough, and a resilient securing clip of generally wedge-like configuration and re-entrant parts, said clip being adapted to be pushed through the slotted projection.

To improve the stackability of a thus-formed container, the base of the U-shaped strip is engaged with a hook at the end of a resilient element which latter has a multiply-bent portion forming a ground-engaging foot for the assembled box or case and a recess for receiving edgewise the base panel of the box or case.

It has been found that, notwithstanding the highly useful repeatedly deformable character of the material from which the continuous covering is made, some circumstances of use dictate that the box should remain permanently erected. In this case, of course, it would be a simple matter to extend the cover at the base and at two

opposing side walls so that then they can be folded inwardly over three edges of a given end panel, somewhat in the manner of the flaps on a record cover. It will, of course, be appreciated that if thereafter it were ever desirable to collapse and re-erect the box, a cut could be made along the three edges covered over by folding and the box or case used as before.

A further application of the present invention, in another aspect, relates to internal supporting structure in the box or case for supporting fragile articles, such as pharmaceutical tablets, packed in flexible bags for storage or transport.

For convenience in packing and emptying it is preferred that a box should contain a single bag, but when there is free space in the box products packed in a single bag are liable to damage by movement.

The invention provides a box or case as claimed in claim 8 of the main invention adapted to be lined using a single bag but to constrict the bag at one or more positions within the box or case by an apertured partition extending from the walls of the box or case at the or each such position to divide the bag into interconnected volumes.

The invention extends also to blanks or kits of parts for making up into such containers, according to claim 1 of the main invention. As supplied, the boxes, or blanks or kits of parts, may include the bags or not, as convenient.

Conveniently, an ordinary square or rectangular box, intended to be opened from the top, is divided horizontally by a partition having a central hole, through which the bag is passed before filling, but many other designs are possible, using for example partitions with slots so that if required the bags can be pre-filled, loosely, and slid into place, or using two or more partitions parallel to each other or in different, intersecting planes in the box. For example, two vertical partitions at right angles each with a central slot may divide a box into four, or a horizontal partition as described above may be supplemented by a centrally slotted partition extending in from opposite sides of the box to divide the upper and lower parts each into two.

In a different aspect the invention provides the kits of parts claimed in claim 1 of the main invention or the box or case claimed in claim 8 of the main invention wherein spring strap fastenings are adapted to be mounted on at least one side panel and to cooperate with a receiving-slot member formed in or adapted to be mounted on an adjacent side panel or end panel, which strap fastenings comprise a first portion adapted to lie flush with the said adjacent panel, a portion stepped out from said side panel and adapted to pass through the slot

a relatively movable handle formed in a side of the container;

Figure 16 is a perspective view of an embodiment of the invention wherein the slots in a side wall of a container, adapted to receive projections from an adjacent side wall, are provided in the form of contiguous drillings;

Figures 17 and 18 respectively illustrate in perspective and cross-section an embodiment of the invention for providing interlocking engagement between two adjacent orthogonal walls of the container;

Figure 19 is a multi-part perspective view of which the top part is "exploded" to show how two boxes may be stacked vertically and secured by means of purpose-built fastenings and the bottom part shows the stacked boxes in their assembled and secured position as well as showing purpose-built stacking feet;

Figure 20 is a perspective assembly view of a box or case according to one aspect of the invention embodying an improved fastening;

Figures 21 or 23 are perspective views respectively showing another fastening clip by itself and in use from the outside and the inside of two panels secured together therewith, and

Figure 24 is a perspective view of a fastening for use with a stretch cord, being a modification of the embodiment of Figures 13 and 14.

The features of claim 1 of the main invention are present in all the embodiments described below, even though not always shown or described in detail.

Referring to Figures 1 to 5 of the drawings, there is shown a collapsible and assemblable tray 10 comprising three side panels 11 each secured to a common, flexible, repeatedly deformable covering 12 (e.g. of paper, rubber, aluminium etc.) and two end panels 13. The general configuration of the panels 11, 13 and the covering 12 is all as described and claimed in my main invention. In what follows, the description will therefore highlight the improvements in and modifications of the main invention.

In this invention the preferred covering 12 is of laminated paper board, reinforced at the fold lines, if so desired. The internal surfaces of the panels 11, 13 are lined with similar material.

