

(19)



(11)

EP 2 078 679 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

15.07.2009 Bulletin 2009/29

(51) Int Cl.:

B65D 6/16 (2006.01)

(21) Application number: **09150258.3**

(22) Date of filing: **08.01.2009**

(84) Designated Contracting States:

**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL
PT RO SE SI SK TR**

Designated Extension States:

AL BA RS

(30) Priority: **09.01.2008 GB 0800353**

31.01.2008 GB 0801804

04.06.2008 GB 0810211

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(54) **Container**

(57) A container (1) comprises a frame (11) having a pair of opposed sides (3, 5) and a pair of opposed ends (7, 9) surrounding a base (2). At least one wall mounted

between a pair of columns (19) of the frame (11), is configured to be moved within the frame (11) between a raised position and a lowered position. In some embodiments, frame (11) is collapsible.

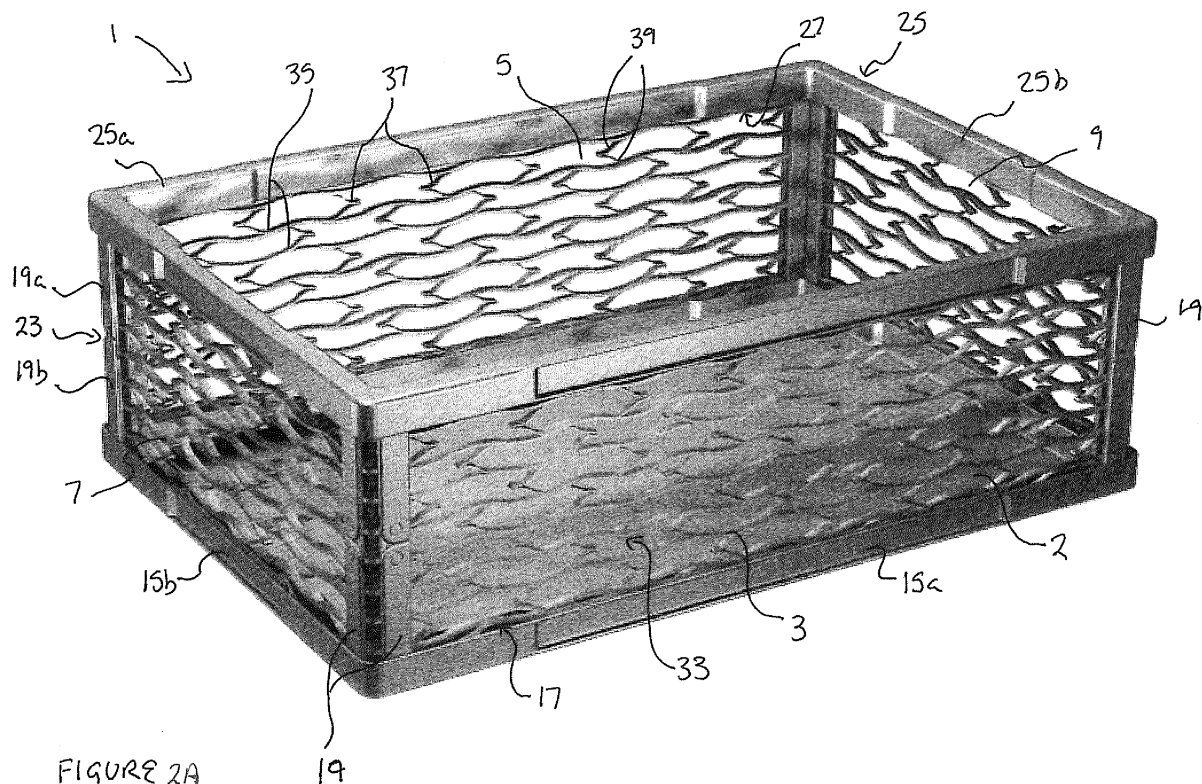


FIGURE 2A

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Description

[0001] The present invention relates to a container, and, more particularly, to a container for consumer-products that can be used for the transport of such products, and their display in a retail outlet.

[0002] It is known to use containers of plastics material for the storage and transport of consumer products to retail outlets. Typically, such containers are reusable, and are therefore adapted to be collapsed to a substantially flat configuration, so that they can be readily stored and transported empty, whilst occupying minimal space.

[0003] Typically, consumer products are transferred from such containers to shelving or other displays in the retail outlet, which provide consumers with ready access to the products. However, the transfer of products can be time consuming and labour intensive.

[0004] It would be desirable to have a container, which not only is suitable for containing consumer products during transport to a retail outlet, but also is suitable for displaying the products in the retail outlet. For instance, such a container may be accommodated on conventional shelving or other product displays.

[0005] According to a first aspect, the present invention provides a container comprising: a frame having a base section having a pair of opposed sides and a pair of opposed ends surrounding a base, and a plurality of supports extending substantially vertically from corners of the base section; and at least one wall mounted between a pair of the plurality of supports of the frame, and configured to be moved within the frame between a raised position and a lowered position.

[0006] According to a second aspect, the present invention provides a frame for a container in accordance with the first aspect of the present invention.

[0007] In one embodiment, the frame is collapsible. For example, the frame comprises: a base section having a pair of opposed sides and a pair of opposed ends surrounding a base; and a plurality of supports extending substantially vertically from corners of the base section; wherein the supports are configured to be collapsed on the frame, so that they are at least partially accommodated in the base section.

[0008] According to a third aspect, the present invention provides a frame for a container, comprising: a base section having a pair of opposed sides and pair of opposed ends surrounding a base; and a plurality of supports extending substantially vertically from corners of the base section; wherein at least one pair of the plurality of supports are configured to receive a wall such that it can be moved between a raised position and a lowered position.

[0009] According to a fourth aspect, the present invention provides a container comprising a frame in accordance with the third aspect of the present invention.

[0010] According to a fifth aspect, the present invention provides a container comprising: a base section having a pair of opposed sides and a pair of opposed ends

surrounding a base; a top section having a pair of opposed sides and a pair of opposed ends; and a plurality of supports extending substantially vertically between corners of the base section and corners of the top section; wherein the supports are configured to be adjustable in height.

[0011] According to a sixth aspect, the present invention provides a container comprising: a base section having a pair of opposed sides and a pair of opposed ends surrounding a base; and a top section having a pair of opposed sides and a pair of opposed ends; a plurality of supports connecting the base section and the top section, the supports movable between an extended position, in which the top section is retained at a predetermined maximum height above the base section, and a collapsed position, in which the top section lies directly over the base section.

[0012] According to a seventh aspect, the present invention provides a container comprising: a base section having a pair of opposed sides and a pair of opposed ends surrounding a base, and supports projecting substantially vertically from the corners thereof; a top section having a complementary configuration to the sides, ends and corner supports of the base section, wherein the top section is hollow and open at the corners of its base such that the top section can be nested over the bottom section in a collapsed position; and means to at least partially close the open corners of the base of the top section, so that the top section can be supported on the corner supports of the base section in a raised position.

[0013] According to an eighth aspect, the present invention provides a container comprising: a base section having a pair of opposed sides and a pair of opposed ends surrounding a base; a collar having a pair of opposed sides and a pair of opposed ends; wherein the base section and the collar are configured to be connected together in an erect position, so that the collar is positioned above the base and the sides and ends of the base and collar together form respective side walls and end walls of the container, and wherein the collar is dimensioned to fit concentrically around the sides and ends of the base section in a collapsed position.

[0014] According to a ninth aspect, the present invention provides a container comprising: a base section having a pair of opposed sides and a pair of opposed ends surrounding a base; a collar having a pair of opposed sides and a pair of opposed ends of complementary configuration to the sides and ends of the base section; wherein the base section and the collar are configured to be connected together in an erect position, so that the collar is positioned above the base and the sides and ends of the base and collar together form respective side walls and end walls of the container, and wherein the collar is substantially hollow and is configured to nest over the sides and ends of the base section in a collapsed position.

[0015] Other aspects of the present invention are set out in the accompanying claims. Moreover, other pre-

ferred features and advantages of the present invention will be apparent from the following description and accompanying claims.

[0016] Embodiments of the present invention will now be described, by way of example, with reference to the accompanying drawings, in which:

Figures 1A to 1C are perspective views of a container according to a first embodiment of the present invention, with its side walls in an erect, partially dropped and fully dropped configuration, respectively;

Figures 1D to 1F are vertical cross sections along a line X-X, as illustrated in Figure 1A, of the container of the first embodiment showing a side wall in the erect, partially dropped and fully dropped configuration, respectively;

Figure 1G is a horizontal cross section through a column of the container of Figure 1A, for example along the line Y-Y illustrated in Figure 1A;

Figures 2A to 2C are perspective views of a collapsible container according to a second embodiment of the present invention, in a fully upright, partially collapsed and fully collapsed configuration, respectively;

Figures 3A to 3C are perspective views of the collapsible container of Figures 2A to 2C, in use with products contained therein, in the fully upright, partially collapsed and fully collapsed configuration, respectively;

Figure 4 is a perspective view of the collapsible container of Figures 2A to 2C in the fully upright configuration, with a release mechanism in an engaged position, according to another embodiment of the present invention, and Figure 4A is an enlarged plan view of a slot used in the release mechanism;

Figures 5A and 5B are perspective and sectional views, respectively, of a part of the container of Figure 4 in the collapsed configuration, with the release mechanism in an engaged position, and

Figures 6A and 6B are perspective and sectional views, respectively, of a part of the container of Figure 4 in the collapsed configuration, with the release mechanism in a released position.

Figures 7A to 7C are perspective views of a collapsible frame for a container, suitable for use with the container of the first and second embodiments of the present invention, in an erect, partially collapsed and fully collapsed configuration, respectively;

Figures 7D to 7F are vertical cross sections along a line X-X, as illustrated in Figure 7A, of the collapsible frame in a fully collapsed, partially collapsed and erect configuration, respectively;

Figures 8A to 8C are perspective views of a collapsible frame for a container, suitable use with the container of the first embodiment of the present invention, in an erect, partially collapsed and fully collapsed configuration, respectively;

Figures 8D to 8F are vertical cross sections along a line X-X, as illustrated in Figure 8A, of the collapsible frame, in a fully collapsed, partially collapsed and an erect configuration, respectively;

Figures 9A to 9C are perspective views of a container according to third embodiment of the present invention similar to the first embodiment, with its side walls in an erect, partially dropped and fully dropped configuration, respectively;

Figures 9D to 9F are vertical cross sections along line X-X, as illustrated in Figure 9A, of the container of the third embodiment with a wall in an erect, partially dropped and fully dropped configuration, respectively;

Figures 10A to 10C are perspective views of a collapsible container according to a fourth embodiment of the present invention, in an erect, partially collapsed and fully collapsed configuration, respectively;

Figures 10D to 10F are vertical cross sections along line X-X, as illustrated in Figure 10A, of the container of the fourth embodiment in a collapsed, partially collapsed and erect configuration, respectively;

Figures 11A to 11C are perspective views of a collapsible container according to a fifth embodiment of the present invention, in an erect, partially collapsed and fully collapsed configuration, respectively;

Figures 11D to 11F are vertical cross sections taken along the length of a side wall of the container of the fifth embodiment in a collapsed, partially collapsed and erect configuration, respectively;

Figures 12A to 12C are perspective views of a collapsible container according to a sixth embodiment of the present invention, in an erect, partially collapsed and fully collapsed configuration, respectively;

Figures 12D and 12E are vertical cross sections through a wall of the container of the sixth embodi-

ment in an erect configuration and collapsed configuration, respectively;

Figures 13A to 13C are perspective views of a collapsible container according to a seventh embodiment of the present invention, in an erect, partially collapsed and fully collapsed configuration, respectively;

Figures 13D to 13F are vertical cross sections through a wall of the container of the seventh embodiment in an erect, partially collapsed and fully collapsed configuration, respectively, and

[0017] Figures 14A to 14C are perspective views of a collapsible container according to an eighth embodiment of the present invention, in an erect, partially collapsed and fully collapsed configuration, respectively.

[0018] In the drawings, with the exception of Figures 2 to 6, the perspective views show schematically the outline of embodiments of a container or frame therefore, according to embodiments of the present invention, and do not show detailed design implementation. The details of the design implementation will depend on the desired application, for example the nature of the product to be contained and the display unit with which it is designed to be used. Thus, the shape, size and relative proportions illustrated in the drawings are by way of example only, and are not intended to limit the scope of protection. In different embodiments, similar features have been accorded the same or similar reference numerals.

[0019] In the following description, the terms "vertically" and "horizontally" are used to denote the orientation of certain features of the described embodiments. These terms are intended to indicate orientation with respect to the base of the container or frame, which is considered to be oriented horizontally, and no other limitation is intended. Similarly, the terms "upper" and "lower" are used to denote relative position with respect to the base, and do not imply any other limitation,

[0020] Figure 1A is a perspective view of a container according to a first embodiment of the present invention, in its normal, erect position, in use.

Figures 1B and 1C show the container with partially dropped and fully dropped walls, respectively. Container 1 comprises a base 2, a pair of opposed side walls 3, 5 and a pair of opposed end walls 7, 9. The container 1 is configured with a frame 11 having a rectilinear configuration that defines the bottom and side edges of the container. It will be appreciated that in other embodiments, the frame 11 can also define the top edges of the container.

[0021] In particular, frame 11 is formed with a generally square or rectangular cross section and includes a horizontally extending rectangular base section 15 having a pair of parallel sides 15a and a pair of parallel ends 15b which surround the generally planar rectangular base 2 of container 1. Frame 11 is further formed with a

pair of vertically extending end sections 17 comprising four columns 19, extending vertically from respective four corners of the base section 15, and a pair of connecting bars 20, each extending horizontally between the upper ends of columns 19 at each end wall 7, 9 of the container 1. End sections 17, and, in particular, corner columns 19, provide the principle support for container when in use.

[0022] Although not illustrated in Figure 1A, frame 11 may be adapted to be collapsed to a substantially flat configuration. Examples of techniques for allowing the collapse of frame 11 are described below in relation to Figures 2 to 7.

[0023] Frame 11 is typically formed by injection moulding from a suitable plastics material, and has a hollow construction. Whilst in the illustrated embodiment, the frame has a rectangular cross section, it will be appreciated that the frame can be formed with other suitable hollow or substantially hollow, cross sectional configurations, such as circular or oval. Typically, the frame 11 is formed in one piece, and has suitable complementary snap-fit connections (or the like) to allow the base 2 to be fitted thereto during assembly of the container 1, as is well known in the art. Alternatively, the frame 11 and base 2 may be formed in one piece. Similarly, frame 11 is adapted to be fitted with side walls 3, 5 and/or end walls 7, 9, as described in further detail below.

[0024] As shown in Figures 1A to 1C, side walls 3, 5 and end walls 7, 9 are adapted to be lowered from an upright position as shown in Figure 1A, in which the upper edges of the walls are substantially level with the upper edge of the frame 11, to a dropped position as illustrated in Figure 1C, in which the walls are substantially concealed within or behind the base section 15 of the frame 11. This allows access by consumers to the contents of the container 1, through the frame 11, if the container is placed on display in a retail outlet. It will be appreciated that in other embodiments the end walls 7, 9 need not be configured to drop down, and in some embodiments, only one side and/or one end wall may be configured for dropping down.

[0025] The side walls 3, 5 and end walls 7, 9 may have any suitable construction to enable lowering thereof. For example, the walls may be arranged with a slatted or pleated configuration as used in conventional horizontal or vertical window blinds, or may be in the form of a screen that can be retracted onto a roller, as used in conventional roller blinds. Any suitable materials may be used to form the side walls 3, 5 and end walls 7, 9 according to design requirements.

[0026] The side walls 3, 5 and end walls 7, 9 are mounted to the frame, through slots 21 in the columns 19, on a suitable mechanism (not shown in Figures 1A to 1C) to allow lowering thereof. As described below in relation to Figures 1D to 1F, the mechanism for raising (extending) and lowering (retracting) the walls is concealed within the interior of the columns 19 of the frame 11, and at least part of the wall is retracted within the frame 11 in the fully dropped position. However, in other embodi-

ments, the mechanism may be mounted on an interior surface of the frame 11, and the wall retracted behind the frame (i.e. in the interior of the frame).

[0027] Referring to Figures 1D to 1G (which, for ease of illustration, show column 19 integrally formed with a hollow base 2 and omit the connecting bar 20) each column 19 of the frame 11 is internally configured with a mechanism comprising a guide 22 for each adjoining side wall and end wall. In the illustrated example, side wall 5 is in the form of a horizontally pleated blind mounted on a horizontally extending spindle 6, and the ends of the spindle 6 are mounted in respective guides 22 in the columns 19 at the ends of the side wall. Each guide 22 is formed between an outer side of the column 19 and a guiding wall 24 parallel thereto, and spaced by a distance just greater than the end of the spindle 6 to allow guiding movement of the spindle end in a channel or slot thereby defined in the column 19. In particular, spindle 6 can be moved within guide 22, and thus up and down column 19, to raise and lower the side wall 5, as described in more detail below.

[0028] Other configurations for the mechanism are possible, according to the design of the walls and desired applications.

[0029] The mechanism further includes a manually operable catch (shown in detail in Figure 1G), which secures the wall in locking engagement on the frame 11 in the erect position, as shown in Figure 1A, and optionally also in the lowered position, as shown in Figure 1C. It will be appreciated that a catch for the lowered position is not essential, as in normal use, gravity will maintain the wall(s) in the dropped position.

[0030] In particular, the mechanism includes a catch comprising at least one bump 24' formed on the inner surface of the column 19 at or adjacent the top of the column, as shown in Figure 1G, for retaining the spindle 6. The ends of the spindle 6 are configured to be deformable, at the periphery thereof, to allow them to pass over the bump 24', as the blind 5 is manually raised and lowered in the frame 11. However, the bump 24' retains the ends of the spindle 6 when in the raised position. As the skilled person will appreciate, this type of catch is only one possibility for retaining the blind 5 in the raised position. Other suitable catch arrangements are possible and contemplated.

[0031] As mentioned above, in use, the container 1 is arranged with its walls upright or erect, as shown in Figures 1A and 1D, for the storage and transport of consumer products. The container 1 can then be used to directly display the consumer product on shelving or other displays in a retail outlet. In particular, catches, that retain the walls in the erect position, may be manually released, and the walls lowered, as shown in Figure 1B. The ends of the spindle 6 of each wall thus move down respective guides 22, as shown in Figure 1E, and the lower part of the wall is received within a guide 22', similar to guide 22, in the base 2. Lowering of the walls may be achieved, for example, by applying pressure to the top edges of the

walls. Eventually, the spindle 6 reaches a bottom position within guide 22, in which the walls is in a retracted position, at least partly within the base section 15 of the frame 11, as shown in Figures 1C and 1F.

[0032] After it has been emptied, in some embodiments the container 1 is adapted to be collapsed to a substantially flat configuration, so that it can be readily stored and transported for reuse.

[0033] Figures 2A to 2C are perspective views of a container according to a second embodiment of the present invention, which is adapted to be collapsed.

[0034] Figure 2A shows container 1 in an initial position, for use during transport and storage when the container is completely filled with consumer products, as shown in Figure 3A.

[0035] Container 1 comprises a base 2, a pair of opposed side walls 3, 5 and a pair of opposed end walls 7, 9. The container 1 is configured with a frame 11 having a rectilinear configuration that defines the bottom and top edges of the container.

[0036] In particular, frame 11 is formed with a generally square or rectangular cross section and includes a horizontally extending rectangular base section 15 having a pair of parallel sides 15a and a pair of parallel ends 15b which surround a generally planar rectangular base 2 of container 1. In addition, frame 11 includes a complementary, horizontally extending rectangular top section 25 having a pair of parallel sides 25a and a pair of parallel ends 25b.

[0037] A plurality of supports 19 are mounted to the top and base sections of the frame 11, to support the top section 25 directly above base section 15. In the fully upright position shown in Figure 2A, supports 19 extend vertically, and support the top section at a predefined height above the base section 15. Supports 19 are configured to be reduced in height so as to collapse the container 1, to thereby lower the side walls 3, 5 and end walls 7, 9, to a collapsed configuration for use in displaying products contained therein, as described below in relation to Figures 2B and 2C.

[0038] Frame 11 is typically formed by injection moulding from a suitable plastics material, and has a hollow construction. It will be appreciated that the frame can be formed with other configurations, as described above in relation to the frame of the first embodiment. Typically, the top section 25 and the base section 15 of frame 11 are each formed in one piece, and the base section 25 has suitable complementary snap-fit connections, or the like, to allow the base 2 to be fitted thereto during assembly of the container 1, as is well known in the art. Similarly, the top section 25 and base section 15 of the frame 11 is adapted to be fitted with side walls 3, 5 and end walls 7, 9, as described in further detail below. Supports 19 are typically formed separately, of the same or a different material from the top 25 and base 15 sections of frame 11, and are adapted to be pivotally mounted thereto, by snap fit connection or the like, as described below.

[0039] As shown in Figures 2B and 2C, side walls 3,

5 and end walls 7, 9 are adapted to be lowered from the fully upright configuration shown in Figure 2A, through a partially collapsed position shown in Figure 2B, to a fully collapsed configuration, in which the walls are fully dropped as illustrated in Figure 2C. In particular, to allow access by customers to the products within the container 1, the side walls 3, 5 and end walls 7, 9 may be lowered, by reducing the height of supports 19, until the top section 25 overlies the base section 15. In the illustrated embodiment, supports 19 are configured to be reduced in height as described below.

[0040] In particular, in the embodiment illustrated in Figures 2A to 2C, a support 19 is provided at opposite ends of each of the side walls 3, 5 and end walls 7, 9, to provide eight supports 19 in total. It will be appreciated that, in other embodiments, fewer supports may be used, for example four supports or six supports. In the illustrated embodiment, the supports 19 have opposed internal and external sides, between which the walls of the container 1 are retained in place, as described below.

[0041] Each support 19 has an upper section 19a and a lower section 19b. A proximal end of lower section 19b is pivotally mounted to the interior of base section 15 of the frame 11 adjacent a lower corner of container 1, and a proximal end of upper section 19a is pivotally mounted to the interior of top section 25 of the frame 11 in a complementary position, adjacent a corresponding upper corner. The upper and lower sections 19a, 19b are hinged together, at the distal ends thereof, by manually releasable, locking double hinges 23 at or near the centre of the support 19. The supports 19 are thereby configured to fold together, as illustrated in Figure 2B. In particular, by pivotal movement of upper 19a and lower 19b sections of supports 19 about double hinges 23, and on the pivotal mountings to the frame 11, supports 19 are folded from a vertically extending position, in which upper and lower sections of supports 19 are locked together, 180° apart, in vertical alignment, as shown in Figure 2A, to a near horizontal position as illustrated in Figure 2C. Figure 2B shows how the folding action of supports 19 reduces the height of the top section 25 above the base section 15 and base 2, and thus the height of side walls 3, 5 and end walls 7, 9, to the collapsed position of Figure 2C. As shown in Figure 2C, the side walls 3, 5 and end walls 7, 9 are fully concealed within the frame 11, to reveal the base 2, thereby enabling consumers easier access to all levels of products in the container 1, as shown in Figure 3C.

