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(54) **Nestable and stackable container**

(57) A container (10) is nestable within identical containers (10) when empty for efficient storage and shipping. A pair of supports or bails (18) can be pivoted to a position over the floor of the container so that a similar container (10') can be supported thereon. The supports (18) are supported on multiple points on each side wall

(14) of the containers, so that the load is distributed more evenly to the side walls (14).

A support or bail (18) is disclosed which has a projection (36) to provide lateral stacking support.

A container (10) with several stacking heights is disclosed.

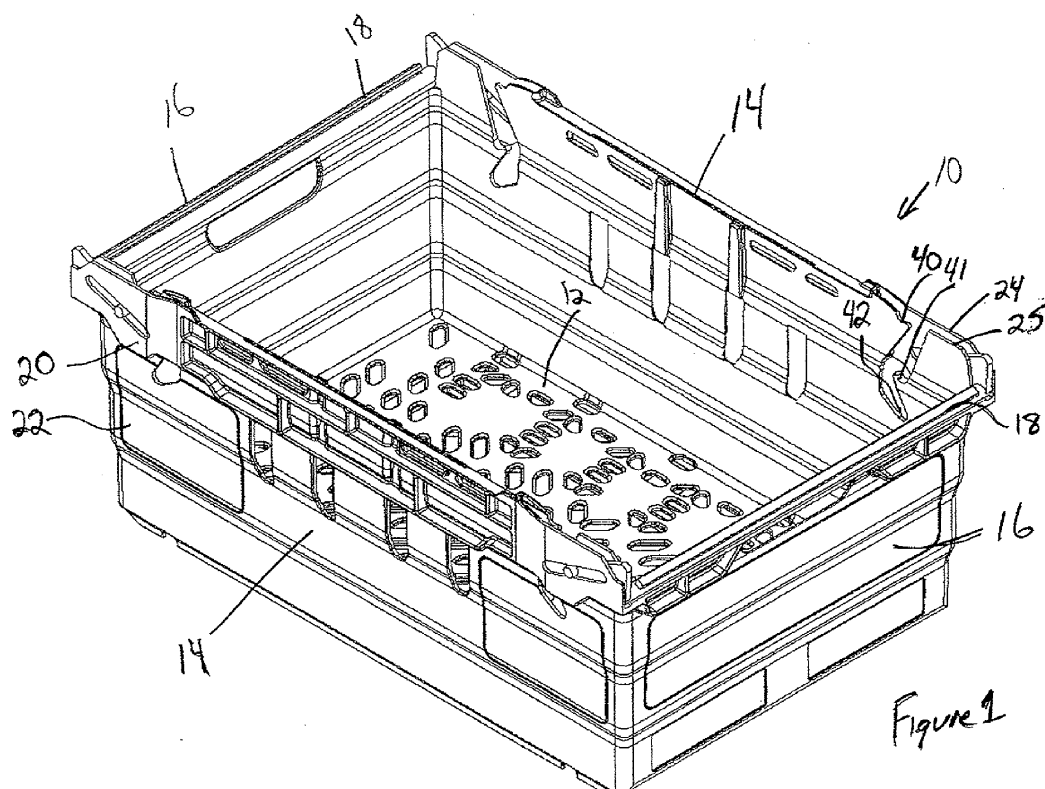


Figure 1

Description

BACKGROUND

[0001] Nestable trays with pivotable support arms are well known. Generally, the trays are nestable within one another when empty for efficient storage and shipping. A pair of supports or bails can be pivoted to a position over the floor of the tray so that a similar tray can be supported thereon. In this manner trays can be stacked when there are goods stored in the trays.

[0002] Some trays having supports that are movable to more than one height, so that the trays can be stacked more efficiently when they are only partially full. In some of these multi-height trays, the supports are only supported on a single thickness wall, which may not be sufficient under a stack of fully-loaded trays.

SUMMARY

[0003] A container according to an embodiment of the present invention includes a container comprising a base wall, a pair of side walls and a pair of end walls extending upward from the base wall, the walls nestable within side walls and end walls of an identical container and a support having a support bar movable between a nesting position where the support bar is outward of the base wall to permit nesting and a stack position over the base wall to permit stacking, wherein the support includes a projecting portion supported on one of the side walls inward of the support bar when the support is in the stack position

[0004] A tray according to an embodiment of the present invention includes a base wall and a plurality of walls extending upward from the base. Supports are pivotable between a nesting position, where an identical container can be nested in the container, and a stack position, where a container can be stacked on the container. The supports are supported on multiple points on each side wall of the trays, so that the load is distributed more evenly.

[0005] In another, optional feature, at least one support has a support bar and projection defining a first support recess between the projection and the support bar. One of the corner edges adjacent the elongated recess of an identical container receivable in the first support recess on the support bar when the identical container is stacked on the container

BRIEF DESCRIPTION OF THE DRAWINGS

[0006]

Figure 1 is a perspective view of a tray according to one embodiment of the present invention with the supports in the nesting or home position.

Figure 2 is a perspective view of one of the supports of Figure 1.

Figure 3 is an end view of the support of Figure 2. Figure 4 is a front view of the support of Figure 2. Figure 5 is a side view, partially broken away of the tray of Figure 1.

Figure 6 is a perspective view of the tray of Figure 1 with the supports in a high stack position.

Figure 7 is a side view, partially broken away, of the tray of Figure 6 with an identical tray stacked thereon. Figure 8 is a perspective view of the tray of Figure 1 with the supports in a mid-stack position.

Figure 9 is a side view, partially broken away, of the tray of Figure 8 with an identical tray stacked thereon. Figure 10 is a perspective view of the tray of Figure 1 with the supports in a low stack position.

Figure 11 is a side view, partially broken away, of the tray of Figure 10 with an identical tray stacked thereon.

Figure 12 is a perspective view of the tray of Figure 1 with an identical tray nested therein.

DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

[0007] A nestable container or tray 10 according to one embodiment is shown in Figure 1. The container 10 generally includes a base wall 12, opposed side walls 14 and opposed end walls 16. A support 18 (or bail) is pivotably and slidably mounted to the side walls 14 adjacent each end wall 16. The side walls 14 and end walls 16 each include an upper wall portion 20 and a lower wall portion 22. The upper wall portions 20 of the side walls 14 each include an outer wall portion 24 and an inner wall portion 25, spaced inwardly from the outer wall portion 24. The outer wall portion 24 is spaced outwardly of the lower wall portion 22 to form a lip along the periphery of the container 10.

[0008] An upper support surface 40 is formed in the inner wall portion 25 adjacent each end wall 16. A lower support surface 42 is formed below and outward of the upper support surface 40. A middle support surface 41 is formed between the upper support surface 40 and the lower support surface 42.

[0009] The support 18 is pivotable and slidable among a plurality of positions, including the home/nest position shown in Figure 1. As shown in Figure 12, in the home or nest position, an identical container 10' can be nested fully in the container 10 (i.e. the lower wall portion of the upper container is fully or nearly fully received within the side walls 14 and end walls 16 of the lower container 10).

[0010] The support 18 is shown in more detail in Figures 2-4. As shown, the support 18 includes a support bar 26 connected at each end to one end of a support arm 28. The opposite end of each support arm 28 includes a pivot pin 30 protruding outwardly and a first projecting portion 32 projecting laterally relative to the support arm 28 and the support bar 26. A second projecting portion 33 proximate the pivot pin 30 projects generally in the same direction as the first projecting portion 32,

although to a lesser distance. A recess 34 is defined between the first projection portion 32 and the second projection portion 33. The support bar 26 has an elongated dovetail projection 36 extending substantially along the length of the support bar 26, but not completely to the arms 28. The dovetail projection 36 is oriented with the narrow end against the support bar 26, giving the support bar 26 a keyhole shaped cross-section.

[0011] As shown in Figure 5, each pivot pin 30 is slidably and pivotably received in an elongated opening 48 slanted downwardly inwardly in the outer wall portion 24. In Figure 5, the support 18 is shown in the nest or "home" position. In the home position, the support bar 26 is received on lower outer support surfaces 44, outward of the lower portion 22 of the end wall 16 and outward of the base wall 12 (Figure 1), such that the lower portion 22 of the side walls 14 and end walls 16 of an identical container 10 could be nested in the container 10. In this position, the hinge pins 30 are slid to a mid-position in the opening 48.

[0012] In Figures 6 and 7, the support 18 is pivoted and slid to a high stack position. Referring to Figure 7, the first projecting portion 32 is supported on a secondary support surface 43 on the side wall 14. The support bar 26 is supported on the upper support surface 40, which rotates the dovetail projection 36 toward the interior and downward of the container 10 (approximately 7 or 8 o'clock). The support bar 26 is received partially in a lower channel 50' in an underside of the base 12', generally toward an interior side of the channel 50'. An edge of the channel 50' is received in the recess between the dovetail projection 36 and the support bar 26 thereby further improving the support of the upper container 10'. In this position, the base 12' of the upper container 10' is at a maximum distance from the base 12 of the lower container 10, thus providing the most volume for goods within the container 10. The weight of the upper container 10' and its contents is distributed by the support 18 to both the upper support surfaces 40 and the secondary support surface 43, as well as to the outer wall portion 24 below the pivot pin 30 and the elongated opening 48. The second support surface 43 is inward of the support bar 26, and the pivot pin 30 is outward of the support bar 26, providing triangulated distribution of the load on the support bar 26.

[0013] Referring to Figure 7, a rear secondary support surface 52 is defined on a projection formed between the outer wall portion 24 and the inner wall portion 25 below the elongated opening 48.

[0014] In Figures 8 and 9, the supports 18 are moved to a mid-stack position. Referring to Figure 9, the support bars 26 are supported on the middle support surfaces 41, while the tapered projections 36 are rotated downward. The rear secondary support surface 52 is received in the recess 34 of the support 18 between the first projecting portion 32 and the second projecting portion 33. Thus, the load from the upper container 10' is distributed to the middle support surfaces 41 and from the second

projecting portion 33 to the rear secondary support surface 52, as well as the outer wall portion 24 below the pivot pin 30 and the elongated opening 48.

[0015] Again, the support bar 26 is received in the channel 50' of the upper container 10', although positioned in the middle of the channel 50'. In the mid stack position, the volume for storage in the lower container 10 is reduced, so that medium size items (or a medium number of items) can be shipped or stored in containers 10 efficiently.

[0016] In Figures 10 and 11, the supports 18 are moved to a low stack position. Referring to Figure 11, the support bars 26 are supported on the lower support surfaces 42, while the pivot pins 30 are supported by the lower edges of the openings 48 in the outer wall portions 24. Although the support only contacts two support surfaces on the lower container 10, rather than three as in the high stack position and the mid stack position, the support bar 26 is at the bottom of the opening formed in the inner wall portion 25 while the pivot pin 30 is at the bottom of the elongated opening 48 in the outer wall portion 24, which improves the strength.

[0017] Again, the support bar 26 is partially received in the channel 50' of the upper container 10', although toward an exterior edge of the channel 50'. The exterior edge of the channel 50' of the upper container 10' is received in the recess between the support bar 26 and the dovetail projection 36, thus improving stability. In the low stack position, the volume for storage in the lower container 10 is reduced, so that smaller items (or fewer items) can be shipped or stored in containers 10 efficiently.

[0018] In accordance with the provisions of the patent statutes and jurisprudence, exemplary configurations described above are considered to represent a preferred embodiment of the invention. However, it should be noted that the invention can be practiced otherwise than as specifically illustrated and described without departing from its scope as defined by the accompanying claims.