The co-operating, interengaging locking abutments 24 and recesses 25 on the side panels of the main invention have been retained, although the number of co-operating element pairs 24, 25 may be varied. Additionally, however, each abutment 24 of one panel, here the base panel 11, has a cut-out 26 and the oppositely lying recess 25 of the adjacent side panel has a similar, aligned cut-out 27. Each cut-out 26, 27 is fitted with

a generally J-shaped slotted member 28 loosely connected by an H-shaped link 29, shown in Figure 3(b), in the manner shown in Figure 3(c). As will be clear from Figures 1 and 3, the base and side panels are in this way connected not only by their common covering 12 but also by a species of lost-motion coupling constituted by the members 28 and the links 29. In particular, this arrangement allows the smaller side panels to be rotated with greater ease and precision. Moreover, if through careless handling the outer covering 12 is damaged, the coupling 28—29 will nevertheless securely retain the side panels.

Turning now to the end panels 13, they are each formed with two projections 30 spaced by a recess 31. Each projection 30 has a central cut-out 32 across which an L-shaped, apertured platelet 33 (best shown in Figures 4(b) and (c)) is secured, e.g. by riveting. As Figure 1 makes clear, the depth of each cut-out 32 is greater than the corresponding dimension of the platelet 33.

The shorter edges of the base panel 11 are each formed with two elongated slots 22. Each slot 22 is dimensioned to receive as a good fit a projection 30 of an end panel 13. Associated with each slot 22 is a resilient clip 35 shown in Figure 4(a). The clip 35 is generally U-shaped but with limbs of unequal length, and the shorter limb has a lateral flange 36 by which the clip 36 is secured to the base panel 11 on the side of the slot 22 remote from the end panel 13. Thus the limbs of each clip 35 rise up from the plane of the base panel and the longer limb has its free end within, and resiliently engaged against the internal wall of, the slot 35. In the assembled condition, this longer limb extends through the aperture 37 of the platelet and into the cut-out 32 of the end panel 13.

This construction, arrangement and co-operation of the platelets 33 and clips 35 provides a lost-motion coupling between the end panel 13 and the base panel 11. Each end panel 13 is capable of limited linear movement relative to the base panel 11 by an extent determined by the width of the U-shaped clip 35; and it is also capable of limited linear and/or pivotal movement by an extent determined by the height of the clip 35. Thus normally the end panels 13 are attached to the base panel and cannot, without expenditure of considerable force (by compressing the limbs of the clip 35 etc.) be removed therefrom. Moreover, the end panels 13 may be folded to lie on top of the base panel 11, thereby saving space, in the collapsed position of the tray.

In a non-illustrated variant, in place of the couplings 28—29 and 33—35, a respective flexible strip of plastics or textile material may be provided to ensure permanent

70

75

80

85

90

95

100

105

110

115

120

125

130

of the slot member, and a retaining projection extending out further from said stepped out portion.

In use, the fastenings, for example four on the lid of a box, are passed through corresponding slot members mounted on or forming part of the box. The retaining projections pass through the panel from the outer sides of the slots and press the stepped out portions inwards until said portions can enter and pass through the slots. The stepped out portions then spring out again and the lid is retained. If a positive fixing is required a pin for example can be passed from one side of the slot to another through holes in the sides so that there is no longer room for the retaining projection to pass.

Conveniently the slot member is formed from a double angle strip of the same spring material as the straps themselves, fixed to the box, but it may be of any other material giving the required slot, or integral.

In yet another aspect of the present invention there is provided a kit of parts according to claim 1 of the main invention wherein at least two mutually opposite side walls are held together by a locking device comprising slots in the side walls, which slots are open at the top and a cord or like thin flexible element stretched between the two slots and having enlarged ends to prevent the thin flexible element from passing through the slot. It will be appreciated that by lifting the stretch cord the relevant side walls may be folded down or removed very quickly from the rest of the box structure.

In yet another aspect of the present invention at least one, but preferably two opposite side walls of the box or case are laminated and a central portion of the laminations is cut and shaped to provide a handle with finger holes, which handle may be captive in or removable from the associated side wall.

In still another aspect of the present invention the recesses in the side walls for receiving complementary projections are not formed, as particularly described in the main invention, but instead are formed from a plurality of contiguous drillings to give a slit of scalloped contour and having a plurality of cusp-shaped friction surfaces.

In a further aspect of the present invention the interengaging abutments may be provided with cooperating clips having complementary interengageable elements in the form of pairs of projections and recesses. Thus one side wall or the base may have an edge thereof surrounded by a generally U-shaped clip provided with spikes facing inwardly to penetrate into the laminations, whereby to allow the clip to be secured to the side wall or base and having at one portion thereof a slot aligned with a corres-

ponding recess in the projecting portion of the side wall or base. The associated wall is then formed with a cooperating clip having inwardly extending spikes for securing it thereto and having at its bottom two right-angled flanges of which the first is adapted to pass between the two members and the second is adapted to be received in the slit of the other clip. According to still further aspects of the invention, a variety of fastening means may be provided for securing together two adjacent orthogonal sides of the box and/or to fasten two separate boxes together into a vertical stack. The invention further provides means for allowing boxes to stack in a convenient manner.