[0042] In the embodiment shown in Figures 2A to 2C, the upper 19a and lower 19b sections of the supports 19 have substantially equal length, and their respective proximal ends are received within, and mounted on pivot pins (not shown) to, the top 25 and base 15 sections of the frame 11, respectively. The upper surface of the sides 15a and ends 15b of the base section 15 and the lower surface of the sides 25a and ends 25b of the top section 25 include openings 17, 27 to receive the supports 19 into the interior of the hollow frame 11, as they are folded

to reduce the height thereof, as described below.

[0043] It should be noted that although Figures 2A and 2B show the supports 19 on both the exterior and interior sides of the side walls 3, 5 and end walls 7, 9, this is for illustrative purposes only. Typically, the supports 19 are provided only exterior to the walls of the container 1.

[0044] Figure 2C illustrates the container of Figures 2A and 2B in its fully dropped or collapsed position, which allows consumer access to all products, including those at the very bottom of the container 1, as shown on Figure 3C, when the container is placed on display in a retail outlet. In addition, once the container is empty, this collapsed position provides a substantially flat configuration, enabling it to be easily stored and transported for reuse.

[0045] In the position shown in Figure 2C, the top section 25 lies directly over the base section 15, and the supports 19 are fully folded together, so that the upper and lower sections 19a, 19b of each support extend substantially horizontally and parallel to each other, and are concealed within the interior of the frame 11. In particular, each upper section 19a is received, through opening 27, within the hollow top section 25 of the frame 11 and each lower section 19b is received, through opening 17, within hollow base section 15 of the frame 11.

[0046] The side walls 3, 5 and end walls 7, 9 of container 1 are constructed so that the height thereof is reduced, in cooperation with the above described folding action of supports 19. In particular, each side wall 3, 5 and end wall 7, 9 is mounted between the base 15 and top 25 sections of frame 11 and is configured to fold or compress as the height of the top section 25 above the base section 15 reduces, as supports 19 are folded.

[0047] In particular, each of the side walls 3, 5 and end walls 7, 9 is formed from a resiliently deformable mesh 33 comprising a plurality of generally parallel bands 35, extending longitudinally along the length of the respective wall, interlinked by compressible, V-shaped spring formations 37. Each V-shaped spring formation comprises a pair of substantially flat arms 39, the proximal ends of which are connected to respective upper and lower surfaces of adjacent parallel bands 35, and the distal ends of which are connected together to form the point of the V between the adjacent parallel bands 35. Mesh 33 is mounted within the hollow top 25 and base 15 sections of the frame 11, and, in the illustrated embodiment, on the interior side of the supports 19. Mesh 33 is typically formed from plastics by injection moulding.

[0048] The parallel bands 35 of mesh 33 may have a non uniform thickness, to assist with the compression of the spring formations 37. In particular, bands 35 may be thinner adjacent the spring formations 37 and thicker between spring formations 37. In this way, the V-shaped spring formations 37 may be compressed, by bringing arms 39 together, to lie substantially flat between adjacent parallel bands 35.

[0049] In the illustrated embodiment, the V-shaped spring formations 37 are located at regular intervals along the length of bands 35, with the arms 39 of alternate V-

shaped formations 37 facing in opposite directions. In addition, the arrangement of the V-shaped formations 37 in a space between a pair of parallel bands and the arrangement of the V-shaped formations 37 in an adjacent space between parallel bands 35 are offset. In this way, the mesh can be efficiently compressed.

[0050] In particular, the mesh 33 may be compressed so that a lower part thereof is received through openings 17 inside the hollow base section 15 of frame 11, and an upper part thereof is received through openings 27 inside the hollow top section 25 of frame 11. Thus, the folded mesh 33 can be fully accommodated, together with the folded supports 19, within the hollow frame 11 in the fully dropped position, as shown in Figure 2C.

[0051] As the skilled person will appreciate, the above described arrangement of the mesh 33, forming the side walls 3, 5 and end walls 7, 9 of the container 1, provides good resilience and structural integrity, as well as an aesthetically pleasing appearance. However, many other constructions of the side walls and end walls of the container are possible, to enable the walls to fold or compress together with the supports. For example, other shapes or forms of compressible spring formations 37 may be used between parallel bands 35 of uniform or non-uniform thickness, to form the compressible mesh 33. In other examples, the walls may be arranged with a slatted or pleated configuration as used in window blinds.

[0052] Figure 4 illustrates a mechanism for manually releasing the double hinges 23 of supports 19 of container 1 in accordance with an embodiment of the present invention. In particular, a collar 41 extends adjacent double hinges 23 around the exterior of side walls 3, 5 and end walls 7, 9 of the container 1, substantially parallel to the sides 15a and ends 15b of the base section 15. Thus, in the illustrated embodiment, collar 41 extends horizontally around the centre of the walls of the container 1.

[0053] Collar 41 has a substantially flat, band-like configuration so that it can be accommodated, together with supports 19, in the hollow interior of the base section 15 and top section 25 in the collapsed position.

[0054] The collar 41 is mounted to the container 1 by means of an extension 23' of one of the pivot pins of the double hinge 23 of each support 19. In particular, in the illustrated embodiment, extension 23' is provided as an outward extension of the upper pivot pin of each double hinge 23. The collar 41 includes slots 43 provided adjacent each support 19, and each extension 23' is mounted in a corresponding slot 43. The extension 23' is retained at a first end 43' of the slot 43, in the upright configuration, as shown in Figure 4, and slides within slot 43 during manual release of the double hinges 23, to a second end 43" of the slot 43 in the collapsed configuration. It will be appreciated that the extension 23' moves in the reverse direction along the slot when the container is released and raised from the collapsed configuration to the upright configuration. As described below with reference to Figure 4A, the first end 43' of each slot 43 is situated at the end of a first section 45a thereof adjacent the correspond-

ing end of the wall, and the second end 43" of each slot 43 is situated on a second section 45b thereof toward the centre of the wall.

[0055] As shown in Figure 4A, slot 43 extends generally longitudinally along the collar 41 in an irregular path from its first end 43' to its second end 43". The first, relatively short, section 45a of slot, extends in a downward arc at a relatively steep angle from the first end 43' near the top edge towards the bottom edge of the collar 43. The second, relatively long, section 45b of slot 43 extends from a corner 47 between the first and second sections in a straight line in an upward direction at a shallow angle towards the top edge of the collar 41 to the second end 43". The first section 45a of slot 43 thus provides a recess which, in cooperation with the corner 47, retains the extension 23' at the first end 43', thereby locking the double hinges 23, when the container 1 is in the upright configuration.

[0056] The collar 41 may be manually lifted relative to the container 1, and in particular relative to the supports 19. For this purpose, the lower edges of the collar 41, near the centre of each adjacent side and/or end wall, may be provided with a handle 49 to allow the underside of the collar 41 to be gripped and thus raised. In the illustrated embodiment, the handle 49 is provided by moulding the collar 41 with an ergonomic configuration shaped with finger spaces for gripping with the fingers of one hand. Thus, the collar 41 may be raised using the handles 49 at opposite side/end walls, so that the first section 45a of each slot passes above the extension 23'.

[0057] This lifting action exerts a force on the pivot extension 23', in a direction towards the centre of the corresponding side/end wall, so as to release the double hinge from its locked position. The upper and lower sections of supports 19 thus collapse, as shown in Figure 2B, and the extensions 23' associated with the upper section of each support 19 slide along the second section 45b of the respective slot 43.

[0058] As the skilled person will appreciate, the shallow angle of the second section 45b of slots 43 enables the collar 41 and upper and lower sections of supports 19 to be accommodated, and thus concealed, within the hollow base section 15 in the collapsed position, as shown in Figure 2C. In addition, when located within the base section 14 together with the collapsed walls and supports 19, the collar 41 has sufficient space to afford a degree of tolerance, that allows movement in a transverse direction.

[0059] When the collar 41 reaches the collapsed position, as shown in Figures 5A and 5B, the collar 41 is secured in locking engagement within the hollow base section 15 by a suitable locking mechanism 50. In the illustrated embodiment, the locking mechanism comprises wedge shaped projections 51a, 51b, provided on the external surface of each side of the collar 41, and complementary apertures 53a, 53b in the external wall of base section 15. The projections 51a, 51b are adapted for snap-fit engagement within the apertures 53a, 53b

when the collar 41 is lowered into the base section 15 to the collapsed configuration of container 1. In the illustrated embodiment, a pair of projections 51a, 51b are provided, which are located on either side of the centrally located handle 49, so as to securely retain the collar 41 with the base section 15. It will be appreciated that a locking mechanism 50 for the collar 41 can be provided on two opposed side/end walls of the container 1, or on both the side walls and end walls as appropriate. In addition, other suitable forms of locking mechanism are possible.

[0060] Thus, in the collapsed configuration, the locking mechanism 50 secures the collar 41 to the base section 15, and in turn secures the top section 25 (not shown in Figures 5B & 6B) above the base section. In particular, since the movement of the double hinges 23 of supports 19 is restricted by the slots 43 in collar 41, it is not possible to raise the top section 25 on the supports 19 whilst projections 51a, 51b and apertures 53a, 53b are locked in engagement.

[0061] To enable the locking mechanism 50 to be released, so that the container 1 can be returned from the collapsed configuration to the upright configuration, a cut out section 55 is provided in the centre of the external wall of the base section 15, between the apertures 53a, 53b of each locking mechanism. The cut out section 55 enables pressure to be applied directly to a release button 57 on the collar 41, as illustrated in Figure 6A and 6B. In the illustrated embodiment, button 57 is simply an area on the surface of the collar 41 formed with a depression, although such a depression is not essential and other arrangements are possible. As illustrated in Figure 6A, pushing the button 57 as shown by arrow A, moves the collar 41 and thus the wedge shaped projections 51a, 51b inwardly, by virtue of the aforementioned tolerance. This disengages the wedge shaped projections 51a, 51b on the collar 41 from the apertures 53a, 53b in the base section 15, as shown in Figure 6B, thereby releasing the collar 41 from locking engagement with the base section. This enables the top section 25 to be manually lifted from the base section 15 from the collapsed configuration to an upright configuration, as previously described.

[0062] The collar 41 provides a convenient solution for automatically locking the container in the collapsed and upright positions, whilst enabling manual release from the collapsed and upright configurations of the container 1 by manual operation of the collar 41. In particular, release from the upright configuration can be conveniently performed by a user holding the handles on opposite side or end walls of the container, and lifting the collar 41. Similarly, release from the collapsed configuration can be conveniently performed by a user pushing the exposed buttons 57 on the collar 41, on opposite side or end walls of the container, and lifting the top section 15 from the base section 15.

[0063] It will be appreciated that the above described locking and release mechanism, using collar 41, can be

used with other forms of collapsible container.

[0064] Figures 7A to 7F shows an example of a collapsible frame that may be used with the container 1 of Figures 1A to 1C or Figures 2A to 2C. For ease of illustration, the base section of the frame is not shown in detail and slots 21 are omitted. In particular, columns 19 are pivotally mounted to the interior of base section 15 of the frame 11, so that each column can fold inwardly so as to lie within the frame, above the base 2. In addition, the columns 19 have respective upper 19a and lower 19b sections which are hinged together by locking double hinges 23 to allow the upper section 19a to fold outwardly over the lower section 19b thereof. Typically, the upper 19a and lower 19b sections of the columns 19 have substantially equal length, and the upper sections 19a are integrally formed with connecting bars 20. In addition, the lower sections 19b of the columns 19 are pivotally mounted to the base section 15 by pivot pins 23'.

[0065] When the frame 11 is in the erect position, as shown in Figures 7A and 7F, the columns 19 are securely retained in the vertical position by manually operable locking catches (not shown) and the hinges 23 are secured, to hold the upper 19a and lower 19b sections of each column 19 in alignment. When the frame 11 is to be collapsed, the locking catches and hinges are manually released, and the frame collapsed, as shown in Figures 7B and 7E, by folding the upper and lower sections inwardly. In the fully collapsed position, as shown in Figures 7C and 7D, the frame is substantially flat, with the columns 19 and connecting bars 20 may be partly nested within, or just above, the interior of the base section 15.

[0066] Figures 8A to 8C show another example of a collapsible frame that may be used with the container 1 of Figures 1A to 1C, but modified to include connecting bars 20 at the side walls 3, 5 as well as connecting bars at the end walls 7, 9.

[0067] Thus, as shown in Figure 8A, frame 11 is formed with a generally rectangular cross section and includes a horizontally extending rectangular base section 15 having a pair of parallel sides 15a and a pair of parallel ends 15b which surround the base 2. Similarly, frame 11 includes a horizontally extending top section 25 having a pair of parallel sides 25a and a pair of parallel ends 25b. Upper ends of columns 19 are pivotally mounted to the sides 25a of the top section 25 of the frame near respective ends thereof, as shown more clearly in Figures 8D to 8F. In particular, the lower surface of the sides 25a of top section 25 are open or include apertures to receive the upper ends of columns 19, which are mounted by a pivot pin 31 on the sides 25a, to allow pivotal movement of the columns, as described below. Lower ends of columns 19 are mounted through slots 33 in the upper surface of sides 15a of the base section 15, to slide along a sliding mechanism (shown in detail in Figures 8D to 8F) to allow collapse of the frame. In particular, the lower ends of each pair of columns 19 mounted on a respective side 15a, can slide towards each other, whilst their respective upper ends pivot about pivot pins 31.

[0068] Referring to Figures 8D to 8F, the lower end of each column 19 is pivotally mounted on a shaft 30 extending laterally and substantially horizontally to the column and the side 15a of base section 15. Shaft 30 is received within a horizontal, longitudinally extending guiding slot 32 formed e.g. on the inner side of the corresponding side 15a of the base section 15. The shaft 30 is thus mounted to slide along horizontal guiding slot 32 as the column 19 pivots about pivot pin 31, as shown in Figure 8E, between an inner end of the slot 32, in which the column 19 is folded into the base section 15 to collapse the frame 11, as shown in Figure 8D, and an outer end of the slot 32, in which the column 19 is vertical, and the frame 11 erect, as shown in Figure 8F.

[0069] It will be appreciated that any other suitable mechanism can be used to connect the lower ends of columns 19 in sliding engagement with the sides 15a of base section 15.

[0070] The columns 19 are proportioned with a cross section smaller than that of at least the sides 15a of the base section 15 of the frame 11, and with a height shorter than about half the length of the sides 15a and/or 25a, so that they can be fully received through slots 33 into the interior of the sides 15a and/or 25a of the frame 11. This enables the frame to be fully collapsed to a flat position, as shown in Figure 8C.

[0071] When the frame 11 is in the erect position, as shown in Figures 8A and 8F, the columns 19 are securely retained in the vertical position by locking catches 24'. In the illustrated embodiment, locking catches 24' are provided in the form of complementary formations on the upper and lower ends of columns 19 and the inside of the base 15 and top 25 sections of the frame 11, which come into engagement when the columns 19 are in the vertical position, as shown in Figure 8F. Locking catches 24' prevent pivotal movement about pivot pin 31 of the upper ends of the columns and sliding movement of their lower ends along the sliding mechanism. When the frame 11 is to be collapsed, the locking catches are manually released, by pushing the columns towards each other, and the frame collapsed by applying pressure to the top section 25. This causes the lower ends of columns 19 to slide towards each other along sliding mechanism within sides 15a of the base section 15, whilst the upper ends pivot about pivot pins 31, so that the lower ends of the columns 19 on each side of the container pivot towards each other, as shown in Figures 8B and 8E. In the fully collapsed position, as shown in Figures 8C and 8D, the frame is substantially flat, with the columns 19 received within the interior of the base section 15 and top section 25.

[0072] Figure 9A is a perspective view of a container according to a third embodiment of the present invention, in its normal position, in use. Figures 9B and 9C show the container during collapse and in a collapsed position, respectively.

[0073] Container 1 is similar to the container of the first embodiment, except that it does not include connecting

bars at the ends thereof, and in the configuration of the drop-down side walls and end walls.

[0074] In particular, container 1 comprises a base 2, side walls 3, 5 and end walls 7, 9. The container 1 comprises a frame 11 of generally rectangular cross section, having a base section 15 including a pair of parallel sides 15a and a pair of parallel ends 15b which surround a rectangular base 2 of container 1. In addition, the frame 11 includes vertically extending columns 19, formed integrally therewith, which extend from each of the four corners of the base section 15 of frame 11. The columns 19 may be tapered towards the upper, distal ends thereof, and form the principle support for the container.

[0075] Like the frames of the first and second embodiments, frame 11 is typically formed by injection moulding from a suitable plastics material, and has a hollow construction. Whilst in the illustrated embodiment, the frame has a square or rectangular cross section, it will be appreciated that the frame can be formed with other suitable cross sectional configurations. Typically, the frame 11 is formed in one piece, and has suitable complementary snap-fit connections (or the like) to allow the base 2 to be fitted thereto during assembly of the container 1, as is well known in the art. Similarly, frame 11 is adapted to be fitted with side walls 3, 5 and/or end walls 7, 9, as described in further detail below.

[0076] Side walls 3, 5 and end walls 7, 9 are adapted to be lowered from an upright position as shown in Figures 9A and 9D, in which the upper edges of the walls are substantially level with the upper edge of the columns 19, to a dropped position as illustrated in Figures 9C and 9F. This dropped position allows access by consumers to the contents of the container 1, through the frame 11, if the container is placed on display in a retail outlet.

[0077] In this embodiment, the side walls 3, 5 and end walls 7, 9 are constructed with a plurality of horizontal slats 57a-d, extending between the columns 19. The slats are mounted to slide up and down the length of the columns 19 and are configured to be nested adjacent the corresponding sides 15a and ends 15b of base section 15 of the frame 11. In the illustrated embodiment, the slats 57a-d are configured to be nested side by side, as shown in Figure 9F.

[0078] In other embodiments, the slats may be hollow and of complementary configuration to allow them to be nested, one top of the other. Thus, the lowest slat 57a has the smallest dimension, which can be accommodated inside the second slat 57b, which can in turn be accommodated inside the third slat and so on.

[0079] The slats 57 are mounted to slide within slots 59 in the columns 19 by any suitable connection therewith. In addition, a manually operable locking mechanism (not shown) may be used to secure the slats in the raised position. The slats 57 forming the side walls 3, 5 and end walls 7, 9 may be formed from any suitable material according to design requirements. Typically, the slats 57 are formed from plastics material.

[0080] In use for transport and storage of products, the

container 1 is arranged with its walls upright or raised, as shown in Figure 9A, for the storage and transport of consumer products. The container 1 can then be used to directly display the consumer product on shelving or other displays in a retail outlet. In particular, the locking mechanism, that retains the walls in the raised position, may be manually released. The slats 57a-d of the walls are thereby released so that they can slide within slots in columns 19. The slats then drop down under the force of gravity, as shown in Figures 4B and 4E, so that each slat nests next to (or over) the immediately lower slat. Pressure may be applied to the top edges of the walls, to assist nesting of the slats in the fully lowered position shown in Figures 9C and 9F.

[0081] Although not shown, the containers 1 when empty may be stacked on top of each other by virtue of the tapering of columns 19, for storage and transport prior to reuse.

[0082] It will be appreciated that the slatted configuration of the side and end walls of the embodiment of Figures 9A to 9C may be used in conjunction with other embodiments.

[0083] Figures 10A is a perspective view of a container according to a fourth embodiment of the present invention, in its normal position, in use. Figures 10B and 10C show the container during collapse and in a collapsed position, respectively.

[0084] Container 1 comprises a frame 11, formed with a generally square or rectangular cross section and includes a horizontally extending rectangular base section 15 having a pair of parallel sides 15a and a pair of parallel ends 15b which surround the base 2, and a horizontally extending top section 35 having a pair of parallel sides 25a and a pair of parallel ends 25b. Four vertically extending columns 19 connect the base section 15 and the top section 25 at their respective corners, and provide support for the frame 11.

[0085] The container 1 may optionally include side walls 3, 5 (not shown) and end walls 7, 9 (not shown) between the columns 19. For example, the side walls and end walls may be in the form of a screen (or the like), so that they can be lowered, as with the first embodiment, described above. The frame 11 thus defines the bottom, side, and top edges of the container.

[0086] The base section 15, top section 25 and four columns 19 are typically formed separately, from injection moulded plastics, and connected together during assembly thereof, as described below. In particular, lower ends of the columns 19 are configured for engagement with formations in the upper surface of the four corners of the base section 15. In the illustrated embodiment, the lower ends of the columns 19 have a cylindrical form, and the corners of base section 15 have complementary circular apertures to receive the lower ends therein. As the skilled person will appreciate, other forms of connection are possible. In addition, upper ends of the columns 19 configured for releasable engagement with formations in the four corners of top section 25. In the illustrated

embodiment, the upper ends of columns 19 have a cylindrical form (of larger diameter than the lower ends), which are received in circular apertures in the corners of top section 25, for locking engagement therein. In particular, a locking mechanism 41 (not shown) is used to retain the upper ends of columns 19 in engagement with the top section 25, when a manually operable lever 43 is rotated to an engaged position, as shown in Figure 10A.

[0087] In this embodiment, columns 19 are in the form of telescopically collapsible legs 49, to allow collapse of the frame 11, and thus the container. In particular, each leg 49 is formed in three hollow cylindrical sections 49a-c of substantially equal length. As best seen in Figure 10F, a first section 49a at the upper end of the leg 49 has the largest cross-section, with the second section 49b and third section having increasingly smaller circular cross-sections so that the inner diameter of the first section 49a is slightly larger than the outer diameter of the second section 49b, so that the first section 49a can accommodate the second section 49b therein. Similarly, the second section 49b is proportioned to accommodate the third section 49c, in telescopic fashion.

[0088] It will be appreciated that legs 49 can be formed in any number of sections, and the cross-section thereof need not be circular, but could equally be square, rectangular or hexagonal. Moreover, the use of telescopically collapsible legs for reducing the height of the top section above the base section is just one possibility. Other techniques for reducing the height of the legs are possible, and contemplated.

[0089] The sections 49a-c of legs 49 may be formed in any conventional manner to allow telescopic extension and retraction thereof. For example, sections of the legs secured together in the extended position by screw threaded engagement (not shown). In this way, the legs can be collapsed to the retracted position simply by rotation of one section of the leg with respect to another. Such rotation may be achieved in conjunction with the lever 43 of the locking mechanism 41.

[0090] Accordingly, when the frame 11 is in the erect position, as shown in Figures 10A and 10F, the legs 49 are extended, with the sections 49a-c thereof secured in locking (e.g. screw threaded) engagement. Although not shown, side walls 3, 5 and end walls 7, 9 may be provided on the frame 11, to form a container. Such side walls 3, 5 and end walls 7, 9 may take the form of a screen, as described above in relation to the first embodiment, and one or more of these may be dropped down to allow access to the contents of the container 1. In this way, the a container having frame 11 may be used to directly display its contents in a retail outlet.