Claims

1. A container (10) comprising:

a base wall (12);
a pair of side walls (14) and a pair of end walls (16) extending upward from the base wall (12), the walls nestable within side walls and end walls of an identical container (10'); and
a support (18) having a support bar (26) movable between a nesting position where the support bar (26) is outward of the base wall (12) to permit nesting and a stack position over the base wall (12) to permit stacking, wherein the support (18) includes a projecting portion (32) supported on one of the side walls (14) inward of the support bar (26) when the support (18) is in the stack position.

2. The container of claim 1 wherein the support bar (26) is supported on a support surface (40) of the side wall (14) when the support (18) is in the stack position.
3. The container of claim 2 wherein the support (18) includes a pair of pivot pins (30) pivotably and slidably connected to the side walls (14), wherein the pivot pins (30) are outward of the support bar (26) when the support (18) is in the stack position.
4. The container of claim 3 wherein the pivot pins (30) are pivotable and slidable within elongated openings (48) in the side walls (14), the elongated openings (48) angled downward toward an interior of the container (10).
5. The container of claim 4 wherein the elongated openings (48) are straight.
6. The container of claim 3, 4 or 5 wherein the support (18) includes a pair of arms (28) extending from the support bar (26), the pivot pins (30) proximate one end of the arms (28) and the support bar (26) at an opposite end of the arms (28), wherein the projecting portion (32) is a first projecting portion (32), the support further including a second projection portion (33), the first and second projecting portions (32,33) projecting from at least one of the pair of arms (28) between the pivot pin (30) and the support bar (26).
7. The container of claim 6 wherein the stack position is a high stack position, and wherein the support (18) is moveable to a second stack position lower than the high stack position and wherein the second projecting portion (33) contacts the one of the side walls (14) in the second stack position.
8. The container of any preceding claim wherein the stack position is a high stack position, and wherein the support (18) is moveable to a second stack position lower than the high stack position and wherein the support (18) contacts the one of the side walls (14) at three separate points including the support bar (26), a or the pivot pin (30) and a contact surface (32,33) on the support (18) other than the support bar (26) and the pivot pin (30).
9. The container of claim 8 wherein the second stack position is a mid-stack position, the support (18) further including a low stack position lower than the high stack position and the mid-stack position, wherein the pivot pins (30) are pivotable and slidable within elongated openings (48) in the side walls (14), wherein the pivot pins (30) are at one end of the elongated openings (48) when the support (18) is in the low stack position.
10. The container of any of claims 1 to 5, said container having a first stack position over the base wall (12) to permit stacking at a first height, and a second stack position over the base wall (12) to permit stacking at a second height, wherein the support (18) includes a pair of arms (28) extending from the support bar (26) at one end and having pivot pins (30) at an opposite end, each arm (28) including first and second projecting portions (32,33) between the pivot pin (30) and the support bar (26), wherein the first projecting portion (32) of each arm (28) is supported on the side walls (14) when the support is in the first stack position, wherein the second projecting portion (33) of each arm (28) is supported on the side walls (14) when the support (18) is in the second stack position.
11. The container of any preceding claim, further comprising an elongated recess (50) defined on a lower surface of the base wall (12), a first corner edge defined adjacent the elongated recess (50); the support (18) including a projection (36) defining a first support recess between the projection (36) and the support bar (26), one of the corner edges adjacent the elongated recess (50) of an identical container (10') receivable in the first support recess on the support bar (26) when the identical container (10') is stacked on the container (10).
12. A container (10) comprising:
 - a base wall (12), an elongated recess (50) defined on a lower surface of the base wall (12), a first corner edge defined adjacent the elongated recess (50);
 - a pair of side walls (14) and a pair of end walls (16) extending upward from the base wall (12), the walls nestable within side walls and end walls of an identical container (10'); and
 - at least one support (18) having a support bar (26) movable between a nesting position where the support bar (26) is outward of the base wall (12) to permit nesting and a stack position over the base wall (12) to permit stacking, the support (18) including a projection (36) defining a first support recess between the projection (36) and the support bar (26), one of the corner edges adjacent the elongated recess (50) of an identical container (10') receivable in the first support recess on the support bar (26) when the identical container (10') is stacked on the container (10).
13. The container of claim 11 or 12 wherein the projection on the support (18) also defines a second support recess between the projection and the support bar (26), wherein a second corner edge is defined adjacent the elongated recess (50) opposite the first corner edge, and wherein the second corner edge adjacent the elongated recess of the base wall (12')

of the identical container (10') is receivable in the second support recess.

14. A container (10) comprising:

a base wall (12);
 a pair of side walls (14) and a pair of end walls (16) extending upward from the base wall (12), the walls nestable within side walls and end walls of an identical container (10'); and
 a support (18) having a support bar (26) movable between a nesting position where the support bar (26) is outward of the base wall (12) to permit nesting, a first stack position over the base wall (12) to permit stacking at a first height, and a second stack position over the base wall (12) to permit stacking at a second height, wherein the support (18) includes a pair of arms (28) extending from the support bar (26) at one end and having pivot pins (30) at an opposite end, each arm (28) including first and second projecting portions (32,33) between the pivot pin (30) and the support bar (26), wherein the first projecting portion (32) of each arm (28) is supported on the side walls (14) when the support is in the first stack position, wherein the second projecting portion (33) of each arm (28) is supported on the side walls (14) when the support (18) is in the second stack position.