Preferred embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings, wherein:

Figure 1 is a plan view of the interior of a rectangular tray embodied in the invention, shown with the side panels folded down and with the end panels detached,

Figure 2 is an enlarged fragmentary perspective view of a corner of the tray of Figure 1,

Figure 3(a) to (c) show in perspective and elevation the connecting elements or lost-motion coupling between side panels of the tray of Figure 1,

Figure 4(a) is an elevation of one connecting element and

Figures 4(b) and (c) are two orthogonal elevations of another connecting element that together constitute the lost-motion coupling between a side panel and an end panel,

Figure 5 is a perspective view of an enlarged scale of the external fastening elements shown in Figure 2;

Figure 6 is a perspective view of an embodiment of the invention wherein the continuous deformable covering is extended to provide flaps to be permanently secured to the end panel.

Figure 7 is a perspective view of a container with one side (normally an integral part of the container shown opened out;

Figure 8 is a part-sectional side elevation of the container with its associated bag;

Figure 9 is a similar elevation of the front of the container;

Figure 10 is a plan view of the top of the container with an outer lid off;

Figure 11 is a perspective view of a strap fastening; and

Figure 12 is a perspective view of a slot member;

Figures 13 and 14 show, respectively in perspective and cross-section an aspect of the invention utilizing a stretch cord for securing together two opposite side walls of a container for quick-release collapsing;

Figure 15 is a diagrammatic elevation of a preferred embodiment illustrating the use of

connection between the panels and the ability to fold the end panels within and over the base panel.

Each end panel 13 has at its shorter sides a respective projecting tab 40 slotted at 41. Each of the smaller side panels 11 has a slot 42 through and beyond which in assembly the slotted tabs 40 project. The tabs 40 of each end panel 13 are adapted to cooperate with a respective external, generally U-shaped band or clip 43 (Figure 5) which has slots 44 near its free ends.

As best seen in Figure 2, in the assembled position the base of the clip 43 runs under the outside of the base panel 11 and its limbs engage the smaller side panels. The tabs 40 project through the slots 42 of the smaller side panels and the slots 44 of the limbs of the clip 43. The sub-assembly is then secured by a further securing clip or lug 45. The lug 45 is of resilient metal strip multiply bent and with the free ends formed as retaining catches. In particular, each clip 45 has a generally wedge-like configuration i.e. is V-shaped in cross section 46 passed through the slot 41 of the associated tab 40, the outer limb of the V having an in-turned flange 47. The inner limb of the V has three successively bent flange portions 48, 49, 50 which partly encompass the remainder of the clip and the portion 50 extends inwardly to engage behind the tip of the tab 40. This provides a strong security catch unclippable only by the exertion of considerable force.

As seen in Figure 2, the end panel 13 stands inwardly of the junction of the two side panels 11. The base of the clip 43 has two spaced, reduced-width portions carrying lugs 55. Each lug extends from the clip 43 to provide a rectangular recess open at one edge. The gap substantially corresponds to the thickness of the base panel which can thus be resiliently fitted into the recess. The lugs 55 provide feet for the tray.

Referring next to Figure 6 there is shown an embodiment of a case or box which is in accordance with the main invention except for the modifications about to be described.

The common covering of the box 100 is extended along the base and two opposing sides so as to provide flaps 101, 102, and 103 as shown. These flaps may then be folded about the edges over which they respectively extend by 90° and glued to the end panel 107 somewhat in the same fashion as record sleeve flaps are folded and stuck. It will be appreciated that in this way the repeatedly deformable character of the common covering is no longer utilised but of course if it should be desired to dismantle the box, then these flaps could be cut along the lines of fold.

In this embodiment the end panels are

formed with feet 105 and a clip 106 with inwardly extending spikes is used to secure together the laminations from which the end panel 107 is made up. For improved stackability, the top corners of the end panel 107 are formed with cut-away grooves 104 in which the superposed feet 105 of another box may securely sit.