[0091] When the container is empty, it may be collapsed to a substantially flat position, by collapsing frame 11, as shown in Figures 10C and 10D. In particular, levers 43 may be rotated to release the screw threaded engagement between sections 49a-c of legs 49, to allow the telescopic collapse thereof, as shown in Figures 10B and 10E. Moreover, the upper half of upper section 49a may

be accommodated within the hollow corners of top section 25 and the lower half of upper section 49a may be accommodated within the hollow corners of base section 15, and locked in engagement by rotation of lever 43, so that the top section 25 lies directly on top of base section 15, as shown in Figures 10C and 10D. Alternatively, the collapsed legs 49 may be removed and transported separately from the top and bottom sections of the frame 11.

[0092] It will be appreciated that, for certain types of consumer product, a container having the frame 11 according to the embodiment of Figures 10A to 10C may be used for the direct display of products in a retail outlet in the collapsed position shown in Figure 10C, as an alternative to the erect position shown in Figure 10A.

[0093] Figures 11A is a perspective view of a container according to a fifth embodiment of the present invention, in its normal position, in use. Figures 11B and 11C show the container during collapse and in a collapsed position, respectively.

[0094] The container according to this fifth embodiment differs from the first embodiment in that it does not include vertically extending columns at the corners thereof, for providing support for the container. Instead, the support is provided by diagonally extending crossed bars on the side walls of the container, which also enable the collapse of the container, as described below.

[0095] In addition, the end walls of the container can be lowered. The container also includes a frame with an top section and a base section, similar to the frame of Figures 8A to 8C.

[0096] In particular, as shown in Figures 11A to 11C, container 1 comprises a base 2, side walls 3, 5 and end walls 7, 9. The container 1 is configured with a frame 11 having a rectilinear configuration that defines the bottom, side and top edges of the container. In particular, frame 11 is formed with a generally rectangular cross section, which is relatively flat in this embodiment, and includes a horizontally extending rectangular base section 15 having a pair of parallel sides 15a and a pair of parallel ends 15b which surround the rectangular base 2 of container 1, and a corresponding horizontally extending rectangular top section 25 having a pair of parallel sides 25a and a pair of parallel ends 25b.

[0097] Top section 25 and base section 15 are interconnected by a pair of crossed bars 35, which are mounted on the interior of each of the side walls 3, 5 of the container as shown in detail in Figures 11D to 11F. Each bar 35 extends diagonally from its upper end adjacent one end of a side 25a of the top section 25, towards an opposite end of the corresponding side 15a of the base section 15. In addition, the upper end of each bar 35 is pivotally mounted on pivot pin 31 to the inner surface of the side 25a of the top section 25, and the lower end of each bar 35 is mounted to slide within a respective slot 37 in the side 15a of the base section 15. This allows the container 1 to be collapsed, as described below.

[0098] In the illustrated embodiment, the crossed bars 35 have a substantially flat configuration, so that they do

not extend a significant distance into the interior of the container. Moreover, each pair of crossed bars are inter-linked by a central pivot 39, as well known in the art, to allow co-operative movement of the bars 35 during the erection and collapse of the container 1.

[0099] When the frame 11 is in the erect position, as shown in Figures 11A and 11F, the lower ends of the crossed bars 35 are securely retained at the inner ends of slots 37, to support the container 1. This position can be used to transport the filled container and optionally to display consumer products in the container. The end walls 7, 9, in the form of a blind or screen as described above in relation to the first embodiment, may be dropped down for display, or alternatively kept in an upright position to help contain the contents of container 1. Spaces between the crossed bars 35 in the side walls 3, 7 allow access to the contents of the container 1. In this way, the container 1 may be used to directly display its contents in a retail outlet.

[0100] When the container 1 is empty, it may be collapsed to a substantially flat position, as shown in Figures 11C and 11D. In particular, the crossed bars 35 may be manually released, and the frame collapsed by applying pressure to the upper section 25. This causes the crossed bars 35 to pivot about pivot 39, so that the upper ends of crossed bars 35 pivot, and the lower ends of crossed bars 35 slide away from each other along slots 37, as shown in Figures 11B and 11E. In the fully collapsed position, as shown in Figures 11C, the crossed bars 35 lie substantially flush with the inner surface of the sides 15a/25a of the top 25 and base 15 sections of the frame 11. Furthermore, the top section 25 lies directly on top of the bottom section 15 so that the collapsed container is substantially flat. This position may also be used for the display of certain types of consumer products in a retail outlet.

[0101] Figure 12A is a perspective view of a container according to a sixth embodiment of the present invention, in its normal position, in use. Figures 12B and 12C show the container during collapse and in a collapsed position, respectively.

[0102] Container 1 comprises a base 2, side walls 3, 5 and end walls 7, 9. The container 1 comprises a generally rectangular base section 15 having a pair of parallel sides 15a and a pair of parallel ends 15b which surround the rectangular base 2 of container 1. In addition, each corner of the base section 15 is formed with a corner column 19 which extends vertically above the upper surface of the sides 15a and ends 15b. The columns 19 may be tapered towards the upper, distal ends thereof, so that the lower ends are wider than the upper ends. The container 1 further comprises a generally rectangular top section 25 of complementary configuration to the base section 15, but without rectangular base 2. In addition, the top section is hollow, and open at its lower surface, to allow the base section 15 to be substantially fully accommodated therein. In this way, the top section 25 can be nested over the bottom section 15, as described be-

low.

[0103] Each of the top and base sections 15, 25 is typically formed by injection moulding from a suitable plastics material, and at least the top section 25 has a hollow construction. Whilst in the illustrated embodiment, the sides and ends of the top and base sections have a generally rectangular cross section, it will be appreciated that they can be formed with other suitable hollow or substantially hollow configurations e.g. with curved surfaces.

[0104] A manually operable catch 53 is provided to actuate a mechanism (not shown) within the top section 25, which comprises retractable projections. When extended, the projections at least partially close the opening in the lower surface at its corners to allow the top section to be stacked on top of the bottom section, as shown in Figure 12A. Any suitable mechanism may be used for this purpose.

[0105] Thus, in the erect position shown in Figures 12A and 12D, consumer products may be contained within container 1, formed by the stacked top 25 and base 15 sections, for transport and storage.

[0106] The container 1 can then be collapsed to the collapsed position shown in Figure 12C, to allow access to the contents of the container. Thus the collapsed container may be used for the direct display of products in a retail outlet. In particular, catch 53 may be operated to release the mechanism (not shown) and thus retract the projections, to thereby fully open the lower surface of the top section 25. The top section 25 can then be pushed down over the lower section 15, as shown in Figure 12B. In the collapsed position shown in Figures 12C and 12E, the sides and ends of the base section 15 are substantially fully nested in the top section 25.

[0107] Figure 13A is a perspective view of a container according to a seventh embodiment of the present invention, in its normal position, in use. Figures 13B and 13C show the container during collapse and in a collapsed position, respectively.

[0108] As shown in Figures 13A to 13C, container 1 comprises a base 2, side walls 3, 5 and end walls 7, 9. The container 1 is configured with a horizontally extending rectangular base section 15 having a pair of parallel sides 15a and a pair of parallel ends 15b which surround the rectangular base 2 of container 1. Side walls 3, 5 and end walls 7, 9 are formed from a plurality of concentric, rectangular collars 61a-c of complementary configuration to the sides 15a and ends 15b of the base section. Collars 61a-c may be fastened together, one on top of the other, to the base section 15, by any suitable, manually releasable fastening. In the illustrated embodiment, three rectangular collars 61a-c are used, although it will be appreciated that any number of collars can be used, with any desired configuration and dimensions to suit the application. The first collar 61a is configured so that the dimensions of its inner surfaces are just greater than the dimensions of the outer surfaces of the sides 15a and ends 15b of the base section 15, so that the first collar 61a can surround the base section 15. Similarly, the sec-

ond collar 61b is configured so that its internal dimensions are just greater than the external dimensions of the first collar 61a, so that the second collar can surround the first collar. Finally, the third collar 61c is configured so that its internal dimensions are just greater than the external dimensions of the second collar 61b, so that the second collar can surround the first collar.

[0109] In use for transport and storage of products, the container 1 is arranged with collars 61a-c fastened together to form walls, as shown in Figures 13A and 13D, for the storage and transport of consumer products. The container 1 can be used to directly display the consumer product on shelving or other displays in a retail outlet. In particular, the fastenings for the collars 61a-c can be manually released, from the bottom collar 61a to the top, as shown in Figures 13B and 13E, so that each collar drops down to the level of the base section 15. In the fully collapsed position, as shown in Figures 13C and 13F, the collars 61 lie concentrically around the base section 15, and may be fastened together in this position for storage and transport prior to reuse.

[0110] Figure 14A is a perspective view of a container according to an eighth embodiment of the present invention, in its normal position, in use. Figures 14B and 14C show the container during collapse and in a collapsed position, respectively.

[0111] The eighth embodiment is similar to the seventh embodiment in that it comprises a base section and a plurality of collars, that form the side and end walls of the container. However, the construction of the collars differs in that some of the collars may be nested one on top of the other.

[0112] In particular, as shown in Figures 14A to 14C, container 1 comprises a base 2, side walls 3, 5 and end walls 7, 9. The container 1 is configured with a horizontally extending rectangular base section 15 having a pair of parallel sides 15a and a pair of parallel ends 15b which surround the rectangular base 2 of container 1. Sides 15a and ends 15b have a tapered cross section such that the bottom is wider than the top thereof.

[0113] Side walls 3, 5 and end walls 7, 9 are formed from a plurality of concentric, rectangular middle collars 61a-c and a rectangular top collar 65. Middle collars 61a-c have a complementary configuration to the sides 15a and ends 15b of the base section 15, and top collar 65 is configured to lie on top of a middle collar. Each of the middle collars 61a-c has substantially the same shape, with a tapered cross section that is complementary to the tapered cross section of the sides and ends of the base section 15. Moreover, each middle collar 61a-c is hollow and is open at its lower surface so that it can be nested on top of another middle collar or the sides and ends of the base section 15. In the illustrated embodiment, three rectangular middle collars 61a-c are used, although it will be appreciated that any number of collars can be used, with any desired configuration and dimensions to suit the application.

[0114] The top collar 65 also has a complementary

rectangular configuration but has vertical sides 65a and ends 65b, and is provided to cooperate with a releasable fastening (not shown) that secures the collars 61a-c, 65 together, and prevents them from dropping over the base section 15 when container 1 is in the erect configuration. As the skilled person will appreciate, any suitable releasable fastening may be employed, according to design requirements.

[0115] In use for transport and storage of products, the container 1 is arranged with middle collars 61a-c and top collar 65 fastened together to form container walls, as shown in Figure 14A, for the storage and transport of consumer products. The container 1 can be used to directly display the consumer product on shelving or other displays in a retail outlet. In particular, the fastenings for the collars 61a-c 65 can be manually released, and the collars pushed down, as shown in Figure 14B. In this way, in the fully collapsed position, the first middle collar 61a nests over the base section 15, second middle collar 61b nests over first middle collar 61a, and third middle collar 61c nests over second middle collar 61b. Top collar 65 then overlies the nested middle collars 61a-c, as shown in Figure 14C. The base section 15 and top collar 65 may be fastened together in this collapsed position for storage and transport prior to reuse.

[0116] Thus, the containers of the described embodiments have a sturdy construction by providing a base and columns or supports that provide good strength, whilst being adapted to be collapsible to a substantially flat configuration. In this way, the container is resilient and adapted to protect consumer-products contained therein, whilst it can be reduced in size when empty.

[0117] The containers are generally rectangular in configuration, and may be stacked one on top of another for transport and storage of consumer-products.

[0118] In addition, in some embodiments, the container includes walls, which may be mounted to a frame, which are retractable into or adjacent at least part of a base section of the frame, to allow access by consumers to products within the container when on display at a retail outlet. In this way, it is possible to utilise the containers for display in a retail outlet, thus avoiding the need to transfer consumer-products from the container to shelving.

[0119] It should be noted that features of each of the described embodiments can be used interchangeably with features of the other embodiments, where appropriate, to meet design requirements. For example, drop down walls, such as those of the first and second embodiments, can be used in conjunction with the fourth embodiment.

Alternative Embodiments are set out in the following clauses:

[0120] Clause 1. A container comprising: a frame comprising: a base section having a pair of opposed sides and a pair of opposed ends surrounding a base; a plurality

of columns extending substantially vertically from corners of the base section; and at least one wall mounted between a pair of the plurality of columns of the frame, and configured to be moved within the frame between a raised position and a lowered position.

[0121] Clause 2. A container as in clause 1, wherein each said at least one wall comprises a screen, mounted on the frame such that at least part of the screen is retractable into the frame when the wall is in the lowered position.

[0122] Clause 3. A container as in clause 2, wherein the screen is in the form of one of: a pleated blind; a slatted blind, a roller blind, a plurality of complementary, independently arranged slats, or a compressible mesh.

[0123] Clause 4. A container as in clause 2 or clause 3, wherein the screen is mounted within a pair of guides in opposite columns of the frame for movement between the raised position, in which the screen is extended, and the lowered position, in which the screen is retracted.

[0124] Clause 5. A container as in clause 1, 2 or 3, wherein the at least part of the screen is retractable into the base section of the frame.

[0125] Clause 6. A container as in any one of clauses 1 to 5, wherein the frame further comprises: at least one connecting bar extending between the top of a pair of columns on a side or end of the container.

[0126] Clause 7. A frame for a container, comprising: a base section having a pair of opposed sides and pair of opposed ends surrounding a base; and a plurality of columns extending substantially vertically from corners of the base section; wherein at least one pair of the plurality of columns are configured to receive a wall such that it can be moved between a raised position and a lowered position.

[0127] Clause 8. A frame as in clause 7, wherein the frame has a substantially hollow construction.

[0128] Clause 9. A frame as in clause 7 or clause 8, wherein each column of said at least one pair of the plurality of columns includes: a vertically extending slot in a surface of the column facing the other of said at least one pair of the plurality of columns, and a vertically extending guide in the column, wherein the slot provides an opening in the column for an end of a mounting of the wall, so that the mounting can be received within said guide, for movement therein.

[0129] Clause 10. A frame as in clause 9, wherein the guide is configured to receive and retain said end of said mounting, for guiding movement of said mounting therein between a raised position and a lowered position of the wall.

[0130] Clause 11. A frame as in clause 9 or clause 10, wherein the guide includes a manually releasable catch for retaining the mounting at a position in which the wall is in the raised position.

[0131] Clause 12. A frame for a container, comprising: a base section having a pair of opposed sides and a pair of opposed ends surrounding a base; and a plurality of columns extending substantially vertically from corners

of the base section; wherein the columns are configured to be collapsed on the frame, so that the columns are at least partially nested on or within the base section.

[0132] Clause 13. A frame as in clause 12, wherein lower ends of the columns are pivotally mounted to an inner surface of the sides or ends of the base section, so that the columns can be collapsed, by pivotal movement a the lower ends thereof, to a horizontal position in which the columns overlie the base.

[0133] Clause 14. A frame as in clause 13, wherein each column includes upper and lower sections interconnected by a hinge such that the upper section can be folded over the lower section in the collapsed position.

[0134] Clause 15. A frame as in clause 12, wherein the frame is configured to receive a pair of columns within the interior of a hollow side or end of the base section

[0135] Clause 16. A frame as in clause 12 or clause 13, wherein a lower end of each column is configured for sliding engagement within a horizontally extending guide within a hollow side or end of the base section, and an upper end of each column is adapted for pivotal movement, such that the column may be dropped into the hollow side or end of the base section by sliding the lower end in a direction towards the centre of said side or end of the base section.

[0136] Clause 17. A container comprising: a base section having a pair of opposed sides and a pair of opposed ends surrounding a base; a top section having a pair of opposed sides and a pair of opposed ends; and a plurality of columns extending substantially vertically between corners of the base section and corners of the top section; wherein the columns are configured to be adjustable in height.

[0137] Clause 18. A container as in clause 17, wherein the columns are configured in telescopically collapsible sections.

[0138] Clause 19. A container as in clause 18, wherein corners of the top section and the bottom section are configured for mounting respective ends of the columns.

[0139] Clause 20. A container as in clause 19, wherein the columns are collapsible to a minimum height, and the corners of the top section and the bottom section are configured to accommodate the columns when collapsed to the minimum height.

[0140] Clause 21. A container comprising: a base section having a pair of opposed sides and a pair of opposed ends surrounding a base; a top section having a pair of opposed sides and a pair of opposed ends; and a plurality of supports connecting the base section and the top section, the supports movable between an extended position, in which the top section is retained at a predetermined maximum height above the base section, and a collapsed position, in which the top section lies directly over the base section.

[0141] Clause 22. A container as in clause 21, wherein the plurality of supports include a pair of crossed bars, mounted to a side or an end of the container.

[0142] Clause 23. A container as in clause 22, wherein

one end of each of said pair of crossed bars is pivotally mounted to one of the base and top sections, and the other end of said pair of crossed bars is mounted to slide within horizontally extending slot in the other of the base and top sections, so that the crossed bars can be folded from said extended position to said collapsed position.

[0143] Clause 24. A container comprising: a base section having a pair of opposed sides and a pair of opposed ends surrounding a base, and columns projecting substantially vertically from the corners thereof; a top section having a complementary configuration to the sides, ends and corner columns of the base section, wherein the top section is hollow and open at the corners of its base such that the top section can be nested over the bottom section in a collapsed position; and means to at least partially close the open corners of the base of the top section, so that the top section can be supported on the corner columns of the base section in a raised position.

[0144] Clause 25. A container comprising: a base section having a pair of opposed sides and a pair of opposed end surrounding a base; and a collar having a pair of opposed sides and a pair of opposed ends; wherein the base section and the collar are configured to be connected together in an erect position, so that the collar is positioned above the base and the sides and ends of the base and collar together form respective side walls and end walls of the container, and wherein the collar is dimensioned to fit concentrically around the sides and ends of the base section in a collapsed position.

[0145] Clause 26. A container comprising: a base section having a pair of opposed sides and a pair of opposed end surrounding a base; and a collar having a pair of opposed sides and a pair of opposed ends of complementary configuration to the sides and ends of the base section; wherein the base section and the collar are configured to be connected together in an erect position, so that the collar is positioned above the base and the sides and ends of the base and collar together form respective side walls and end walls of the container, and wherein the collar is substantially hollow and is configured to nest over the sides and ends of the base section in a collapsed position.

[0146] Clause 27. A frame for a container as claimed in any one of clauses 1 to 6,.

[0147] Clause 28. A container having a frame as claimed in any one of clauses 7 to 11.

[0148] Clause 29. A container comprising a frame as in any one of clauses 12 to 16, the container further comprising: at least one wall comprising a compressible mesh mounted between a pair of the plurality of columns of the frame, and configured to be moved within the frame between a raised position, in which the mesh is expanded and a lowered position in which the mesh is compressed.

[0149] Clause 30. A container as in clause 29, wherein the compressible mesh comprises a plurality of generally parallel bands interlinked by deformable V-shaped spring formations.

[0150] Clause 31. A container comprising a frame as

in any one of clauses 12 to 16, or as in clause 29 or 30, the container further comprising a mechanism for locking and releasing the collapsible columns in the collapsed position and/or vertical position, the mechanism preferably comprising a manually operable collar extending around the container, the collar connected to hinges of the collapsible columns such that manual operation of the collar engages and/or disengages the hinges from a locked position with respect to the collar.

[0151] Clause 32. A container as in clause 31, wherein the collar further comprises slots, each slot for receiving an extension of a hinge of one of the collapsible columns, the slot configured with a recess for retaining the hinge when the columns are in the vertical position, wherein manual operation of the collar releases the hinge from the recess to enable collapse of the columns.

[0152] Clause 33. A container as in clause 31 or clause 32, wherein the collar further comprises at least one manually releasable catch for engagement with the base section when the columns are collapsed on or within the base section.

[0153] As a skilled person with appreciate, many variations and modifications can be made to the described embodiments. It is intended to include all such variations, modifications and equivalents which fall within the scope of the present invention, as defined in the accompanying claims.