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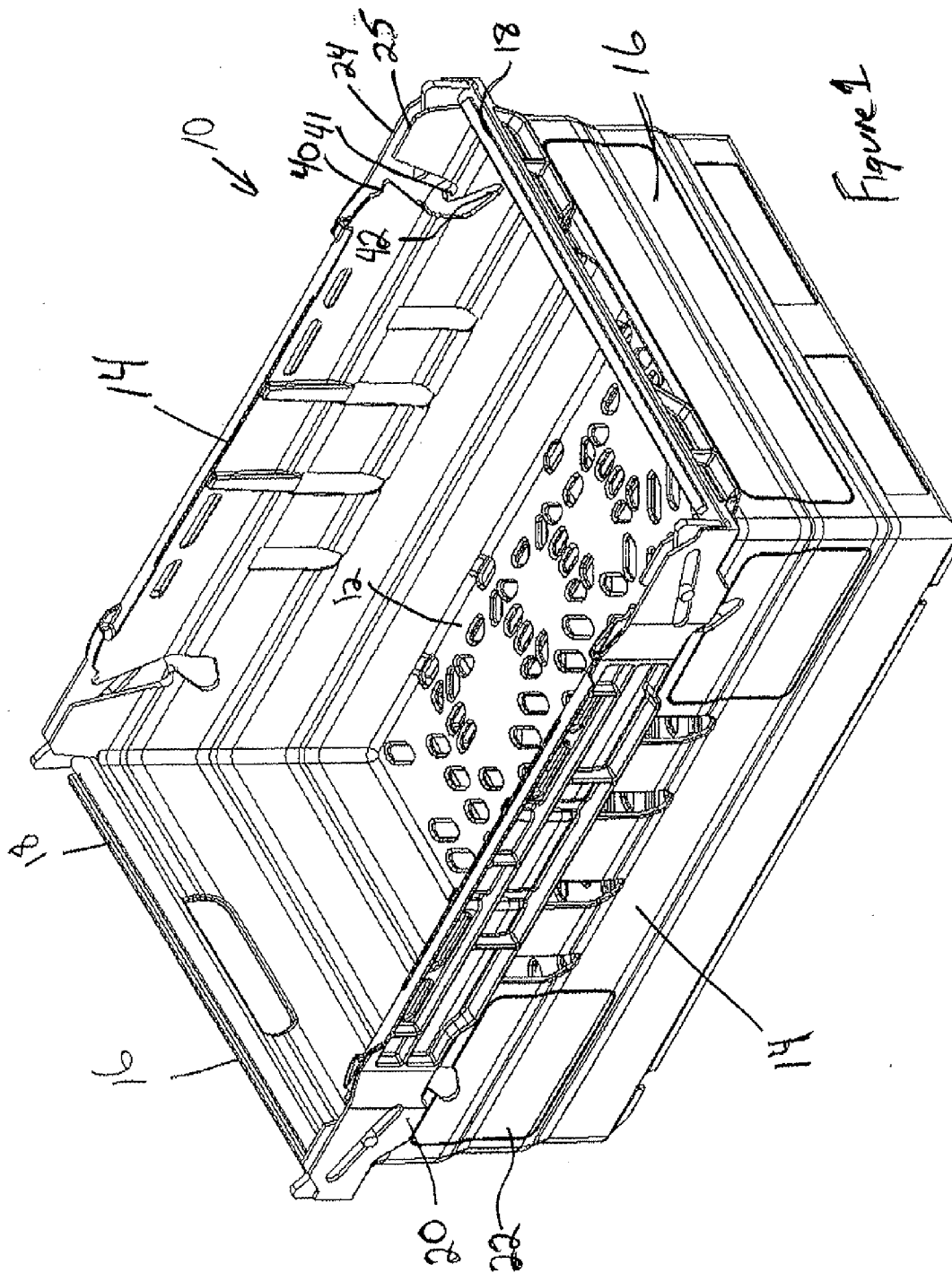