Figures 7 to 12 show a container with outer and inner lids 101, 101', sides 102, and a double-thickness base 103 divided by a double partition 104 with a central holes 105. A bag 106 is fitted inside the box with a central constricting band 107 and a neck band 108 which prevents the neck slipping through a hole 109 in the inner lid. The materials and general make up of the box are as claimed in claim 1 of the main invention. The bag is of any type well known in the art. The manner in which the partition divides the box into two almost independent parts is plain from the drawing.

In use of the box, for example for pharmaceutical tablets, the amount of movement of the contents in handling of the box is much reduced, and in particular when the box is upended the contents cannot drop with the full weight on the lowermost layer, leading to breakage of such products as tablets.

Strap fastenings on both lid and base are indicated purely diagrammatically in Figure 7 at 110 and 111, without showing the slot members.

As seen in Figure 11, the fastenings consist of a portion fixed to the lid or base of the box and continuous between one side of the box and the other. The Figure shows the left hand end of fastening 110, having a first portion 112, a stepped out portion 113 and a retaining projection 114, further stepped out. The material of the fastenings is spring steel strip three-quarters of an inch wide, readily bent and flexed by hand.

The slot member, shown in Figure 12, is of the same material, with fixing portions 115 and a slot portion 116 of a width and depth giving clearance for passage of the stepped out portion and projection 114 of the strap fastening. The sides 117 of the slot portion each have a hole for passage of a wire pin 118 which has a pre-formed bent end 120 and a longer, projecting end 119. The wire is of a gauge readily bent into position by hand but, for security, readily removable only with pliers or by cutting once bent.

In use the strap fastenings are pushed through the slot members, the retaining projections 114 engaging the top edge of the slot members and springing the stepped out portions 113 inwards. Once the projections are through the slots, the stepped out portions spring out again and the lid is retained. Positive retention is then given by 130

passing the pins through behind the stepped out portions and bending the free ends 119 over. Subsequent removal is by reversal of the procedure, the projections 114 being depressed by hand, after removal of the pins, to allow them to be started through the slots by levering off the lid or simply by pressing them through.

The position at which the slot members are mounted on the box depends on the thickness of the lid, but is such that when the projections 114 just spring clear of the bottom edge of the slot portion 116 the lid is a snug fit. The rounded profile of the projections allows for production tolerances, each projection springing out to a greater or smaller extent as required but always enough to allow passage of the retaining pin.

Turning now to Figures 13 and 14, in certain circumstances it is desired to be able to collapse a box very rapidly. For such a purpose the illustrated embodiment has been developed. At the top edges of two orthogonal adjacent side panels 210 and 211 a quick release stretch cord arrangement is provided. More particularly, the panel 211 is slotted and the laminations of the panel 211 are held together by a metallic clip 212 provided with a slot 214. The slot 214 is thin and open at the top. An exactly similar arrangement is provided at the opposing wall, see Figure 14. A thin flexible strip 216 terminating in a knot or other enlarged head 218 at both ends is tautly fitted between the opposing slots 214. The cord 216 is the only means of holding the two opposing panels 211 upright. By quickly lifting one of the heads 218 through the top of the open slot 214 the two panels or sides may be quickly collapsed.

In Figure 15 there is shown an embodiment wherein a handle 220 is provided in one, or two parallel opposite side walls 222 of the case. The case, which is in all other respects similar to that disclosed in the main invention, has its panels made up of a plurality of laminations. On each panel where a handle is desired to be provided, the internal central part of the lamination is removed so as to form a cavity 224 into which is fitted an inverted T-shaped handle 220 having arms 226 and a finger hole 228. The arms 226 are smaller than, and are a loose fit in, the cavity 224 so as to allow the handle 220 to be pulled out as shown or to be pushed completely inside the cavity 224 in which position it can be engaged by virtue of a semi-circular recess 230 formed in the panel.

Figure 16 illustrates a modification of a laminated box which is otherwise as described in preceding embodiments. The modification consists in that the apertures 232 on one side panel 231, which are adapted to receive the tongues 234 of the adjacent

side panel 233, are formed by a series of contiguous drillings so as to form cusp-shaped edges 235 providing frictional edges or lines of contact with the side surfaces of the tongues 234.