Claims

1. A container comprising:
 - a frame comprising:
 - a base section having a pair of opposed sides and a pair of opposed ends surrounding a base;
 - a plurality of columns extending substantially vertically from corners of the base section; and at least one wall mounted between a pair of the plurality of columns of the frame, and configured to be moved within the frame between a raised position and a lowered position.
2. A container as claimed in claim 1, wherein each said at least one wall comprises a screen, mounted on the frame such that at least part of the screen is retractable into the frame when the wall is in the lowered position.
3. A container as claimed in claim 2, wherein the screen is mounted within a pair of guides in opposite columns of the frame for movement between the raised position, in which the screen is extended, and the lowered position, in which the screen is retracted.
4. A container is claimed in claim 1, 2 or 3, wherein the at least part of the screen is retractable into the base section of the frame.
5. A frame for a container, comprising:
 - a base section having a pair of opposed sides and pair of opposed ends surrounding a base; and
 - a plurality of columns extending substantially vertically from corners of the base section;
 wherein at least one pair of the plurality of columns are configured to receive a wall such that it can be moved between a raised position and a lowered position.
6. A frame as claimed in claim 5, wherein each column of said at least one pair of the plurality of columns includes:
 - a vertically extending slot in a surface of the column facing the other of said at least one pair of the plurality of columns, and
 - a vertically extending guide in the column,
 wherein the slot provides an opening in the column for an end of a wall, or a mounting thereof, so that the end of the wall or mounting can be received within said guide, for movement therein.
7. A frame as claimed in claim 6, wherein the guide is configured to receive and retain said end of said mounting, for guiding movement of said mounting therein between a raised position and a lowered position of the wall.
8. A frame as claimed in claim 5, 6 or 7, wherein:
 - the columns are configured to be collapsed on the frame, so that the columns are at least partially nested on or within the base section.
9. A frame as claimed in claim 8, wherein lower ends of the columns are pivotally mounted to an inner surface of the sides or ends of the base section, so that the columns can be collapsed, by pivotal movement of the lower ends thereof, to a horizontal position in which the columns overlie the base.
10. A frame as claimed in claim 9, wherein each column includes upper and lower sections interconnected by a hinge such that the upper section can be folded over the lower section in the collapsed position.
11. A frame as claimed in claim 8, wherein the frame is configured to receive a pair of columns within the interior of a hollow side or end of the base section

12. A frame as claimed in claim 8 or claim 9, wherein a lower end of each column is configured for sliding engagement within a horizontally extending guide within a hollow side or end of the base section, and an upper end of each column is adapted for pivotal movement, such that the column may be dropped into the hollow side or end of the base section by sliding the lower end in a direction towards the centre of said side or end of the base section. 5 10
13. A container comprising a frame as claimed in any one of claims 8 to 12, the container further comprising: 15
- at least one wall comprising a compressible mesh mounted between a pair of the plurality of columns of the frame, and configured to be moved within the frame between a raised position, in which the mesh is expanded and a lowered position in which the mesh is compressed. 20 25
14. A container as claimed in claim 13, wherein the compressible mesh comprises a plurality of generally parallel bands interlinked by deformable V-shaped spring formations. 25
15. A container as claimed in claim 12 or claim 13, further comprising a mechanism for locking and releasing the collapsible columns in the collapsed position and/or vertical position. 30 35 40 45 50 55

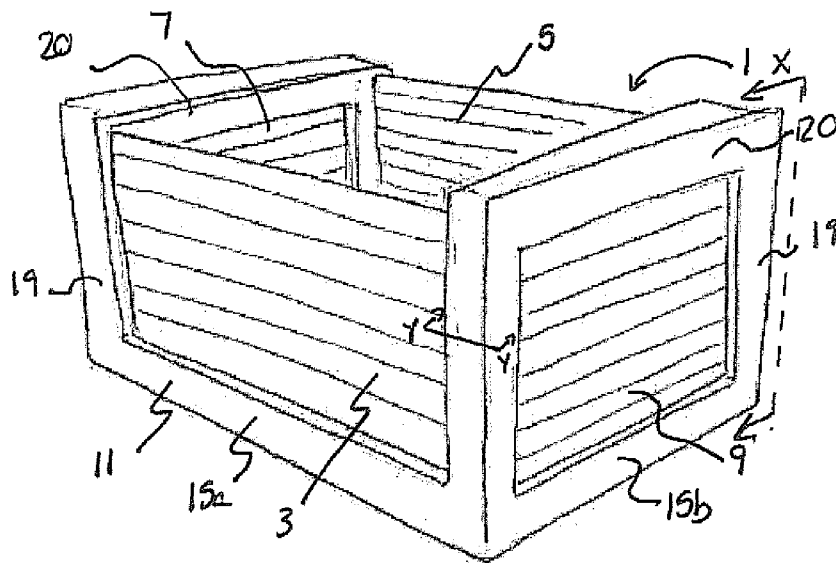


FIGURE 1A

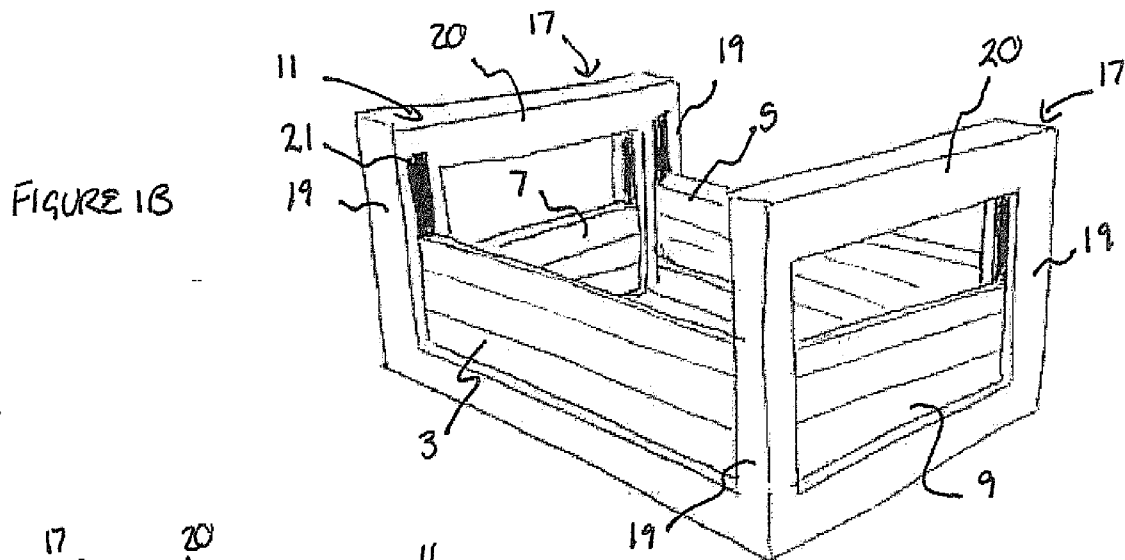


FIGURE 1B

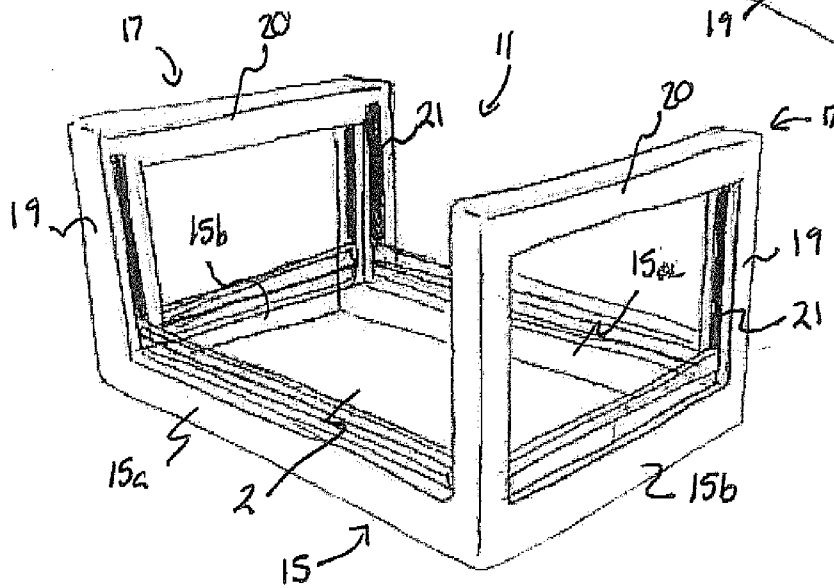
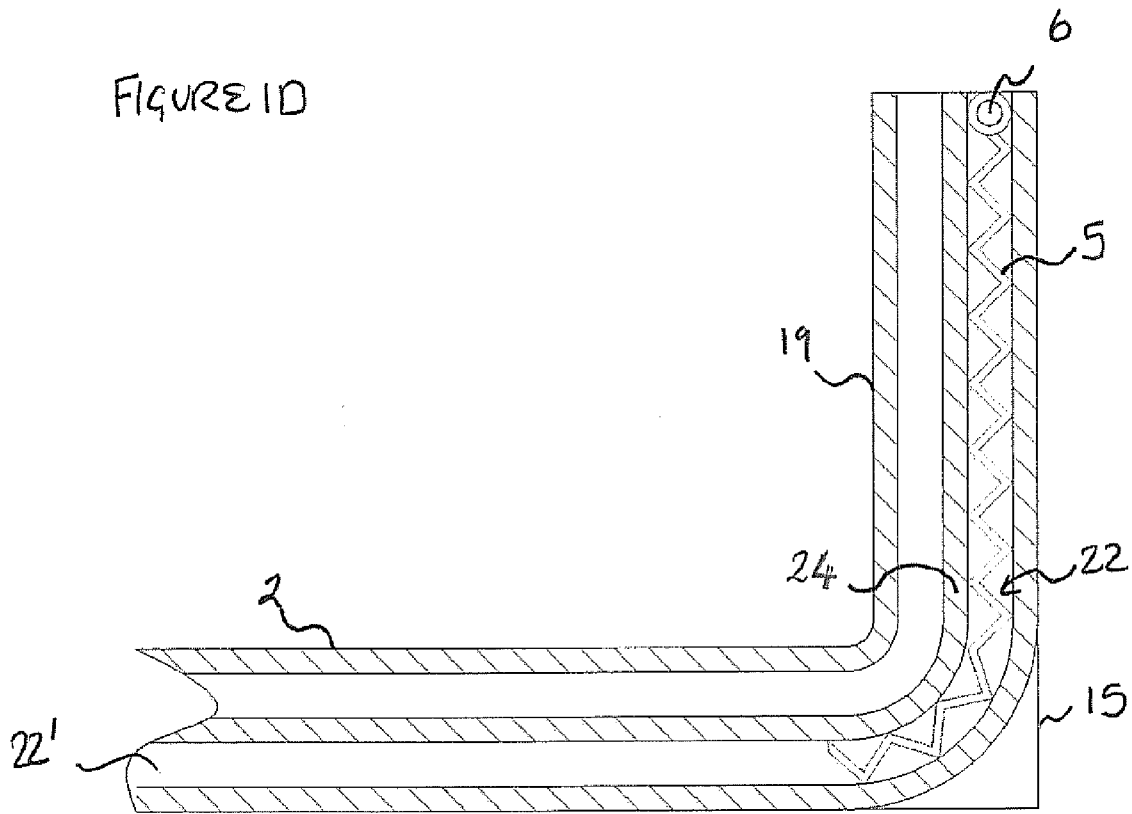


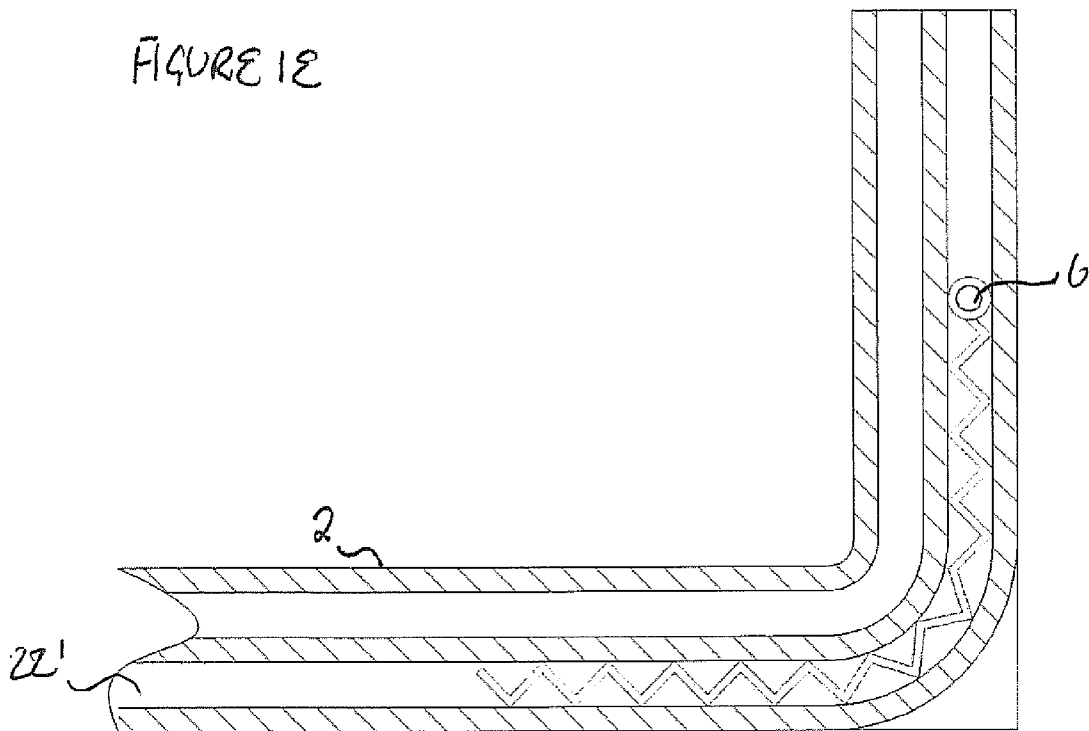
FIGURE 1C

FIGURE 1D



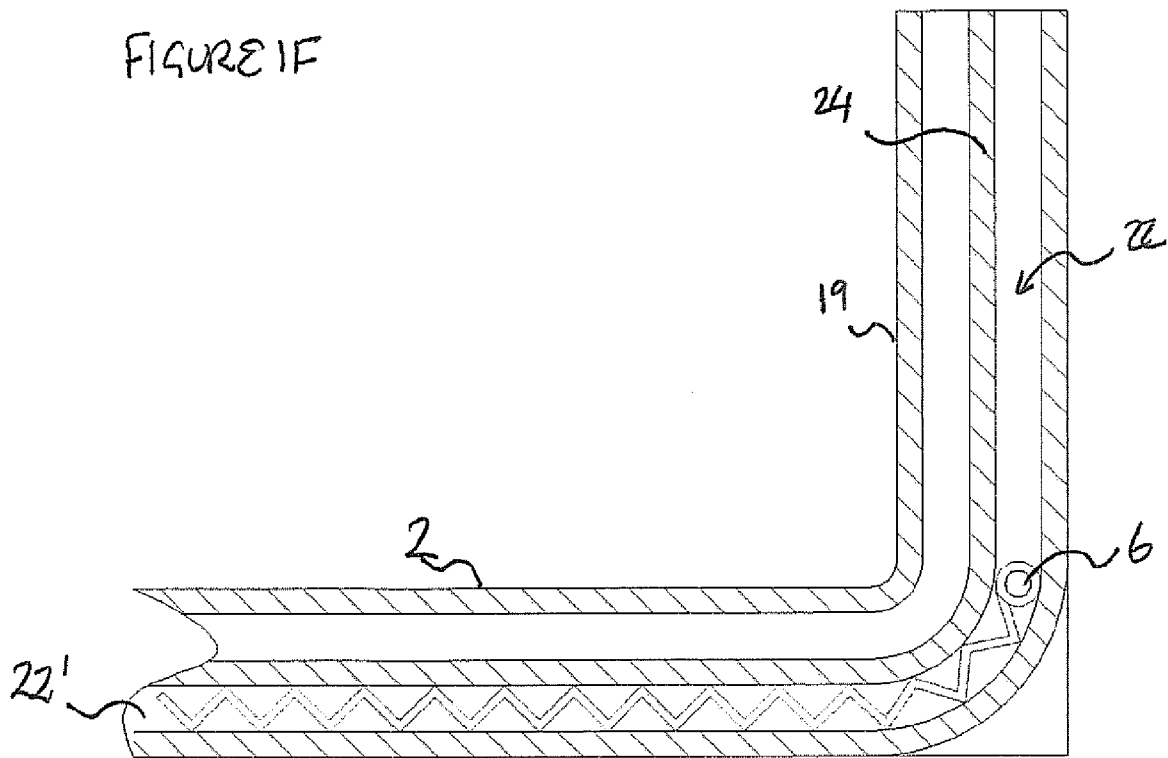
Section thru showing side in the top closed position

FIGURE 1E



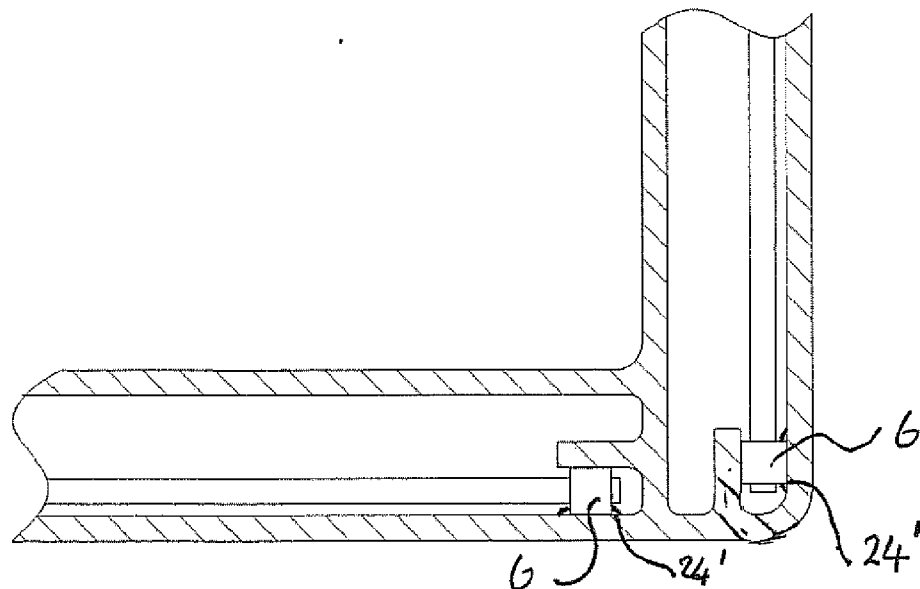
Section thru showing side in the middle position (half open / half closed)

FIGURE 1F



Section thru showing side in the fully open position

FIGURE 1G



Plan view Section showing how the slides are kept in place.