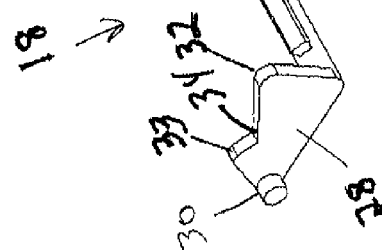
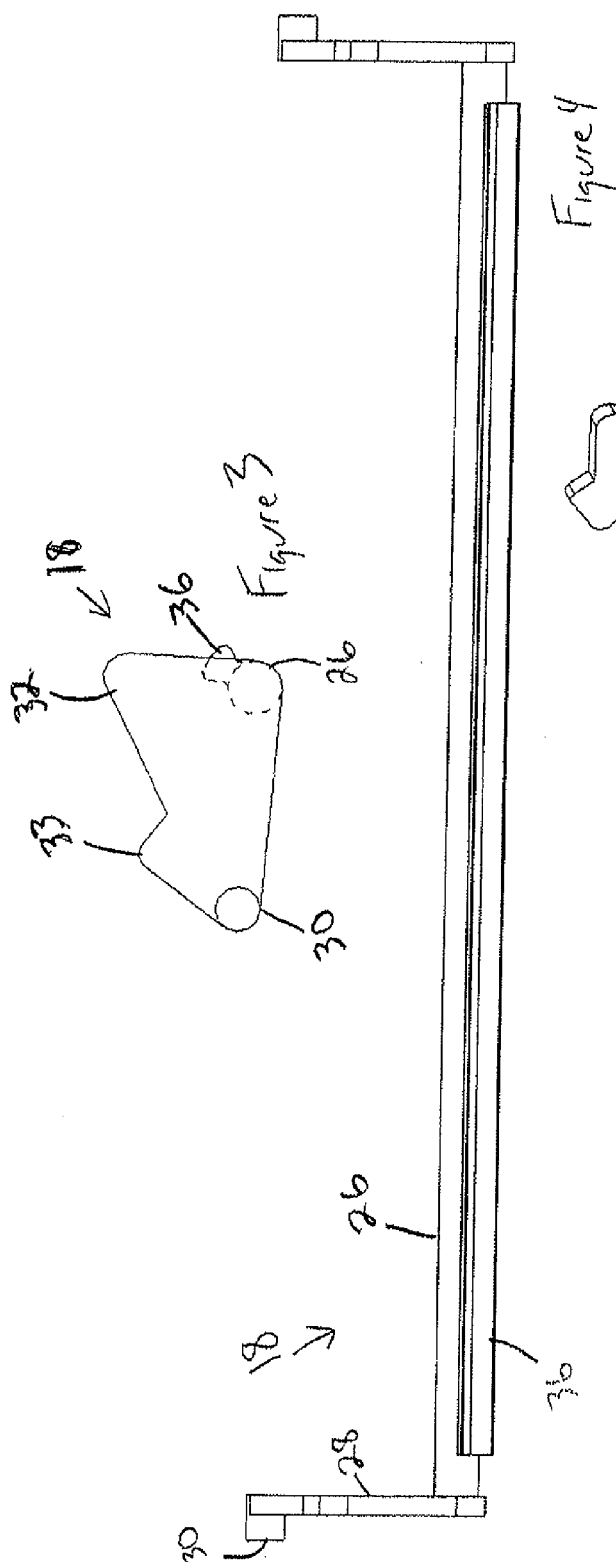
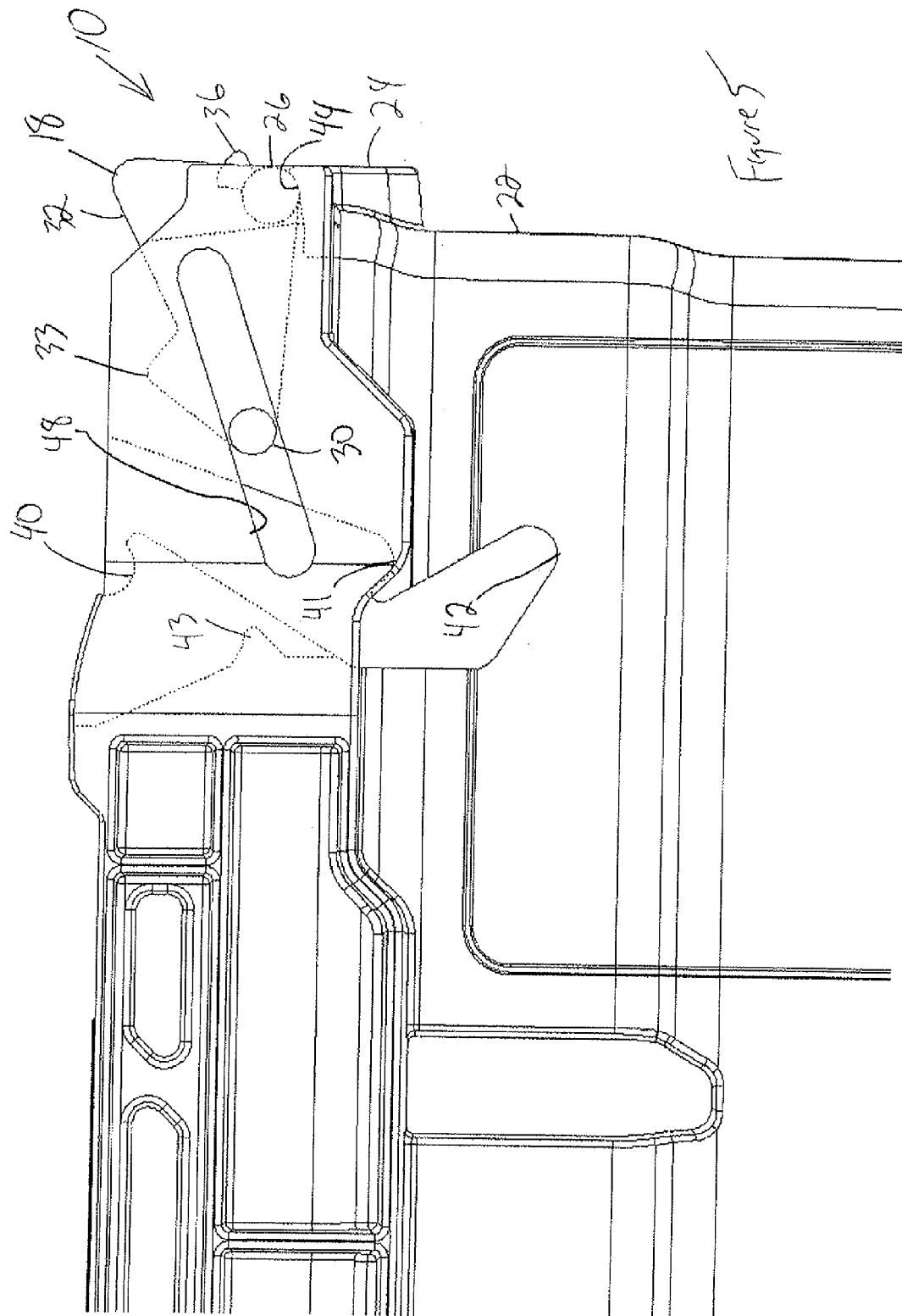