The embodiment according to Figure 17 and 18 makes use of two cooperating clips made of strip-like metallic material. In the illustrated embodiment the two clips cooperate to provide a connection between a horizontal or base member 140 and a vertical or side wall member 141. The clip to be secured to the base member 140 is an essentially U-shaped member 142 having a plurality of inwardly directed spikes 143 to penetrate into the laminations of the base 140. As best seen in Figure 17, the clip 142 has an elongated slot 144 overlying in alignment a slit formed in the laminations. The side wall 141 is associated with the other clip member designated by the reference number 146 which is elongated to run along the full length or height of the associated side wall 141. Each end of the strip 146 is formed in the same way and thus only the lower end is shown. This lower end is formed with an inwardly extending flange 148 terminating in an outwardly turned flange 150 adapted to penetrate into the slot 144 and thus into the slot in the laminations of the base 140. The clip 146 is provided with inwardly directed barbs 151 to allow it to be secured to the laminated member or side wall 141. As can be seen more clearly in Figure 17, the area of location of the clip 142 is over a projecting tongue 145, while the flange 148 passes through a recess 149 formed in the side wall 141.

Turning now to the embodiment of Figure 19 there is disclosed an arrangement for stacking boxes or cases according to the main invention or according to the preceding embodiments of the present invention, and for securing together the thus stacked boxes or cases or trays in pairs. Furthermore, fastenings and clips are disclosed for this purpose.

In Figure 19 altogether four superposed cases are shown. Referring first to the top and second case, respectively designated 160 and 161 having respective end panels 162 and 163 with respective adjacent side panels 164 and 165. The securing means shown have essentially been described hereinabove in connection with Figure 2 and Figure 5, and by using the same reference numbers as in those Figures a further description is rendered unnecessary.

To secure the two boxes together four fasteners members are used, namely two designated by the reference number 45, the member 174 and the member 175. First the member 174 is used. This is a plate provided with two elongated slots 176 each adapted to receive the tongues 168 and a

lateral recess 177. The two clips 45 being resilient clips comprising a metallic strip bent back on itself a plurality of times, the apex between the two limbs 46 making an acute angle between each other can be pushed through the slit 44 between the inside edge of the lug 40 and the top surface of the band 43 and pushed to the left as viewed until the flange 50 passes past the outer edge of the lugs 40. In this way, the bands 43, the plate 174 and the two clips 45 together form an interfastening means between the boxes 161 and 162.

As a further elaboration, before the plate 174 is mounted, an elongated fastening strip 175 may also be used. This strip 175 has at each of its ends an inverted L-shaped flange 190 the apex of which can engage in the recess 177 of the plate 174. As can be seen in the lower part of Figure 19, where the two boxes are respectively designated 191 and 192 and where the clips 45 are shown in their "homed" positions, the strip 175 provides an outer protection for the area of the join between adjacent boxes.

The boxes 161, 191 and 192 differ from the box 162 in that the base and side panels respectively designated 193 and 194 are provided with an overhanging portion, respectively, which, as will be seen provides them with a greater capacity for stacking. To stack the cases 161, 191 and 192 use is made of a clip 55 as described in connection with Figure 5. The two cases 161 and 191 are secured together by means of a clip 55 and a somewhat similar clip 55¹ by means of a connecting member 198.

The kit of parts or blank constructed for ready assembly into a box or case can be further modified as follows. Figure 20 illustrates a box 300 having adjacent side panels 301 and 302. The side panels 301 and 302 are connected together, as before, by means of projecting tongues and corresponding complementary recesses 303 and 304. However, to provide additional means of releasably securing the side panels 301 and 302 together, a fastening means is provided comprising two elements, namely element 305 secured to the side wall 301 and element 306 secured to the side panel 302.

The element 306 is a springy plate provided with a central elongated narrow slot 308 and spikes or tabs 309 allowing it to be secured over the slot 310 formed in the laminations of the panel 302.

In the panel 301 the element 305 is secured for longitudinal movement in a recess 315 which does not extend completely through the laminations. The element 305 is secured in the recess 315 by means of a stud 316. The stud 316 cooperates with a slot 317 in the element so as to form a pin and slot sliding device. The element 305 is provided with two bent and raised portions

318 and 319 of which the latter is in the form of a 'V'. The free end of the element 305 terminates in an inverted L-shaped flange 320 of which the part 321 is adapted to pass through the slots 308 and 310. In this way a good releasable connection can be established between the two panels 301 and 302. To disengage them a rod-like object, such as a screw-driver, can be passed through the V-shaped part 319 of the element 305 and upward pressure will cause the spring element 305 to disengage from the element 306 and to allow it to be moved to the left as shown in the drawing.