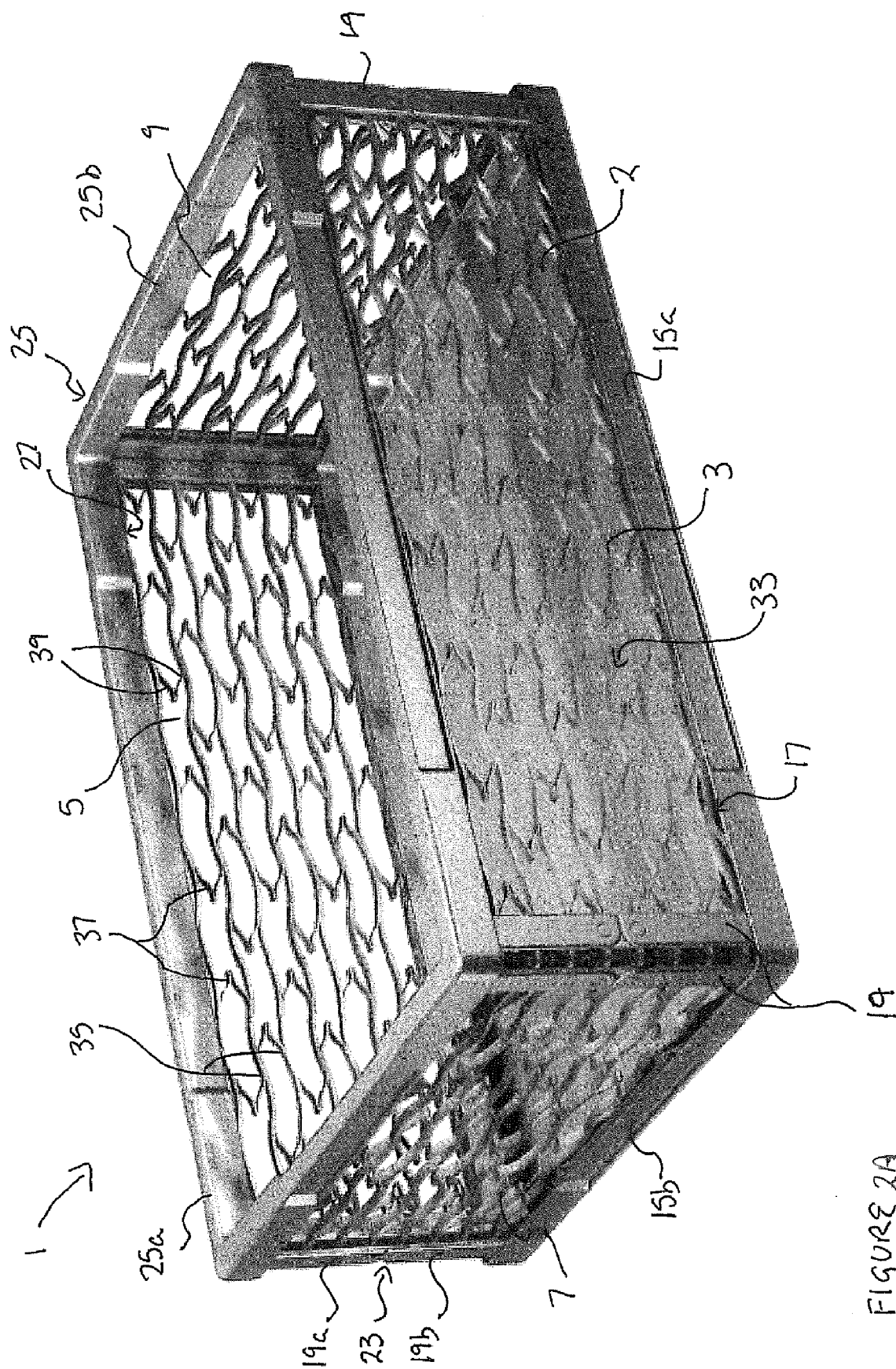


FIGURE 2A

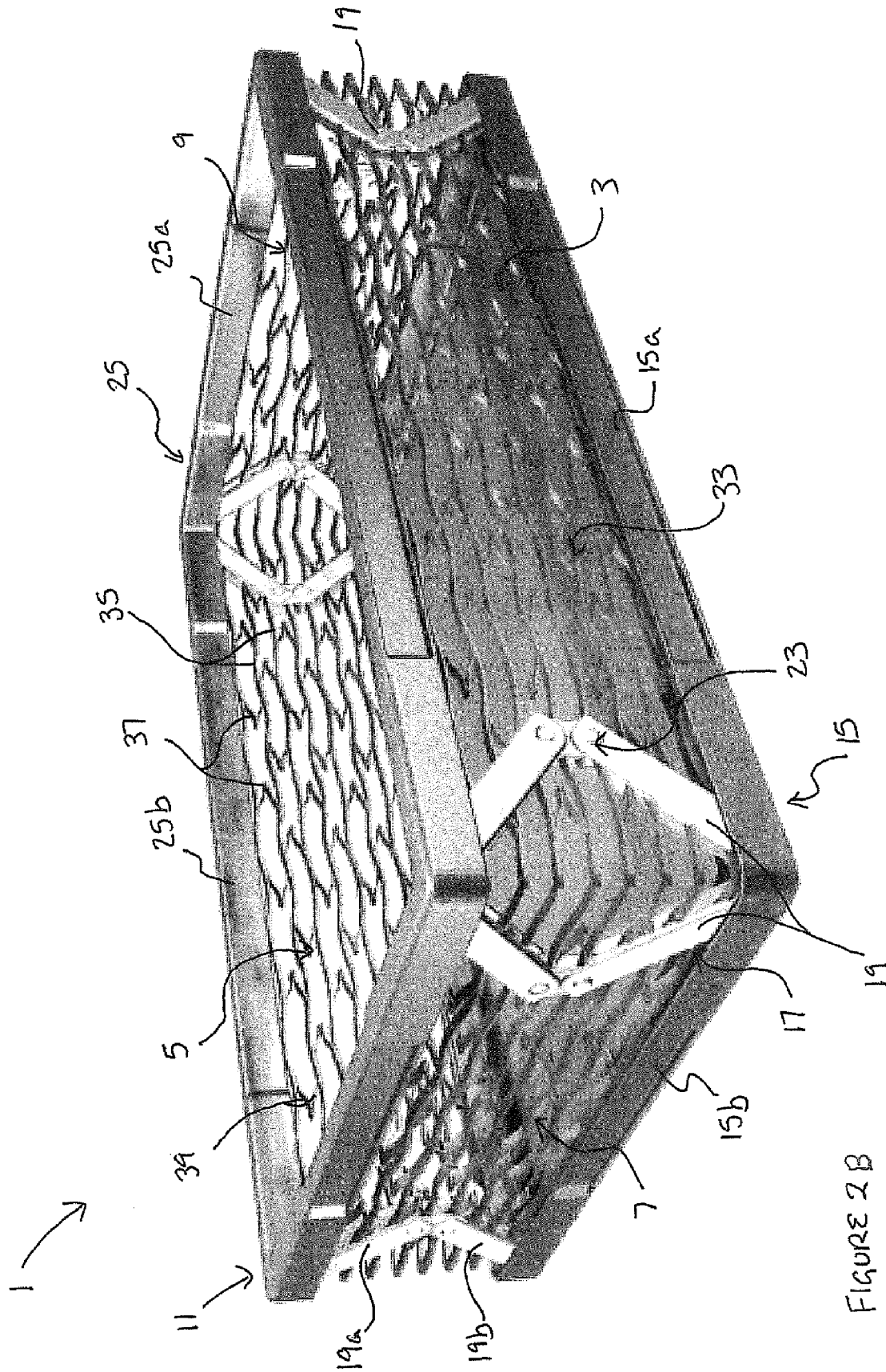


Figure 2 B

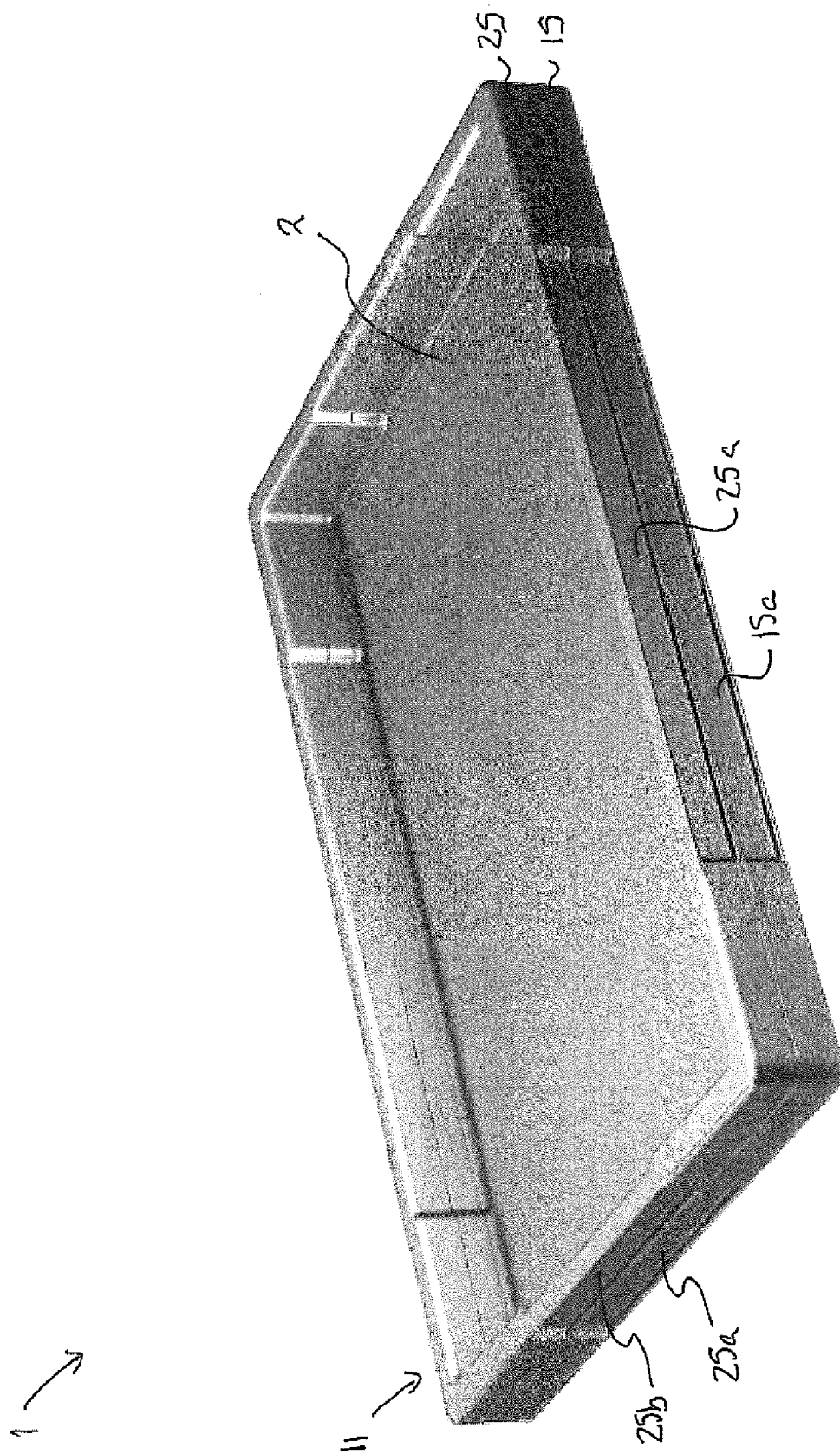


FIGURE 2C

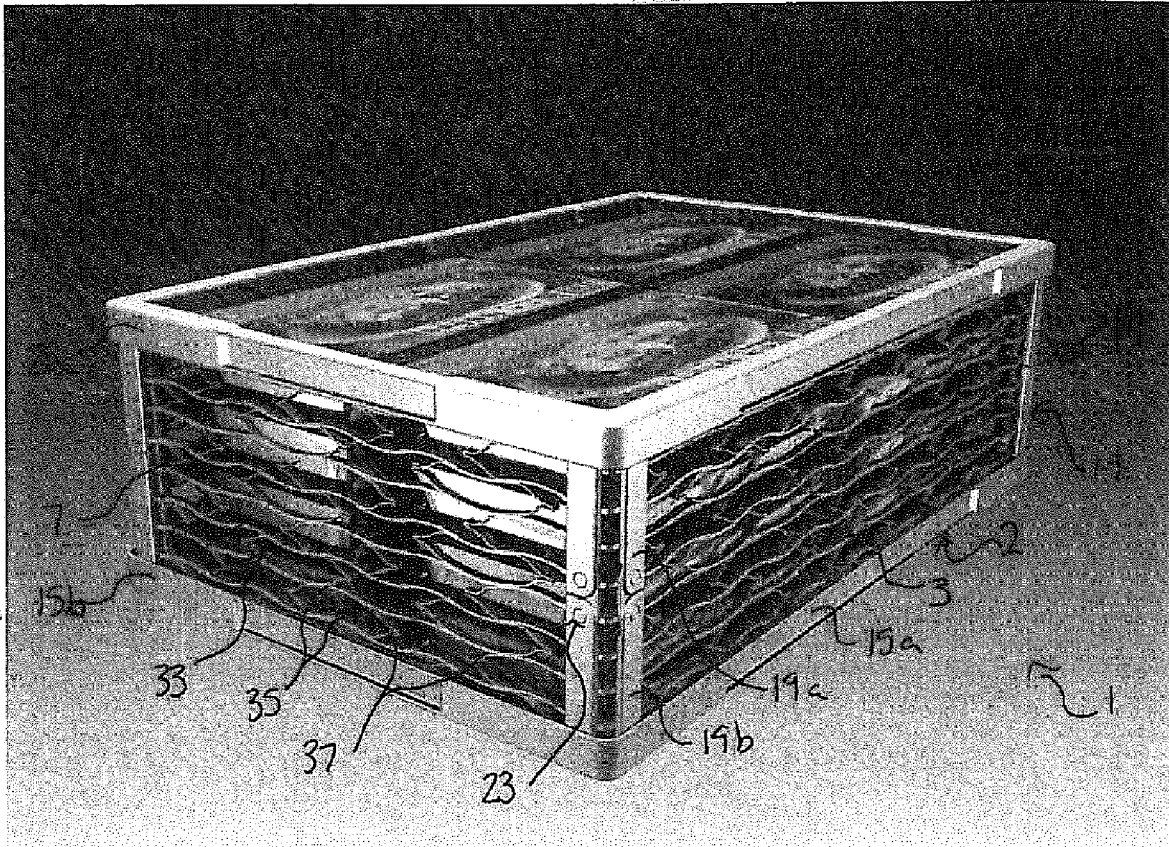
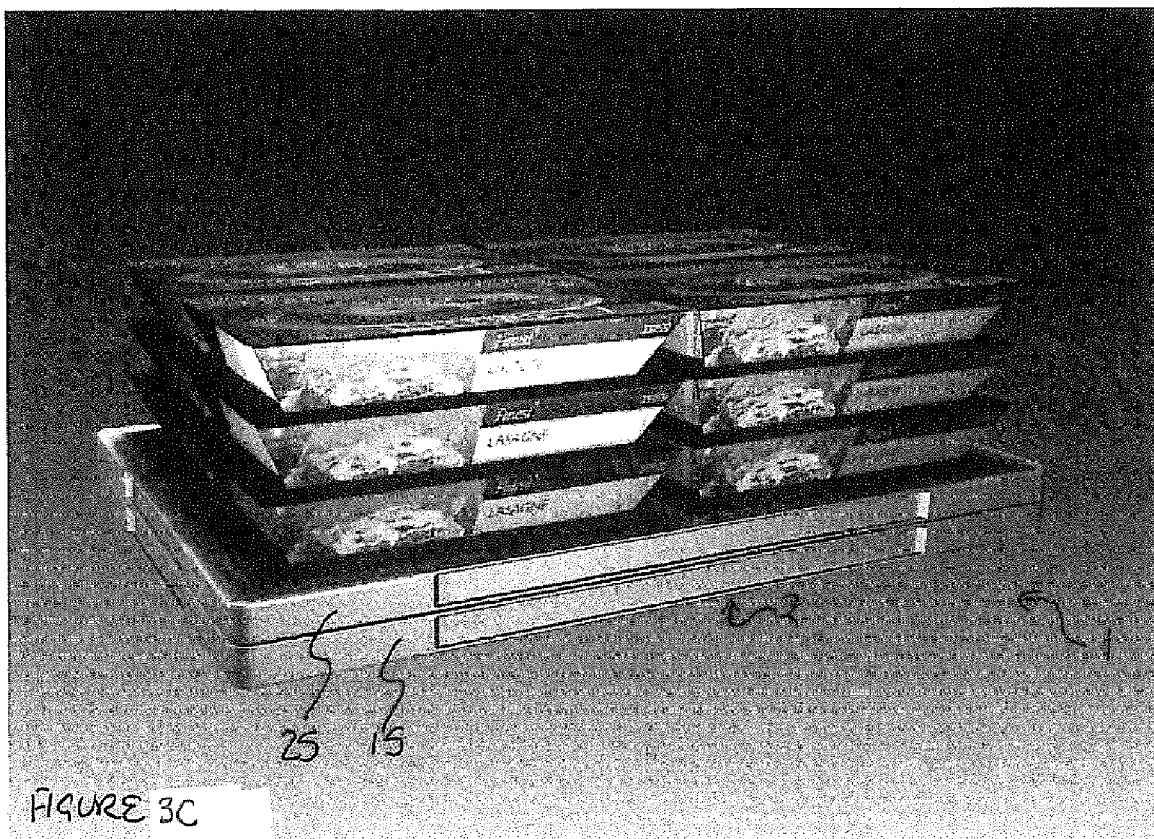
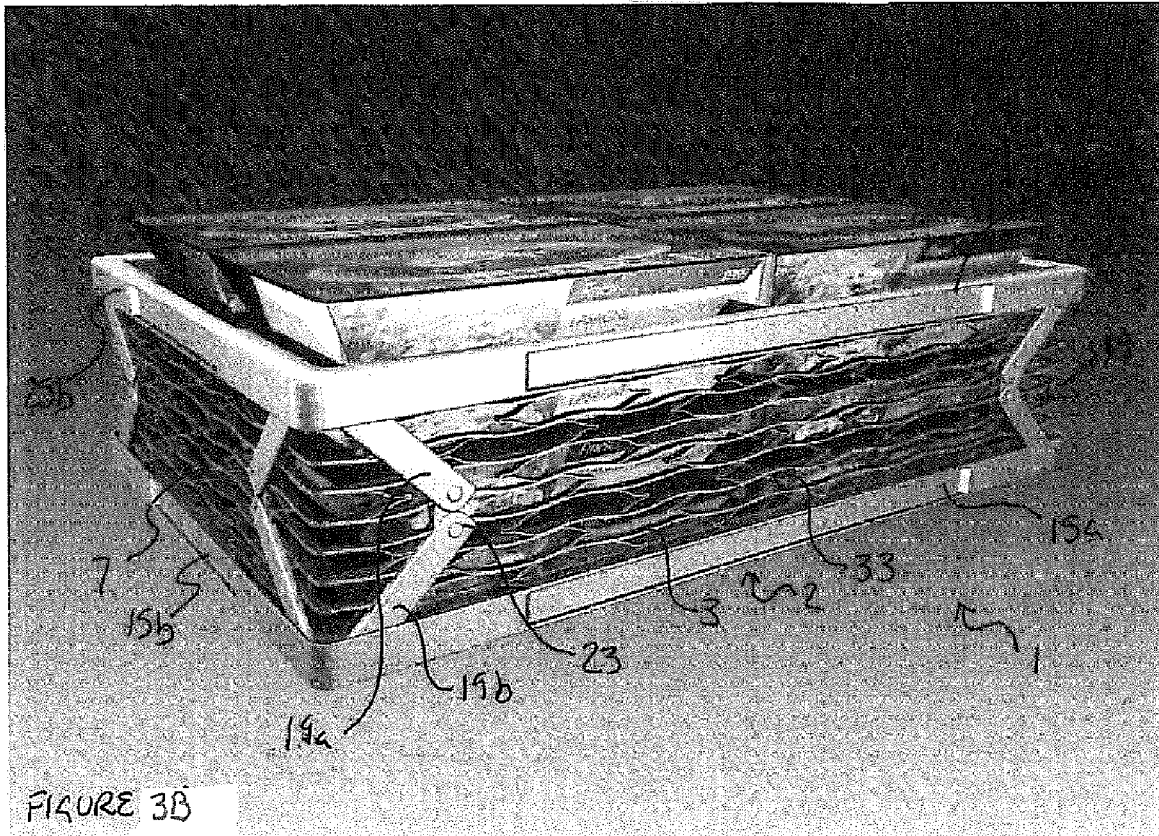