Figure 1





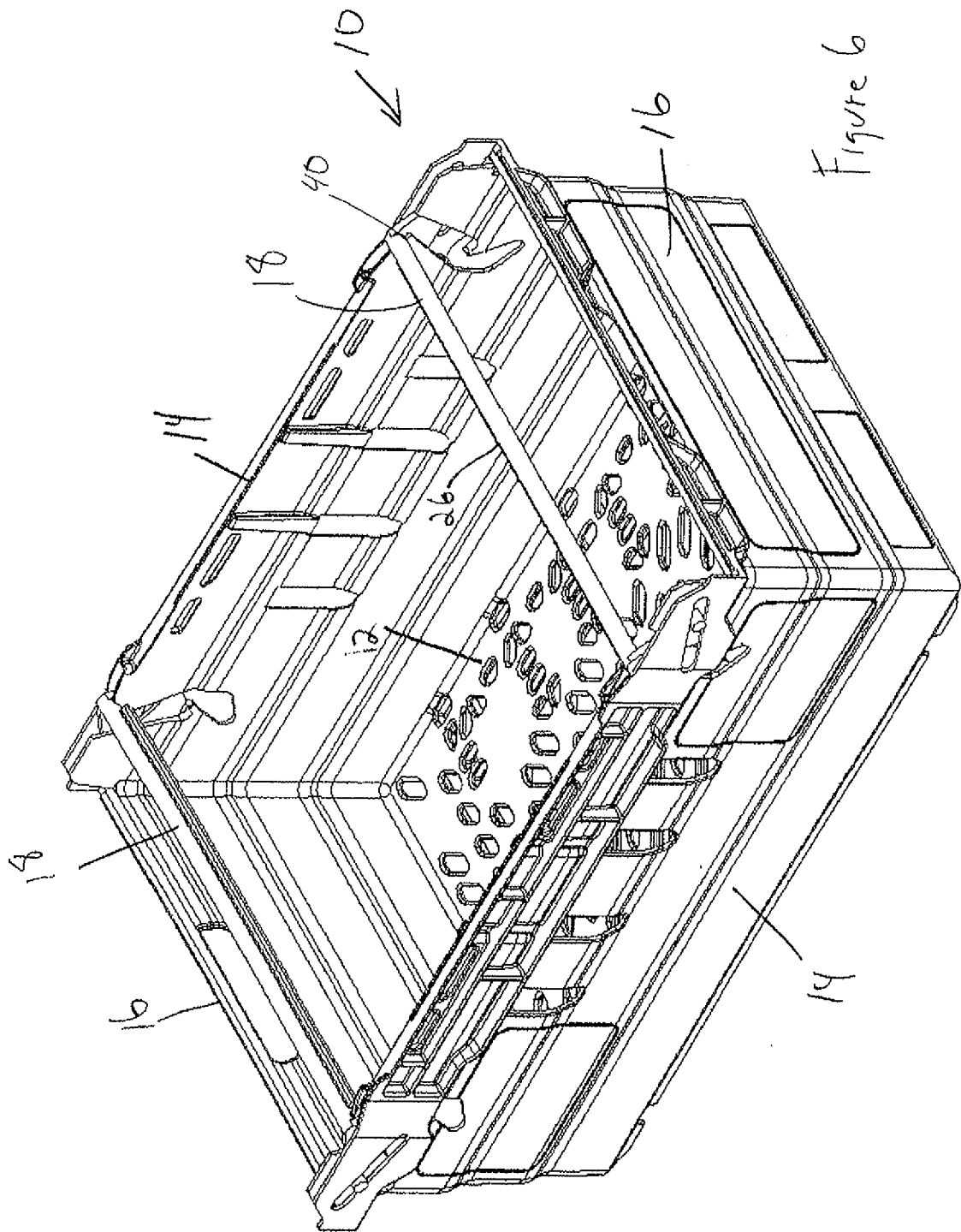