The kit of parts or blank constructed for ready assembly into a box or case can be further modified as follows. Referring to Figures 21-23, two adjacent laminated panels 400, 401 are each formed with appropriately located rectangular, throughgoing slots 402 and are fastened together by a substantially L-shaped clip 403. The free end portion of each limb of the L is struck inwardly to form a pair of parallel webs 404 at right angles to the plane of the remainder. The tip is also struck up and bent twice to form a first tab 405 at right angles to the webs 404 as well as to the remainder of the limb, and a second tab 406 extending away from the tab 405 in a plane parallel with that of the said remainder. Figure 21 shows the clip before the tab 406 is formed, i.e. with a tab 405¹ comprising tabs 405, 406. In use, the clip according to Figure 21 is inserted into the slots 402 with the webs 404 lying against the inner surfaces of the slots and then the tab 406 is formed by bending out.

Finally, Figure 24 shows a clip 500 for use with a stretch cord. The clip 500 has a main body portion 501; a flange 502 bent outwardly to lie against an adjacent panel; a cord guiding groove 503 at the junction of the portion 501 and the flange 502 and a web-and-tab arrangement 504, 505 similar to the configuration of the parts 404, 405 of Figure 21, but without the tab 406. The web 506 connecting the webs 504 has two spaced drillings 507 to receive, as shown a stretch cord 508 knotted at 509, for use with slotted panels such as 400, 401 in Figures 22 and 23.

WHAT I CLAIM IS:—

1. A kit of parts according to claim 1 of the main invention, wherein each side panel is provided with connecting means for connection to an adjacent side panel so that it is free to move to a limited extent relative to the adjacent panel and wherein interengageable and disengageable cooperating connecting elements are provided on the end panels and on the edge regions of one of the side panels adapted to engage with the end panels, or a permanent, flexible connecting member is secured between the end panels

lateral recess 177. The two clips 45 being resilient clips comprising a metallic strip bent back on itself a plurality of times, the apex between the two limbs 46 making an acute angle between each other can be pushed through the slit 44 between the inside edge of the lug 40 and the top surface of the band 43 and pushed to the left as viewed until the flange 50 passes past the outer edge of the lugs 40. In this way, the bands 43, the plate 174 and the two clips 45 together form an interfastening means between the boxes 161 and 162.

As a further elaboration, before the plate 174 is mounted, an elongated fastening strip 175 may also be used. This strip 175 has at each of its ends an inverted L-shaped flange 190 the apex of which can engage in the recess 177 of the plate 174. As can be seen in the lower part of Figure 19, where the two boxes are respectively designated 191 and 192 and where the clips 45 are shown in their "homed" positions, the strip 175 provides an outer protection for the area of the join between adjacent boxes.

The boxes 161, 191 and 192 differ from the box 162 in that the base and side panels respectively designated 193 and 194 are provided with an overhanging portion, respectively, which, as will be seen provides them with a greater capacity for stacking. To stack the cases 161, 191 and 192 use is made of a clip 55 as described in connection with Figure 5. The two cases 161 and 191 are secured together by means of a clip 55 and a somewhat similar clip 55¹ by means of a connecting member 198.

The kit of parts or blank constructed for ready assembly into a box or case can be further modified as follows. Figure 20 illustrates a box 300 having adjacent side panels 301 and 302. The side panels 301 and 302 are connected together, as before, by means of projecting tongues and corresponding complementary recesses 303 and 304. However, to provide additional means of releasably securing the side panels 301 and 302 together, a fastening means is provided comprising two elements, namely element 305 secured to the side wall 301 and element 306 secured to the side panel 302.

The element 306 is a springy plate provided with a central elongated narrow slot 308 and spikes or tabs 309 allowing it to be secured over the slot 310 formed in the laminations of the panel 302.

In the panel 301 the element 305 is secured for longitudinal movement in a recess 315 which does not extend completely through the laminations. The element 305 is secured in the recess 315 by means of a stud 316. The stud 316 cooperates with a slot 317 in the element so as to form a pin and slot sliding device. The element 305 is provided with two bent and raised portions

318 and 319 of which the latter is in the form of a 'V'. The free end of the element 305 terminates in an inverted L-shaped flange 320 of which the part 321 is adapted to pass through the slots 308 and 310. In this way a good releasable connection can be established between the two panels 301 and 302. To disengage them a rod-like object, such as a screw-driver, can be passed through the V-shaped part 319 of the element 305 and upward pressure will cause the spring element 305 to disengage from the element 306 and to allow it to be moved to the left as shown in the drawing.