FIGURE 3A



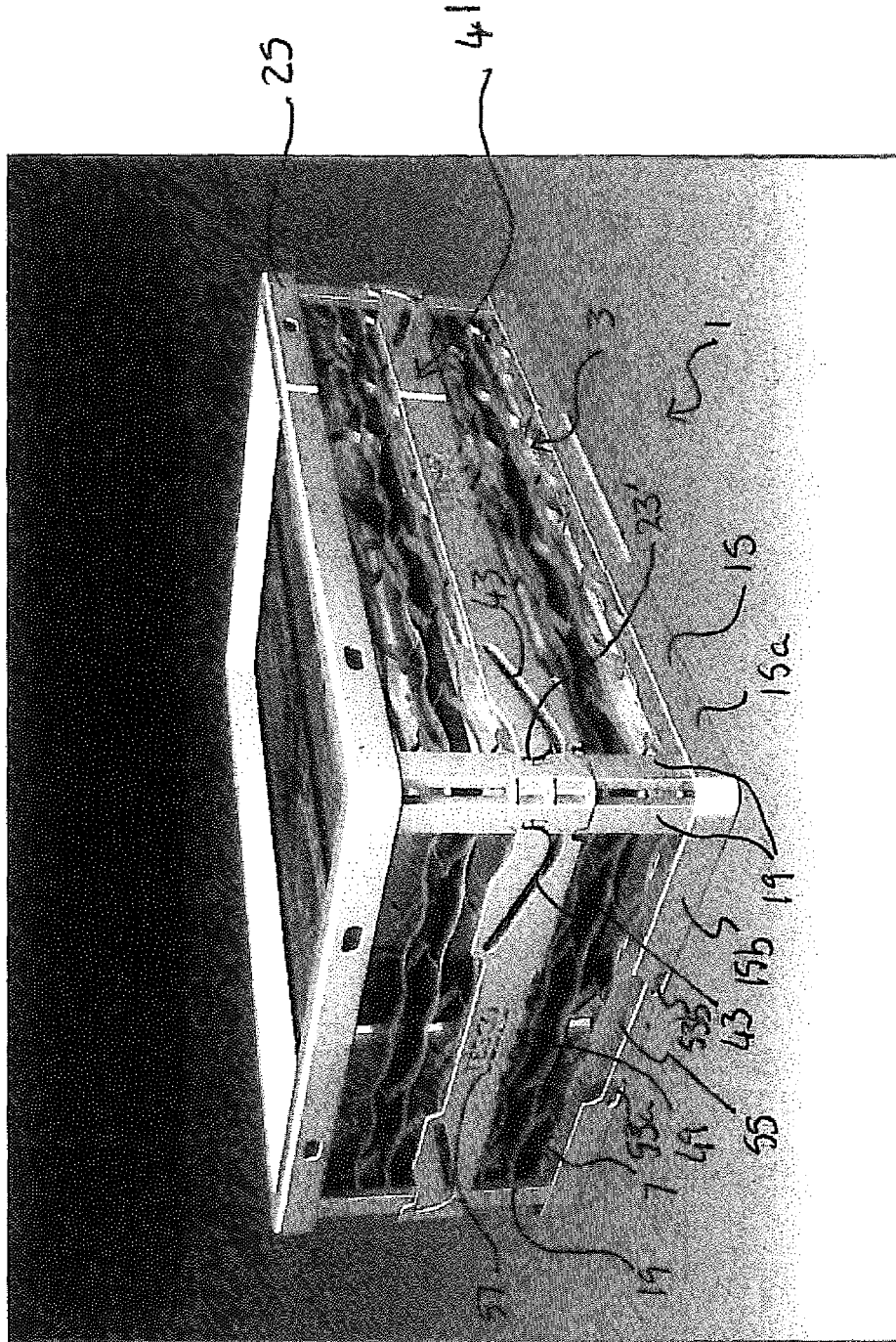


FIGURE 4

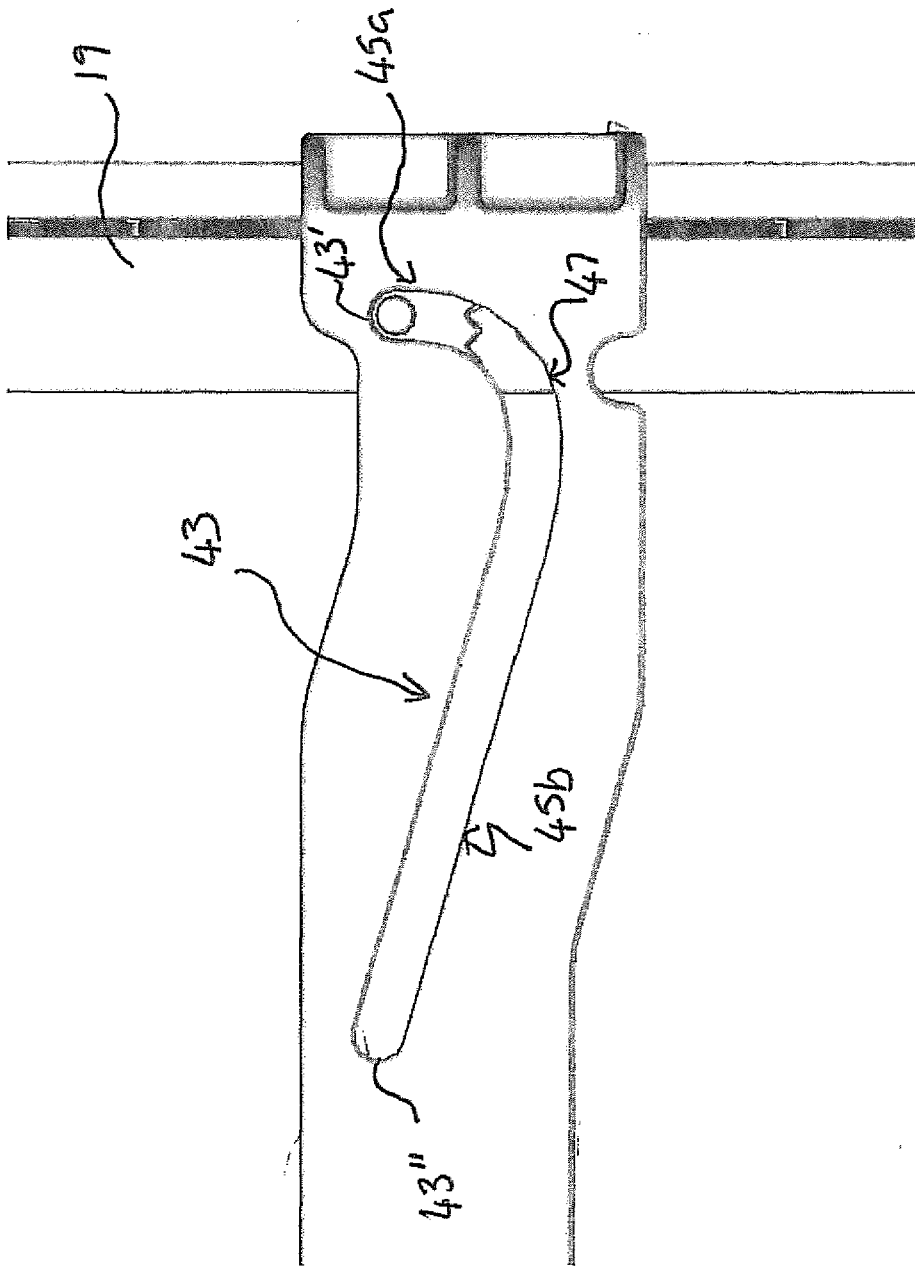


FIGURE 4A

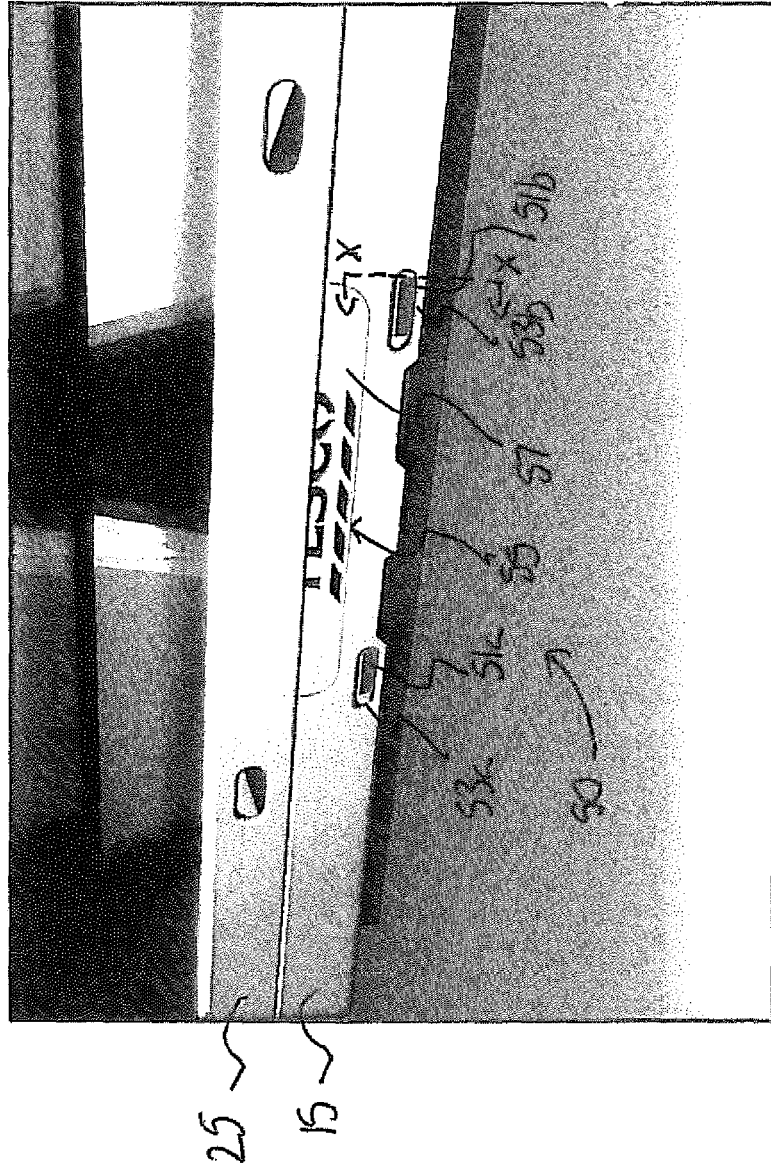


FIGURE 5A

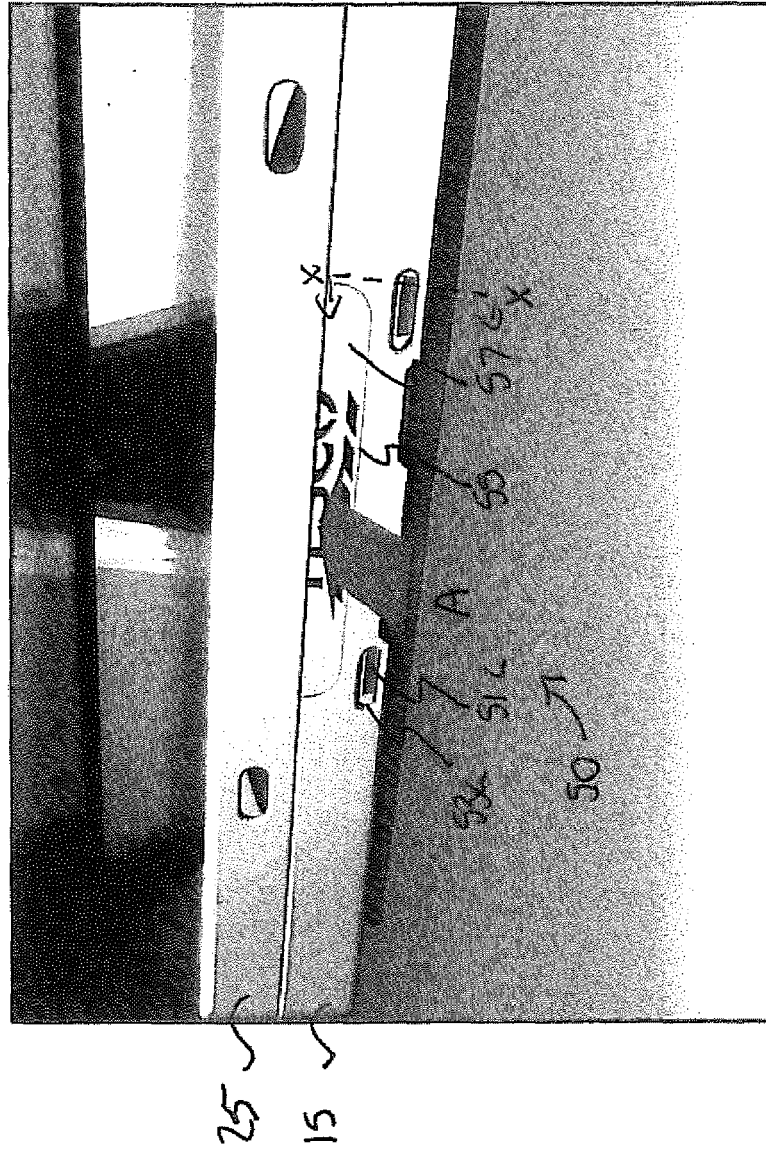
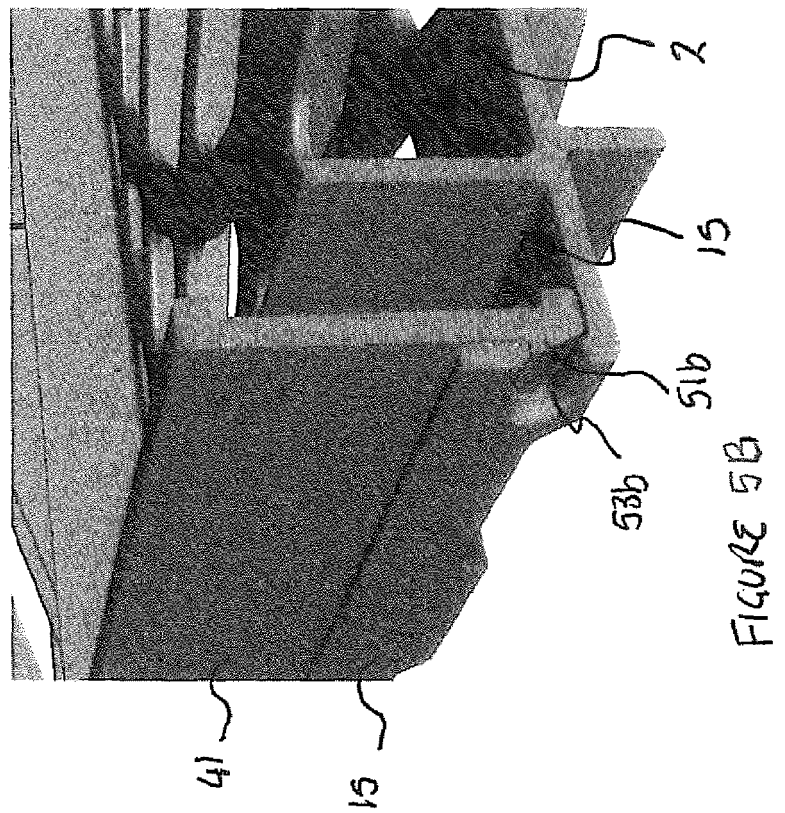
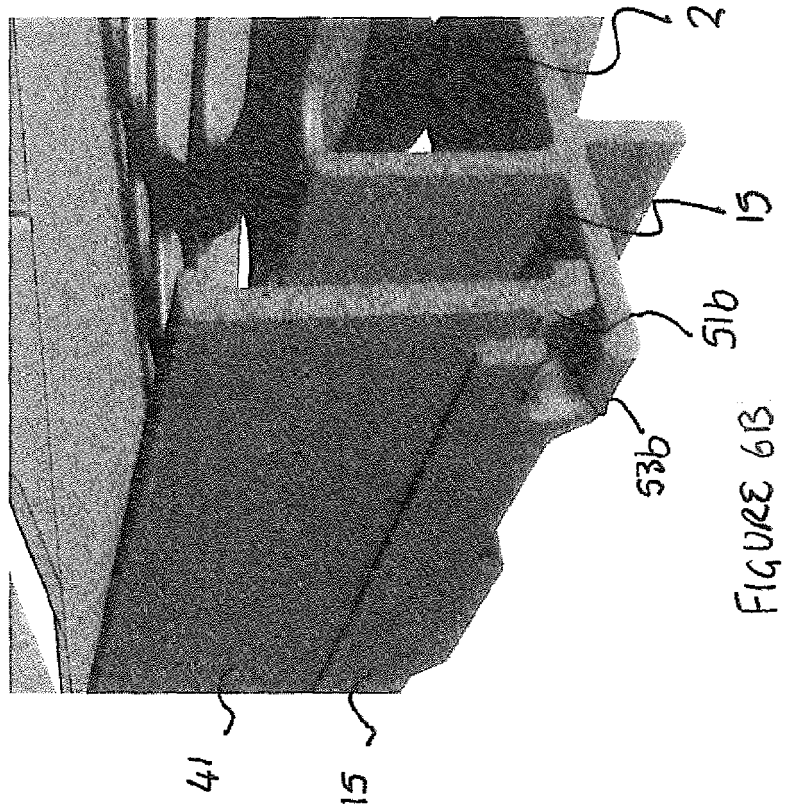


FIGURE 6A



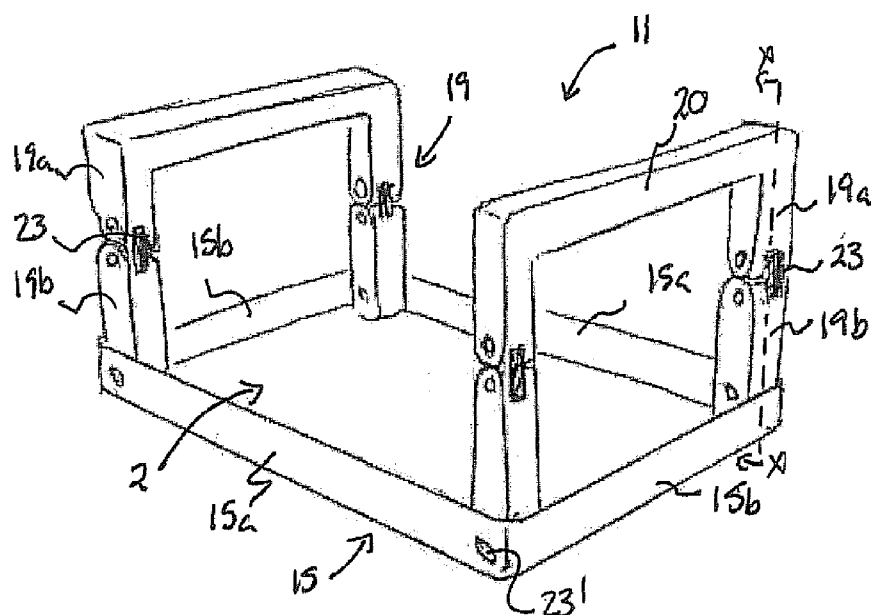


FIGURE 7A

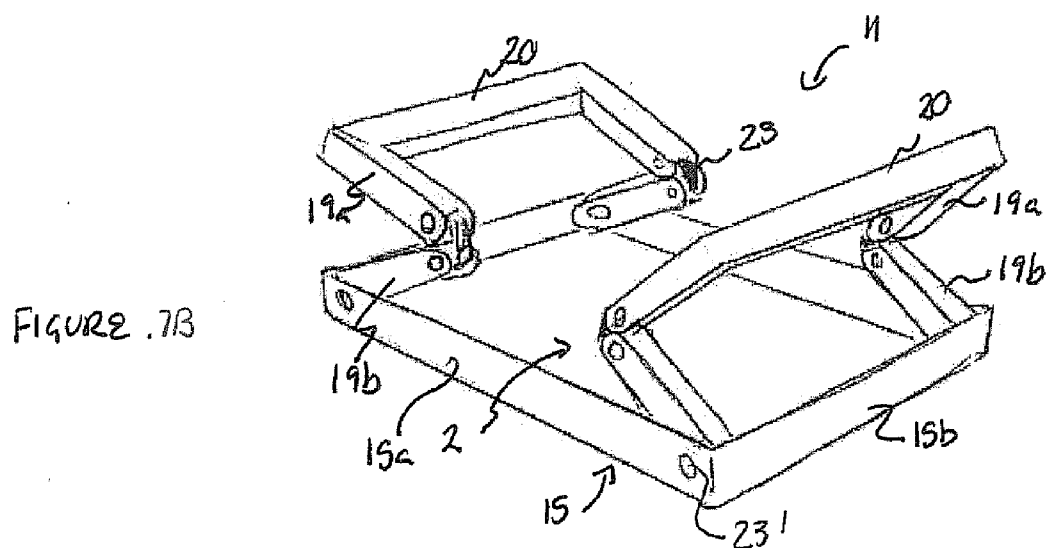


FIGURE 7B

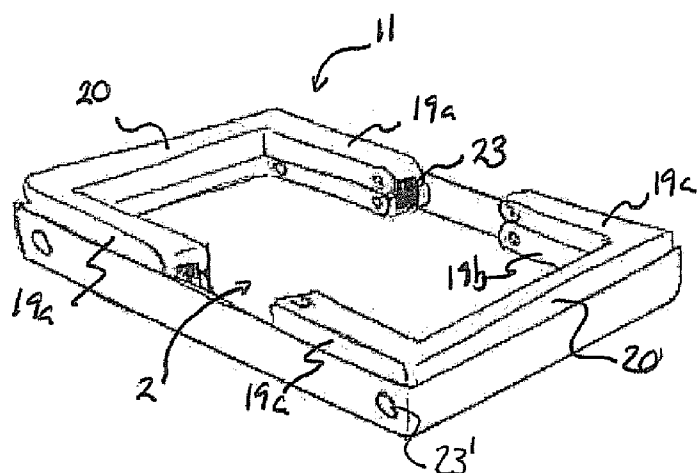


FIGURE 7C

FIGURE 7D

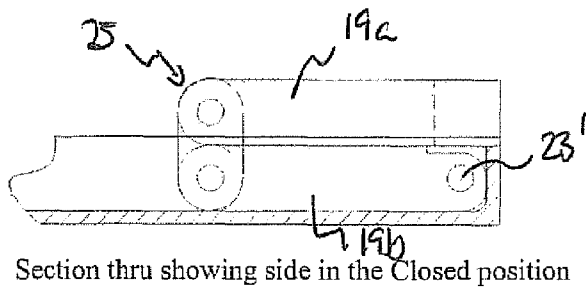


FIGURE 7E

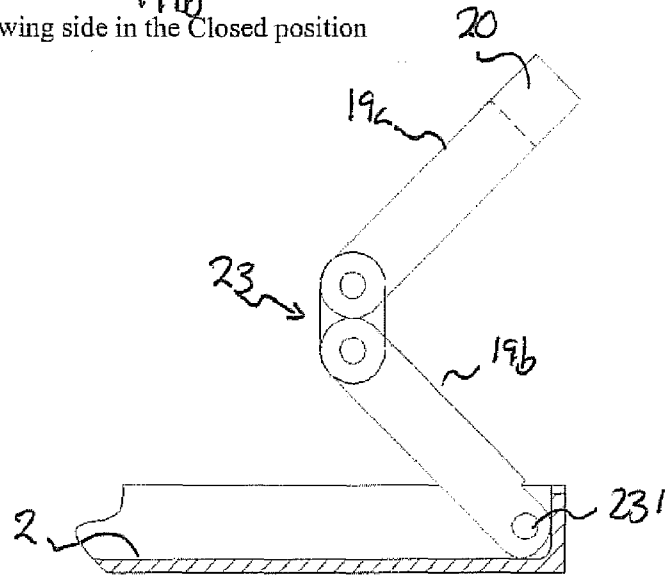
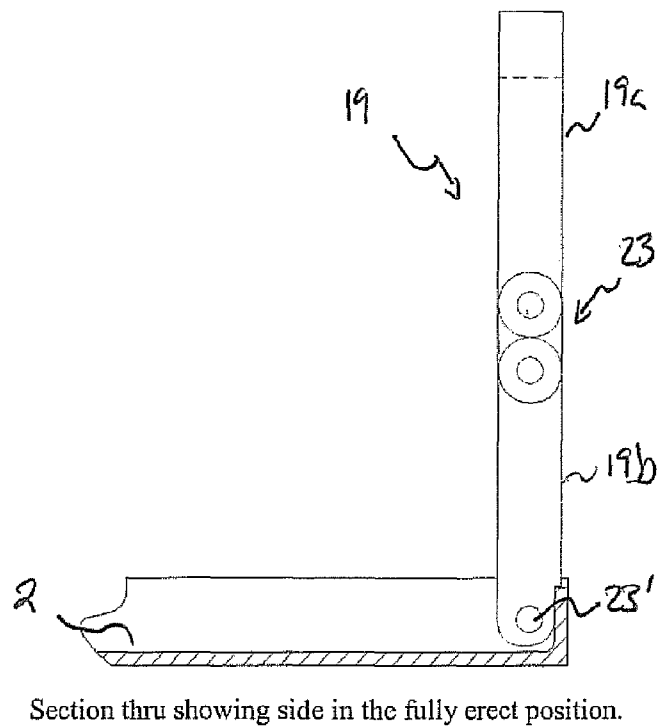