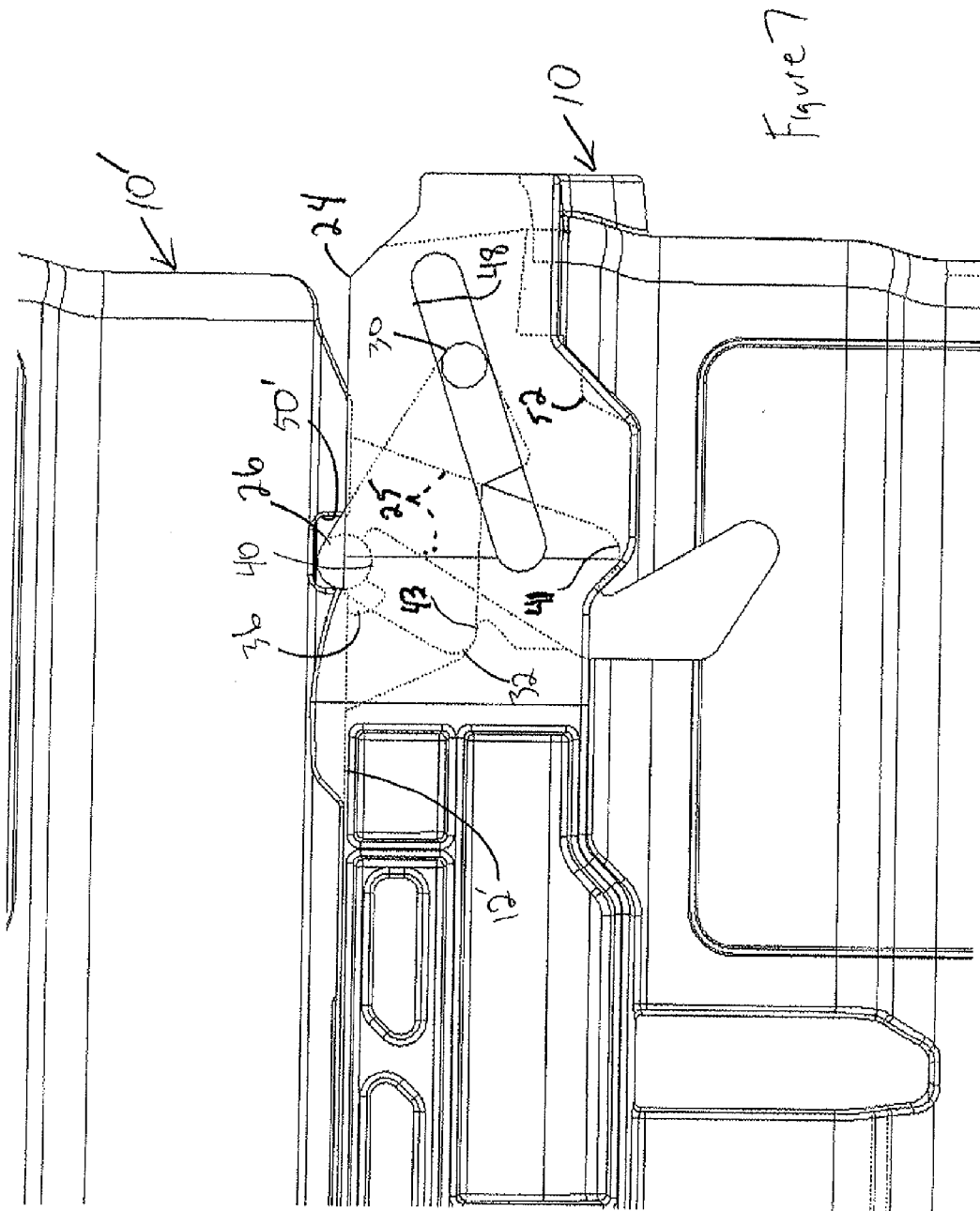
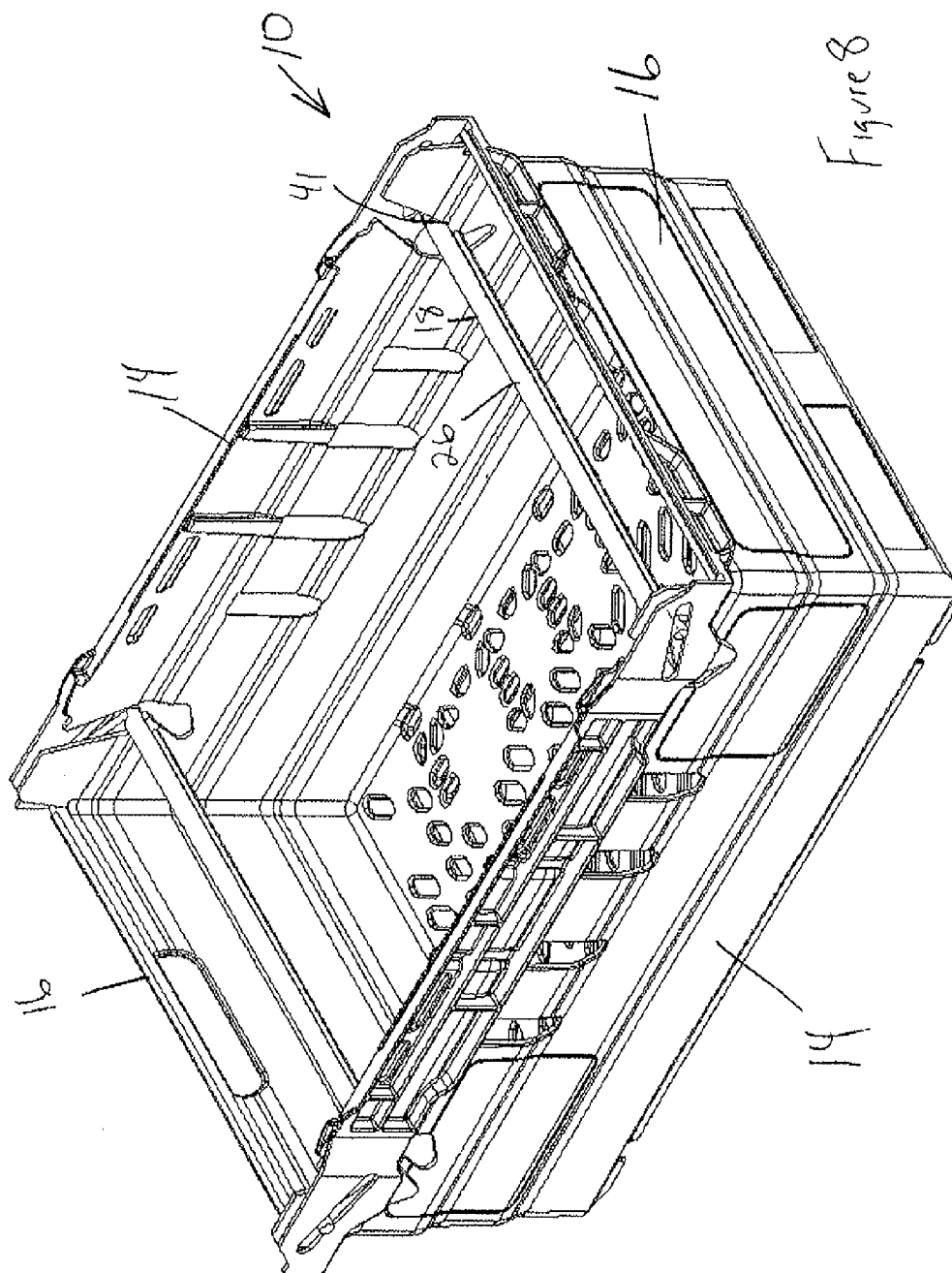