The kit of parts or blank constructed for ready assembly into a box or case can be further modified as follows. Referring to Figures 21-23, two adjacent laminated panels 400, 401 are each formed with appropriately located rectangular, throughgoing slots 402 and are fastened together by a substantially L-shaped clip 403. The free end portion of each limb of the L is struck inwardly to form a pair of parallel webs 404 at right angles to the plane of the remainder. The tip is also struck up and bent twice to form a first tab 405 at right angles to the webs 404 as well as to the remainder of the limb, and a second tab 406 extending away from the tab 405 in a plane parallel with that of the said remainder. Figure 21 shows the clip before the tab 406 is formed, i.e. with a tab 405¹ comprising tabs 405, 406. In use, the clip according to Figure 21 is inserted into the slots 402 with the webs 404 lying against the inner surfaces of the slots and then the tab 406 is formed by bending out.

Finally, Figure 24 shows a clip 500 for use with a stretch cord. The clip 500 has a main body portion 501; a flange 502 bent outwardly to lie against an adjacent panel; a cord guiding groove 503 at the junction of the portion 501 and the flange 502 and a web-and-tab arrangement 504, 505 similar to the configuration of the parts 404, 405 of Figure 21, but without the tab 406. The web 506 connecting the webs 504 has two spaced drillings 507 to receive, as shown a stretch cord 508 knotted at 509, for use with slotted panels such as 400, 401 in Figures 22 and 23.

WHAT I CLAIM IS:—

1. A kit of parts according to claim 1 of the main invention, wherein each side panel is provided with connecting means for connection to an adjacent side panel so that it is free to move to a limited extent relative to the adjacent panel and wherein interengageable and disengageable cooperating connecting elements are provided on the end panels and on the edge regions of one of the side panels adapted to engage with the end panels, or a permanent, flexible connecting member is secured between the end panels



and the edge regions of one of the side panels adapted to engage with the end panels, the said connecting elements or member allowing limited rotational and linear movement between the said one panel and each of the end panels.

2. A kit of parts according to claim 1 wherein there are three side panels and wherein said one side panel is the base or bottom panel of the assembled container and each of the other two side panels is then connected to the base panel by at least one flexible strap constituting said connecting means.

3. A kit of parts according to claim 1 wherein there are three side panels and wherein the said one side panel is the base or bottom panel of the assembled container and each of the other two side panels is connected to the base panel by a lost motion coupling made up of said connecting means.

4. A kit of parts according to any preceding claim wherein the connecting member between each end panel and the base panel is constituted by at least one flexible strap or by a lost motion coupling.

5. A kit of parts according to any preceding claim wherein the container is provided with a fourth panel, to act as a lid panel, connected to one of said two side panels by at least one flexible strap or a lost motion coupling.

6. A kit of parts according to claim 1 of the main invention wherein each end panel is connectable to two said side panels by engaging a slotted projection on one panel in a slot of the other panel such that on engagement the slotted part of the projection extends through and beyond the slot of the other panel, whereby to make the slot of the one panel available for external additional fastening means.

7. A kit of parts according to claim 4 or any claim dependent thereon wherein the lost motion coupling between a side panel and each end panel consists of at least one inverted U-shaped resilient metal clip fittable at its ends to, and readily removable from, the opposite sides of an elongated recess in the edge region of the side panel so that the base of U is upstanding from the recess and straddles it; a projection on the end panel, which projection is capable of engaging as a good fit in the recess of the side panel, is then formed with an opening closed at the mouth by a metal strip extending between the limbs of the U-shaped clip, the height of the U and the depth of the opening respectively defining the limits of relative movement between the base panel and the end panel in two mutually perpendicular directions, while preventing disengagement.

8. A kit of parts according to claim 3 or any claim dependent thereon wherein the lost motion coupling between adjacent side

panels consists of a projection of one panel lying opposite a complementarily shaped recess of the other panel and the leading edge of the projection as well as the bottom edge of the recess are each provided with an opening fixedly to receive a clip of respective generally J-shaped cross-section, the base and adjacent portion of the limbs of which are apertured in a manner capable of loosely but captively engaging the stems of an H-shaped flat plate.

9. A kit of parts according to claim 1 of the main invention wherein external fastening means are provided for the box or case, comprising a generally U-shaped resilient strip having an extended base and two upstanding limbs each of which has a slot adjacent the free end thereof, each slot being adapted to have a slotted projection from a side or end panel extend therethrough, and a resilient securing clip of generally wedge-like configuration, said clip being in use pushed through the slotted projection.

10. A kit of parts according to claim 9 wherein the base of the U-shaped strip is engaged with a hook at the end of a resilient element which latter has a multiply-bent portion for forming a ground-engaging foot for the assembled box or case and a recess for receiving edgewise the base panel of the box or case.

11. A kit of parts according to claim 1 of the main invention when assembled wherein two parallel opposed sides of the box or case are each provided with a clip engaged to a top edge thereof, the clip having an open slot, and a resilient flexible strip of material provided with enlarged ends fitted through the slots for a quick release arrangement.