FIGURE 7F



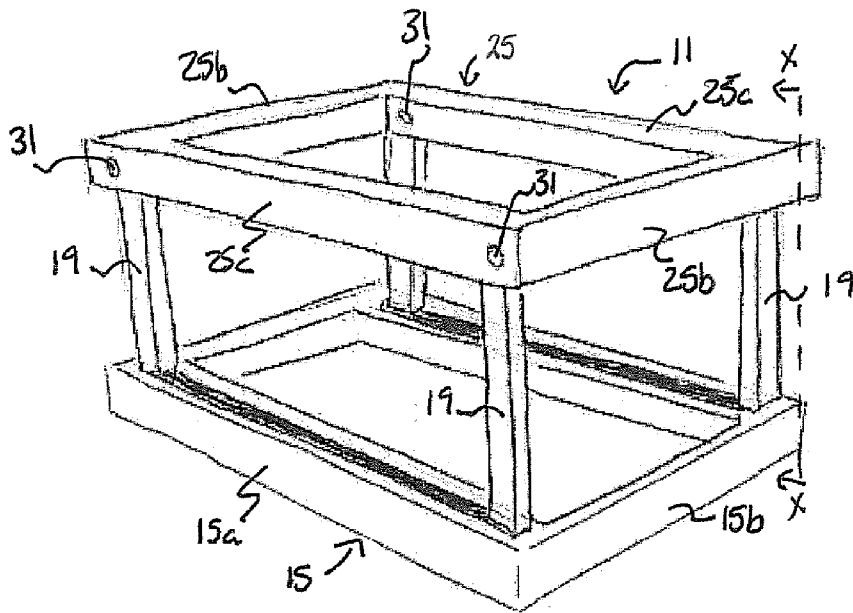


FIGURE 8A

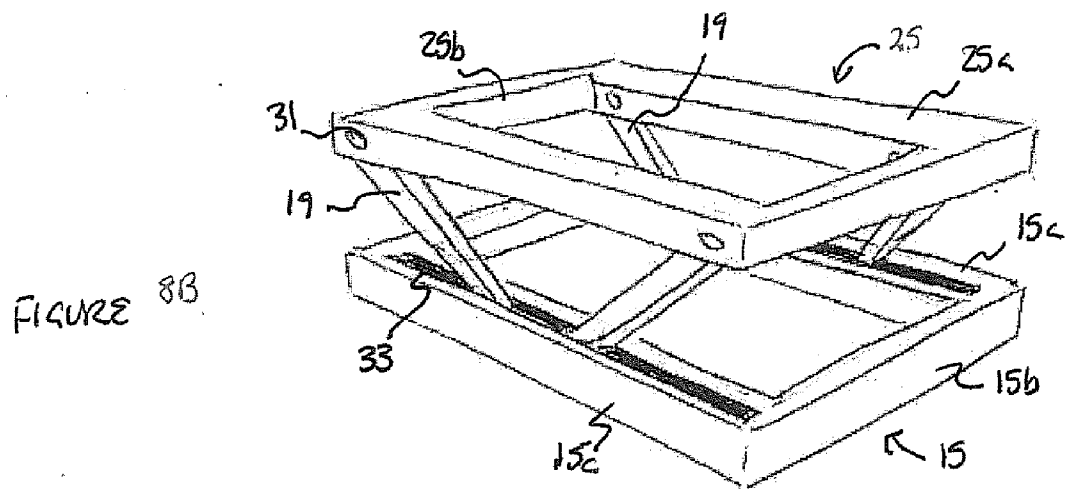


FIGURE 8B

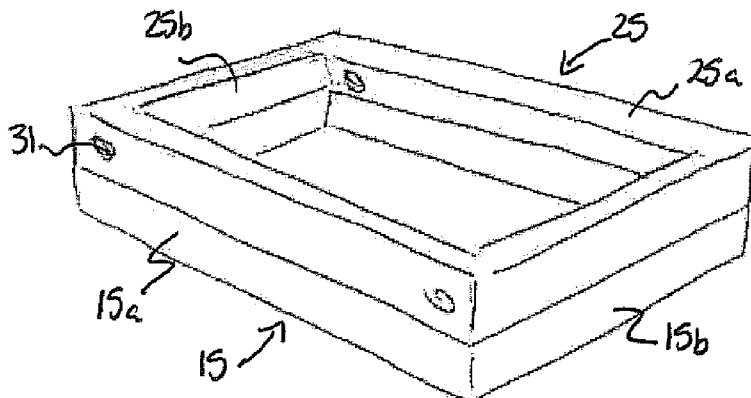


FIGURE 8C

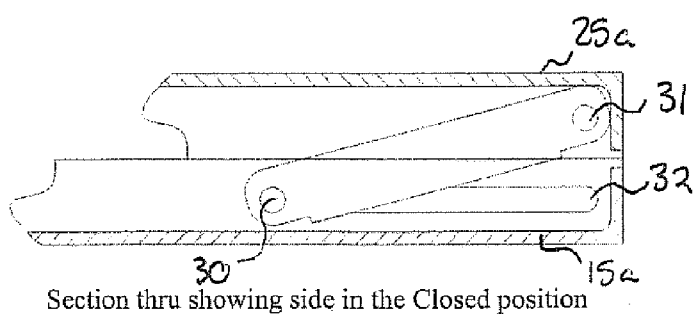


FIGURE 8D

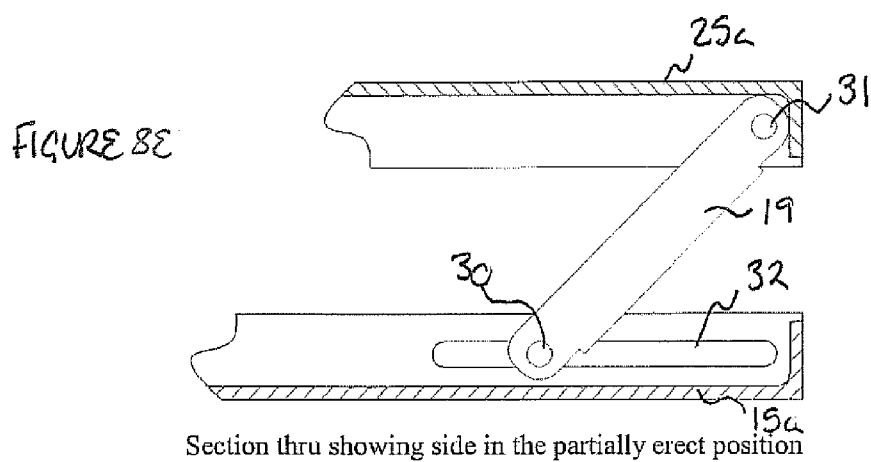


FIGURE 8E

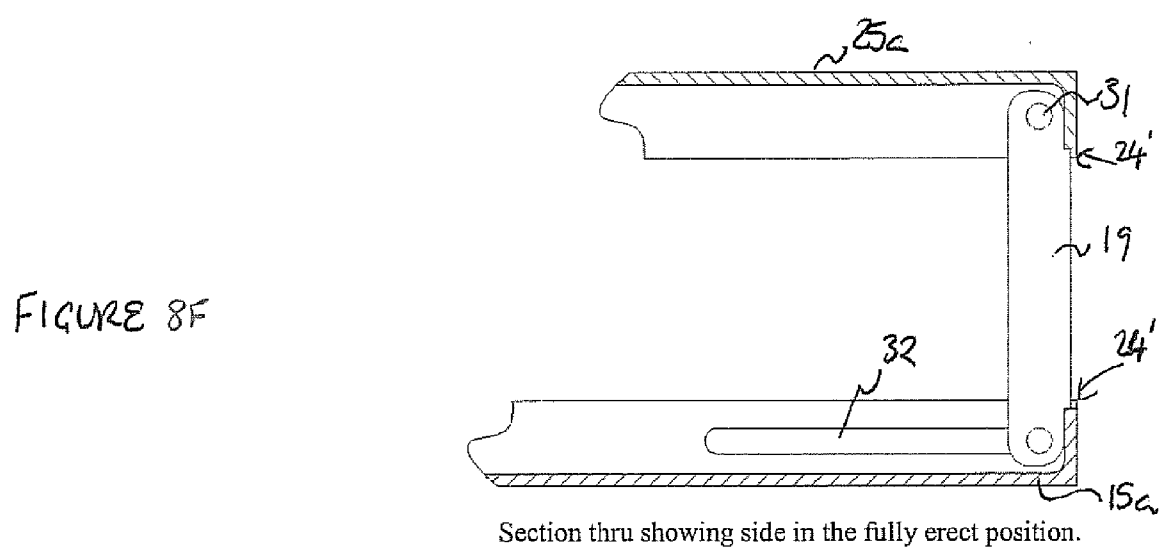
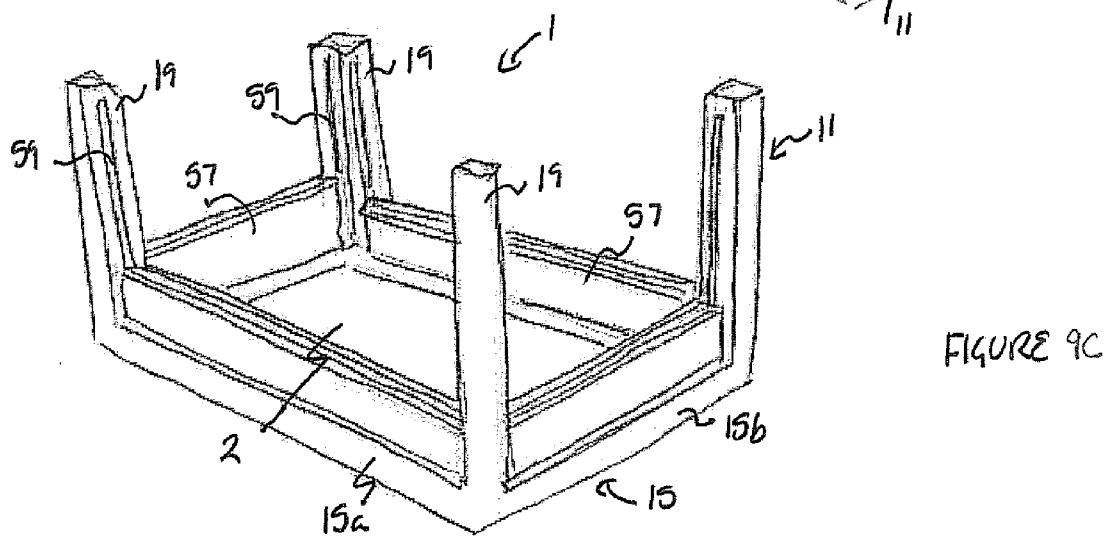
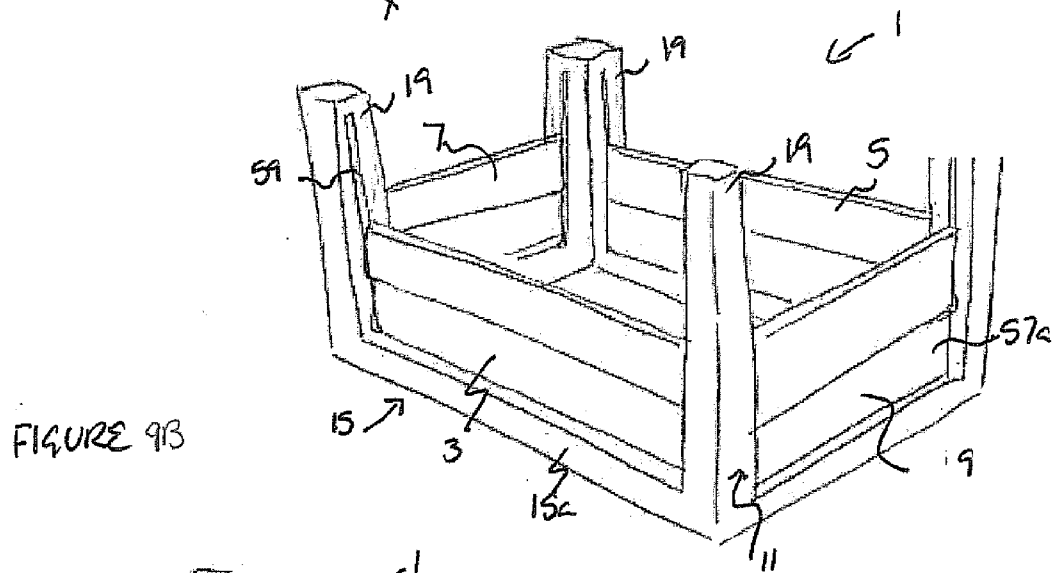
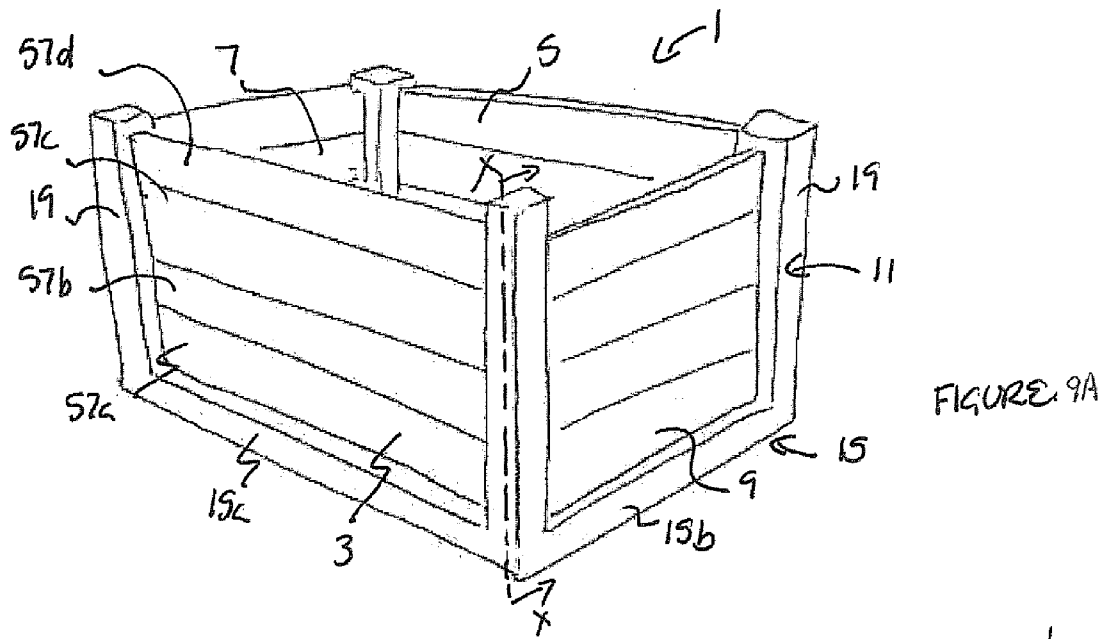


FIGURE 8F



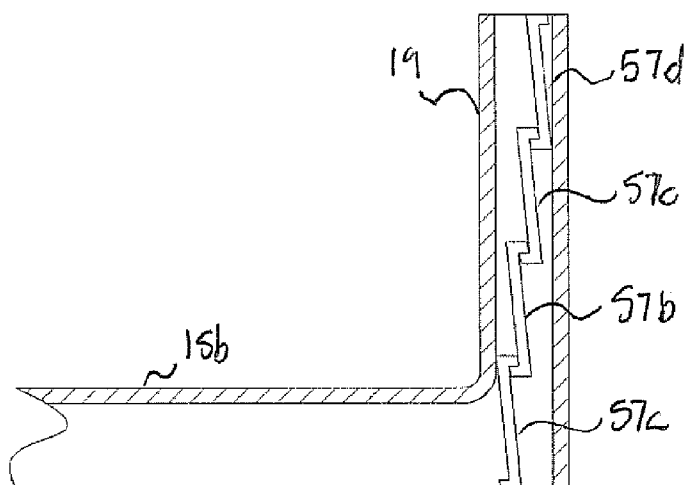
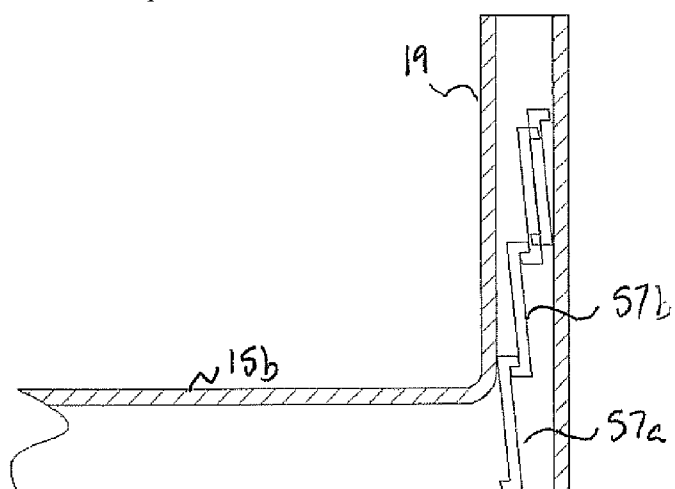


FIGURE 9D

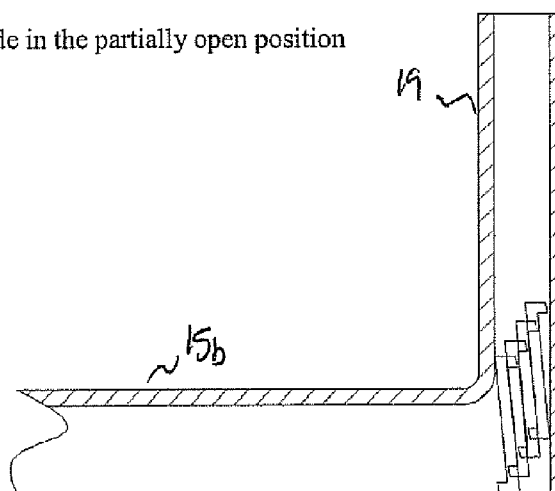
Section thru showing side in the Closed position

FIGURE 9E



Section thru showing side in the partially open position

FIGURE 9F



Section thru showing side in the fully open position.

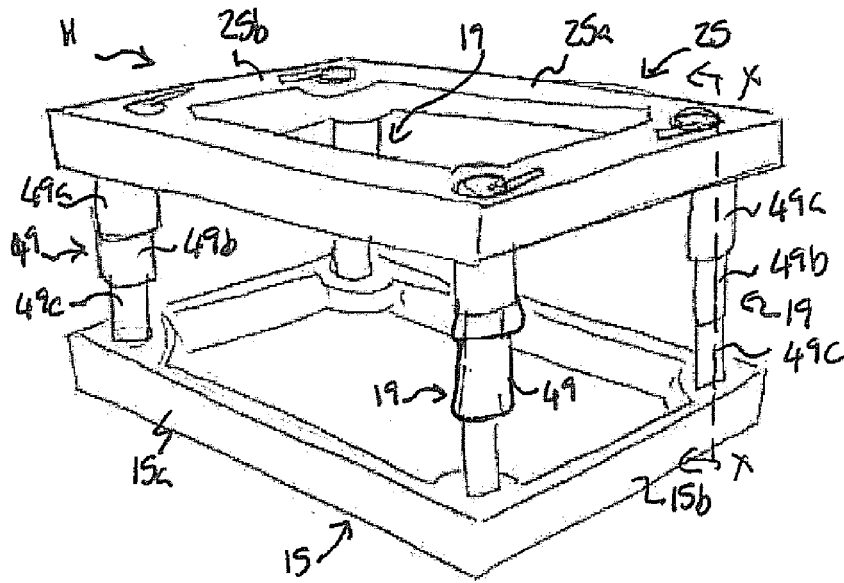


FIGURE 10A

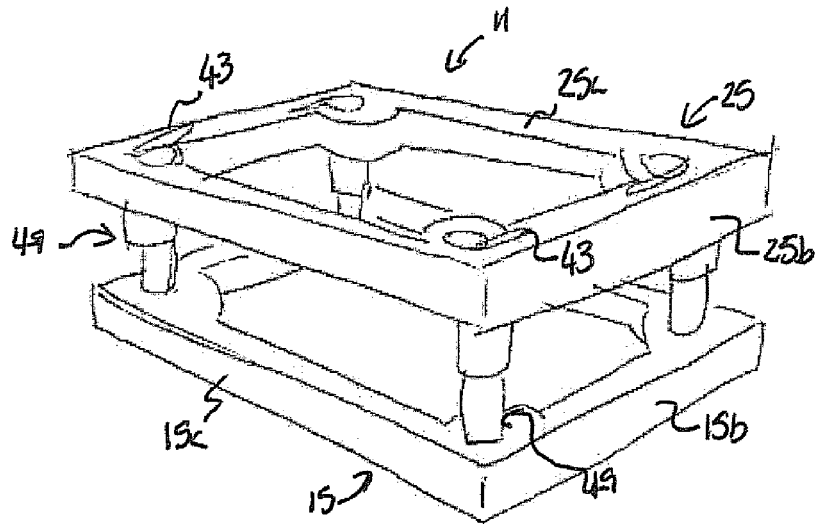


FIGURE 10B

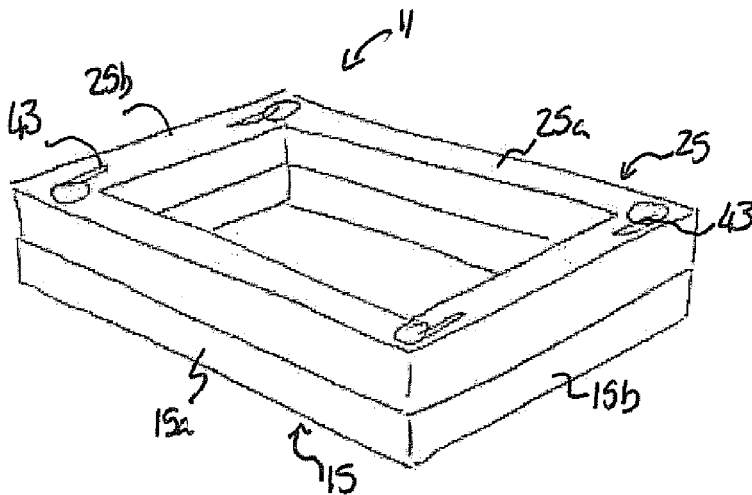


FIGURE 10C

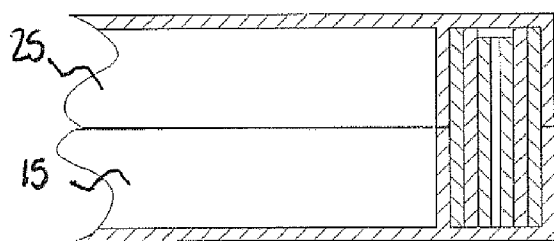


FIGURE 10D

Section thru showing the tray in the Closed position

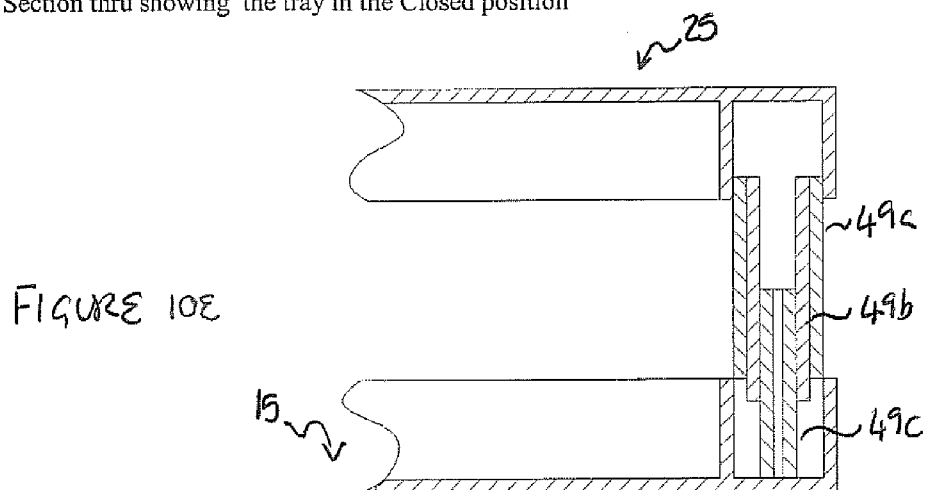


FIGURE 10E

Section thru showing the tray in the partially open position

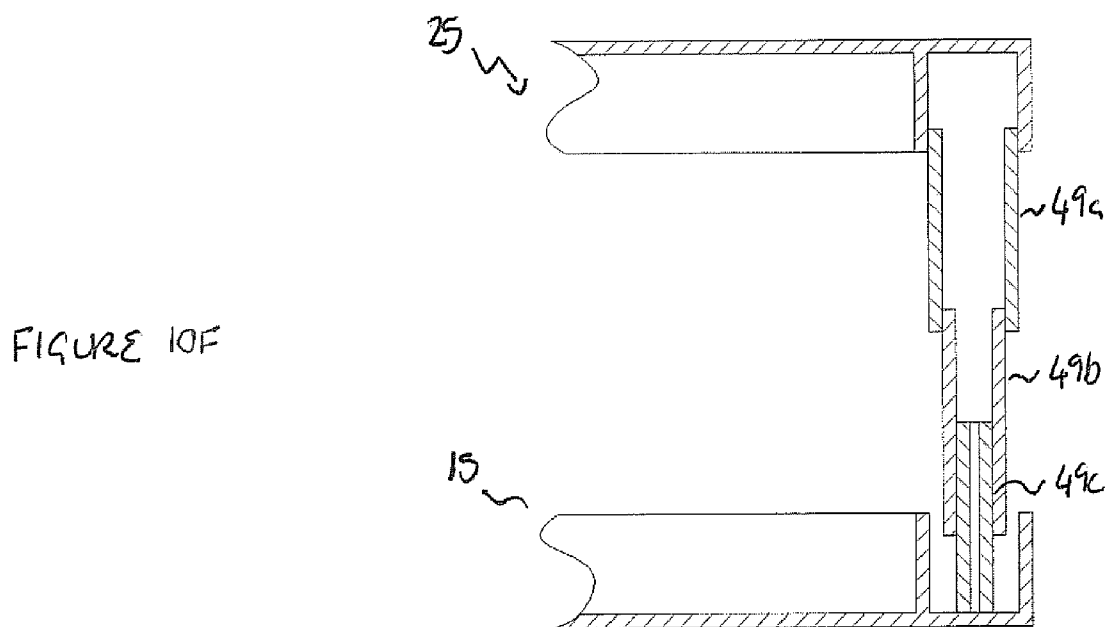
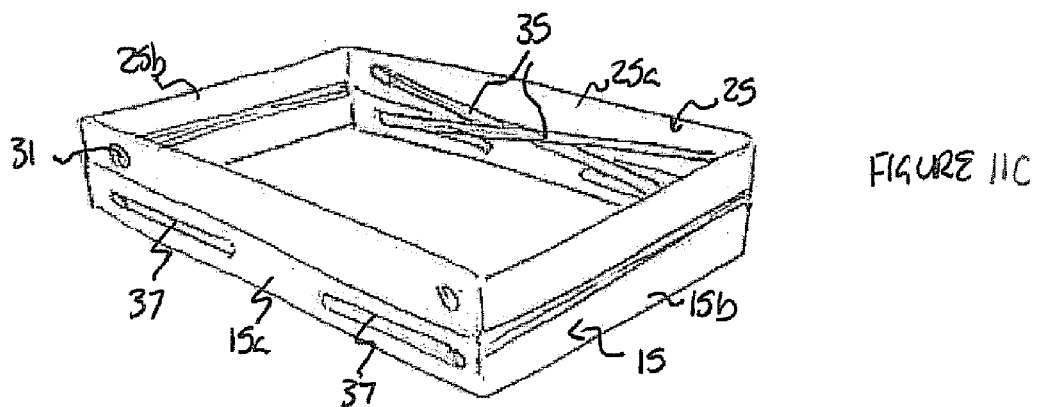
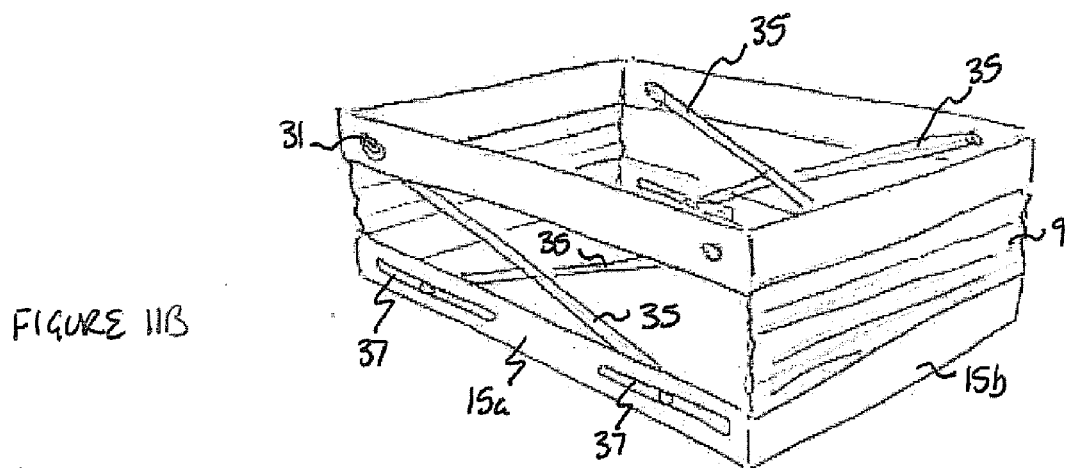
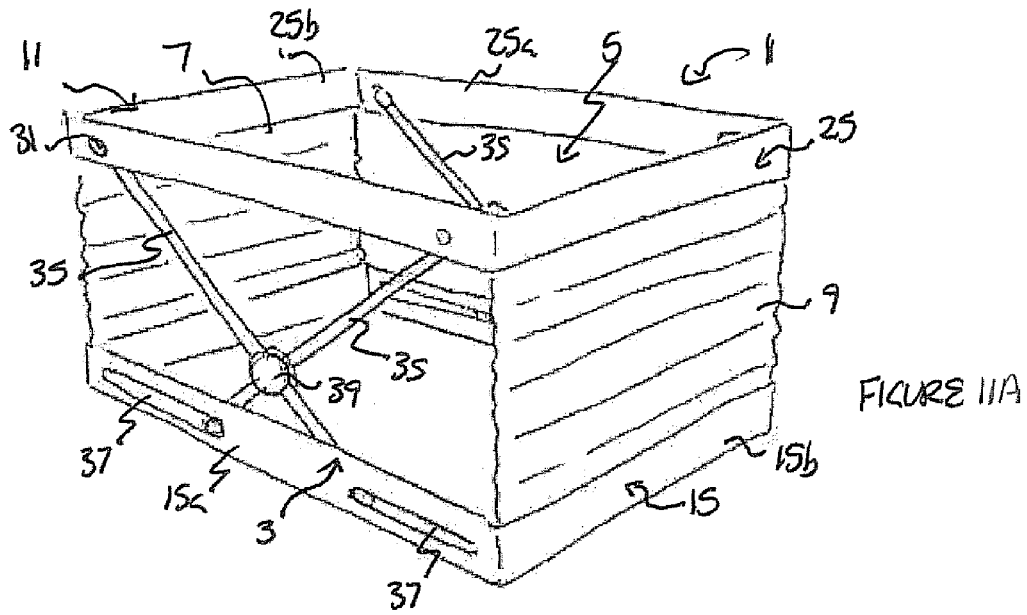


FIGURE 10F

Section thru showing the tray in the fully open position.