12. A kit of parts according to claim 1 of the main invention or any preceding claim wherein one or more side panels are provided with an extensible and retractable handle.

13. A kit of parts according to claim 1 of the main invention or any preceding claim wherein at least one of the recesses of one side panel adapted to receive the projections of an adjacent side panel is in the form of a series of contiguous drillings the spacing of which is such as to provide a series of scalloped edges or cusps adapted to grip the side surfaces of the projections.

14. A kit of parts according to any preceding claim wherein at least one of the projections of one panel is provided with a slotted clip into which fits a projecting tongue of a clip secured to the adjacent side panel and passing through the recess thereof which is complementary to the said projection.

15. A kit of parts according to claim 1 of the main invention wherein the assembled case or box is adapted to be lined using a



single bag, and wherein means are provided to constrict the bag at one or more positions within its interior by an apertured partition extending in the assembled condition from the walls of the box or case at the or each such position to divide the bag into interconnected volumes.

16. A kit of parts according to claim 15 wherein the case or box is parallelepipedal and is intended to be opened from the top, and is divided horizontally by said partition, which has a central hole, through which the bag is passed before filling; or there is a plurality of partitions slidable into place, or there are two or more partitions parallel to each other in different, planes in the box.

17. A kit of parts according to claim 15 wherein two vertical partitions extend at right angles to each other, interlocking by means of a central slot in each such that the box or case is divided into four, or a horizontal partition is interlocked with a centrally slotted partition extending in from opposite sides of the box to such that the upper and lower parts are each divided into two.

18. A kit of parts according to claim 1 of the main invention, wherein spring strap fastenings are adapted to be mounted on at least one side panel and to cooperate with a receiving-slot member formed in or adapted to be mounted on an adjacent side panel or end panel, which strap fastenings comprise a first portion adapted to lie flush with the said adjacent panel, a portion stepped out from said side panel and adapted to pass through the slot of the slot member, and a retaining projection extending out further from said stepped out portion.

19. A kit of parts according to claim 18 wherein, for positive fixing, a pin is provided to be passed from one side of the slot to another through holes in the sides of a receiving-slot member mounted on an adjacent side panel or end panel so that there is no longer room for the retaining projection to pass.

20. A kit of parts according to claim 1 of the main invention, wherein adjacent said side panels are formed with shaped, through-going slots and are fastenable or fastened together by means of a substantially L-shaped clip adapted to be located mostly on the outside on the panels but having webs insertable into the slots to lie as a good fit against the sides of the slots, and tabs bendable or bent to pass through the slots and lie against the inner panel surfaces.

21. A kit of parts according to claim 1 of the main invention, wherein at least one

side panel is formed with a slot and there is a clip adapted to lie against the outer surface of said side panel and having webs insertable into the slot to lie as a good fit against the sides of the slot, and apertures in a portion connecting said webs to receive a stretch cord.

22. A kit of parts substantially as herein described with reference to and as shown in Figures 1 to 5 of the accompanying drawings.

23. A kit of parts substantially as herein described with reference to and as shown in Figure 6 of the accompanying drawings.

24. A kit of parts substantially as herein described with reference to and as shown in Figures 7 to 10 of the accompanying drawings.

25. A kit of parts substantially as herein described with reference to and as shown in Figures 11 and 12 of the accompanying drawings.

26. A kit of parts substantially as herein described with reference to and as shown in Figures 13 and 14 of the accompanying drawings.

27. A kit of parts substantially as herein described with reference to and as shown in Figure 15 of the accompanying drawings.

28. A kit of parts substantially as herein described with reference to and as shown in Figure 16 of the accompanying drawings.

29. A kit of parts substantially as herein described with reference to and as shown in Figures 17 and 18 of the accompanying drawings.

30. A kit of parts substantially as herein described with reference to and as shown in Figure 19 of the accompanying drawings.

31. A kit of parts substantially as herein described with reference to and as shown in Figure 20 of the accompanying drawings.

32. A kit of parts substantially as herein described with reference to and as shown in Figures 21 to 23 of the accompanying drawings.

33. A kit of parts substantially as herein described with reference to and as shown in Figure 24 of the accompanying drawings.

34. A container assembled from a kit of parts according to any preceding claim.

T. Z. GOLD & COMPANY,
Agents for the Applicant,
Chartered Patent Agents,
Staple Inn Buildings North,
High Holborn,
London WC1V 7QB,
and
2 Fawley Road,
London NW6 1SH.