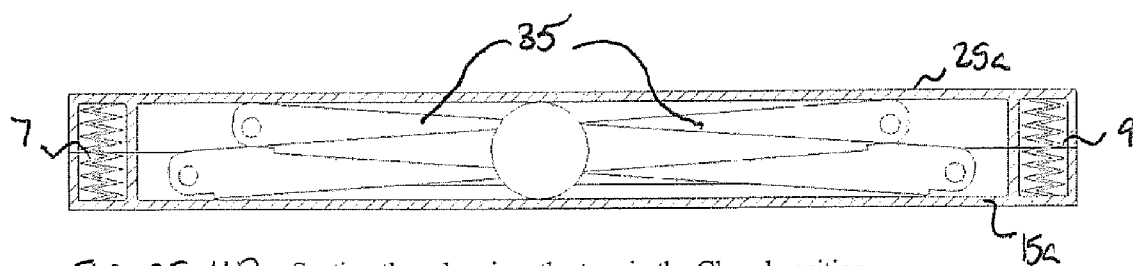


FIGURE 11D Section thru showing the tray in the Closed position

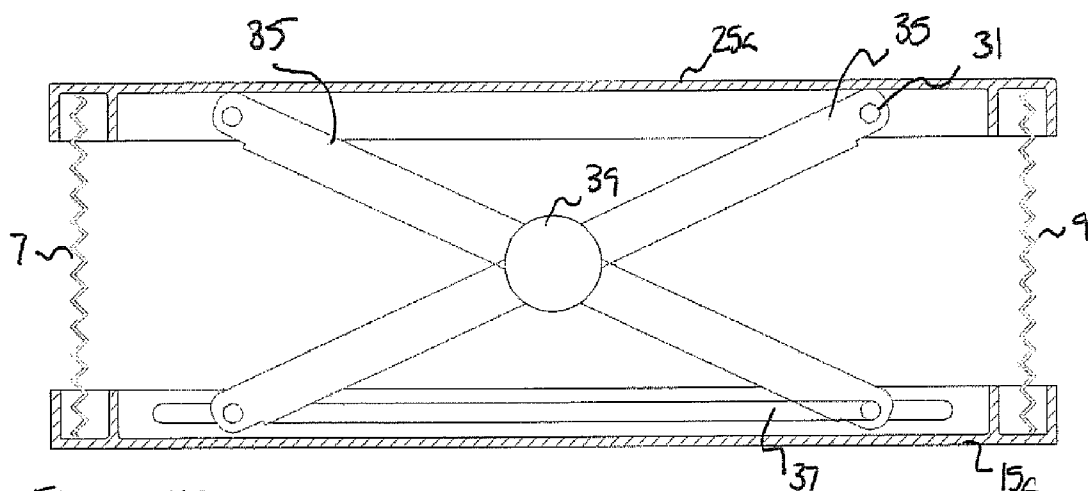


FIGURE 11E Section thru showing the tray in the partially open position

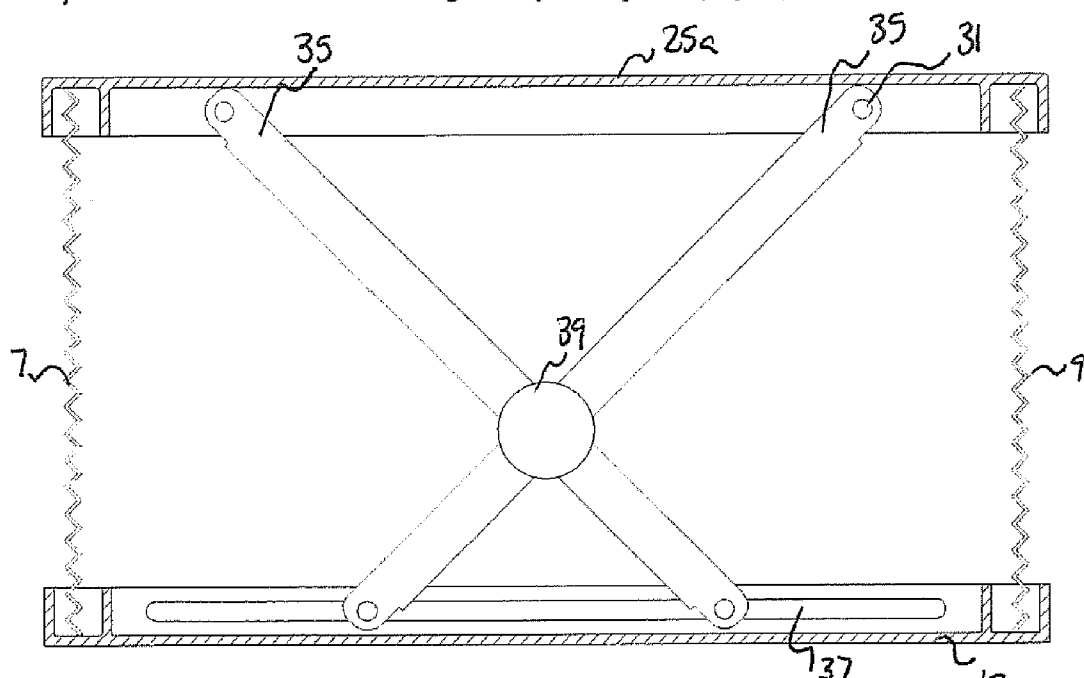


FIGURE 11F Section thru showing the tray in the fully open position.

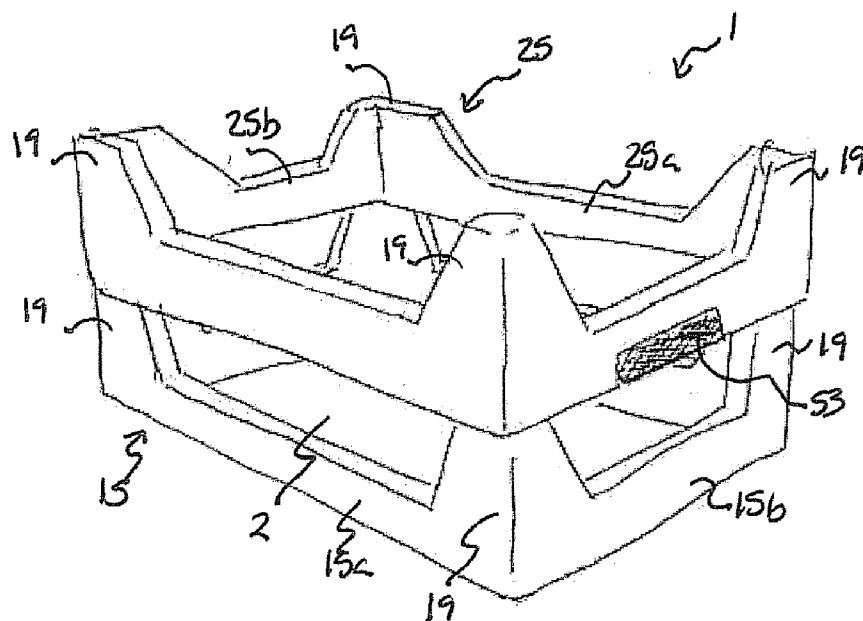


FIGURE 12A

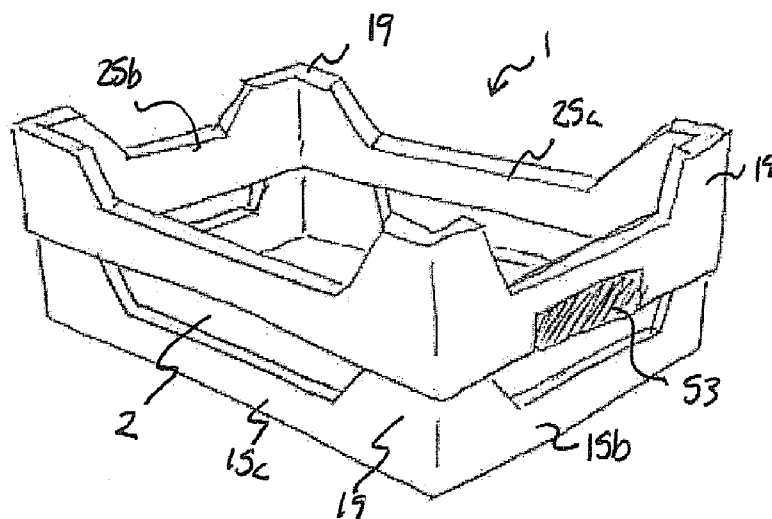


FIGURE 12B

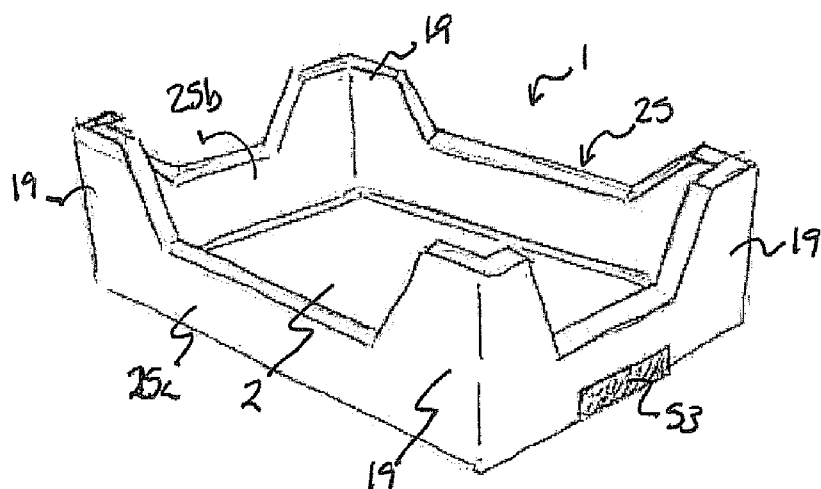


FIGURE 12C

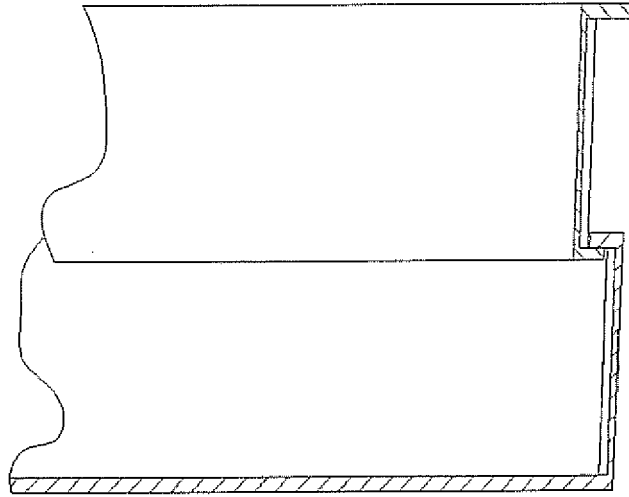


FIGURE 12D

Section thru showing the tray in the fully open position.

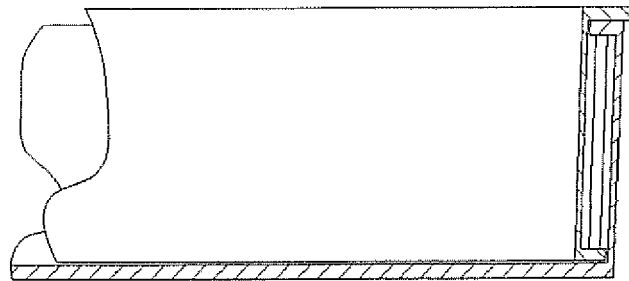


FIGURE 12E

Section thru showing the tray in the closed position.

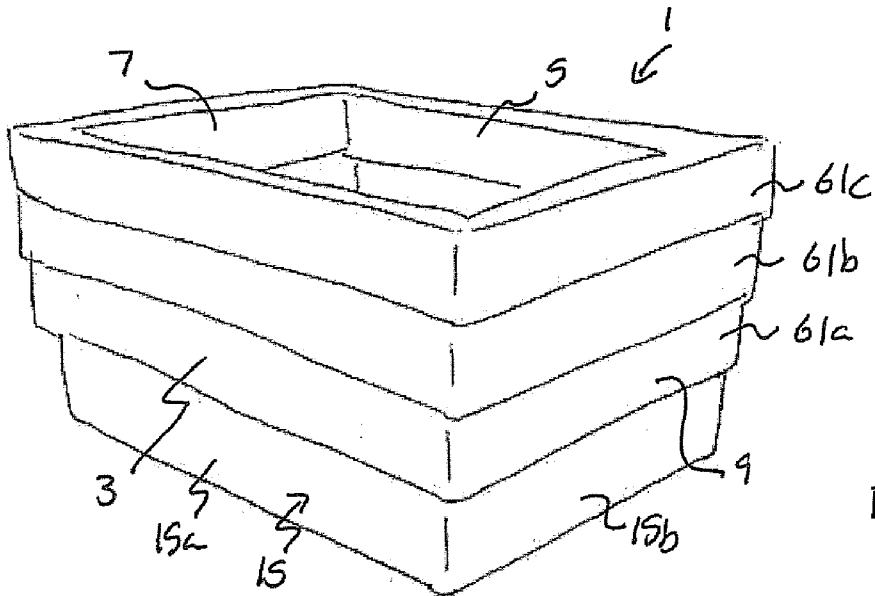


FIGURE 13A

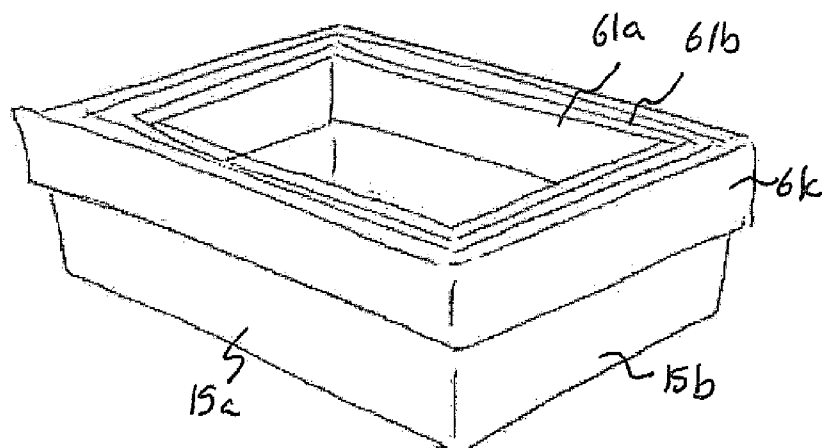


FIGURE 13B

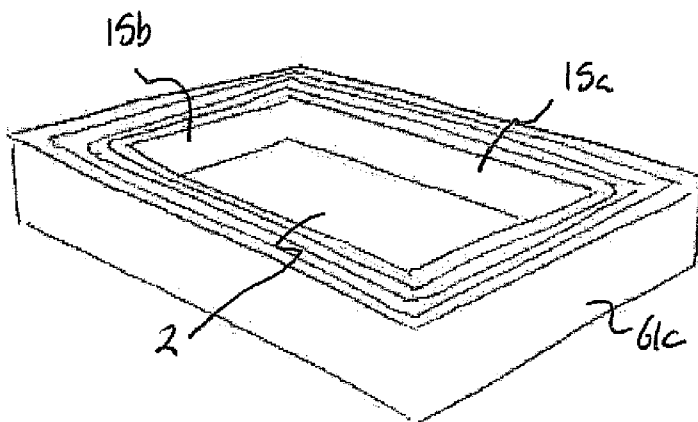


FIGURE 13C

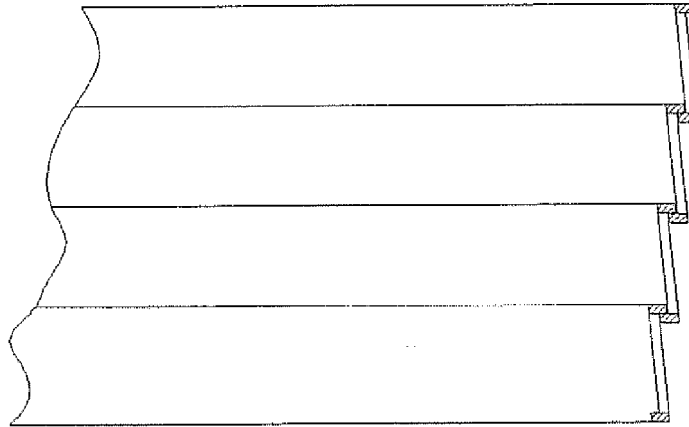


FIGURE 13D

Section thru showing the tray in the erect position

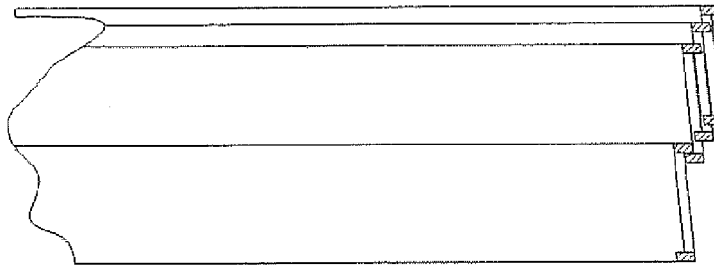


FIGURE 13E

Section thru showing the tray in the partially open position

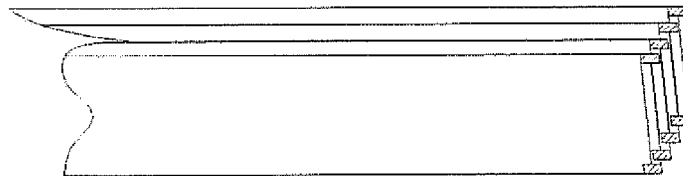


FIGURE 13F

Section thru showing the tray in the closed / collapsed position.

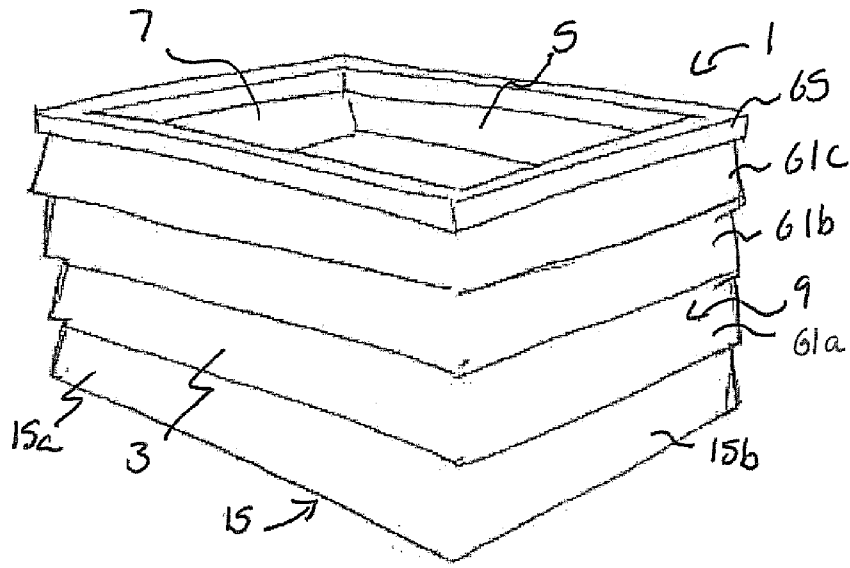


FIGURE 14A

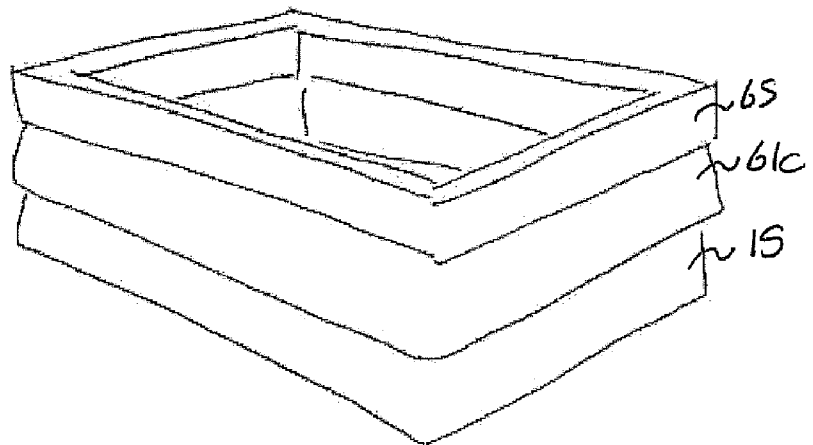


FIGURE 14B

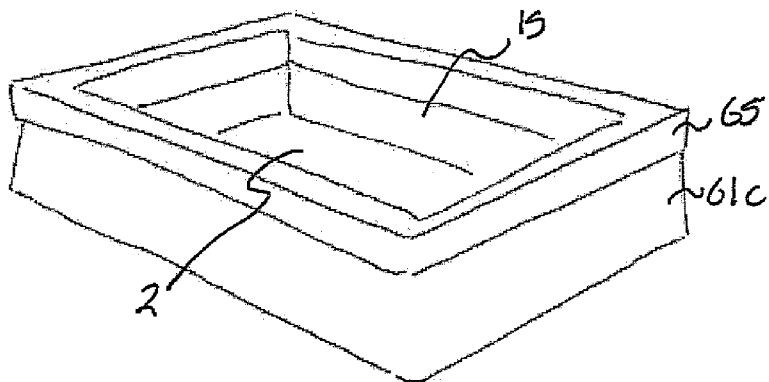


FIGURE 14C



EUROPEAN SEARCH REPORT

Application Number
EP 09 15 0258

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Place of search Munich		Date of completion of the search 15 April 2009	Examiner Jervelund, Niels
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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