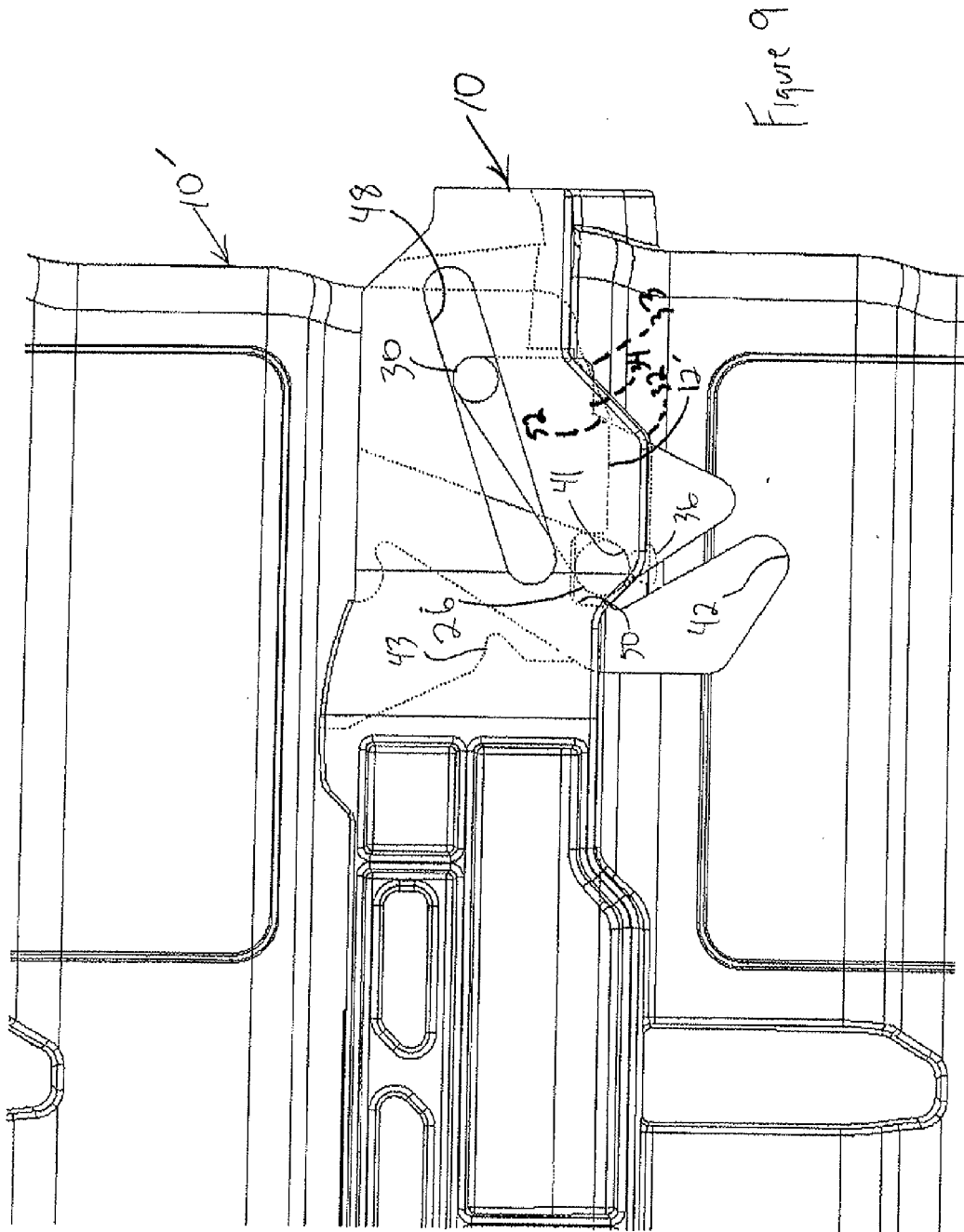
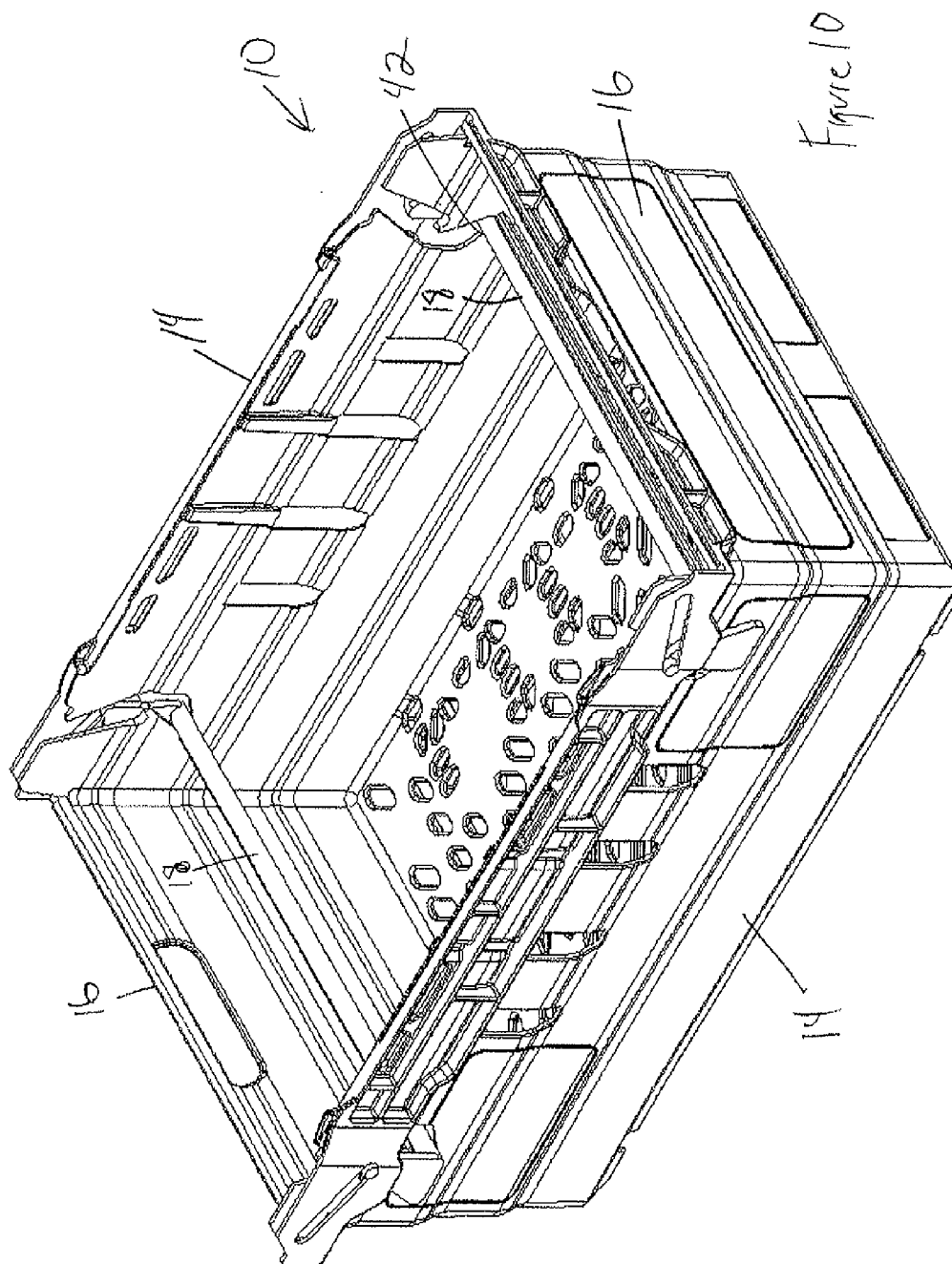


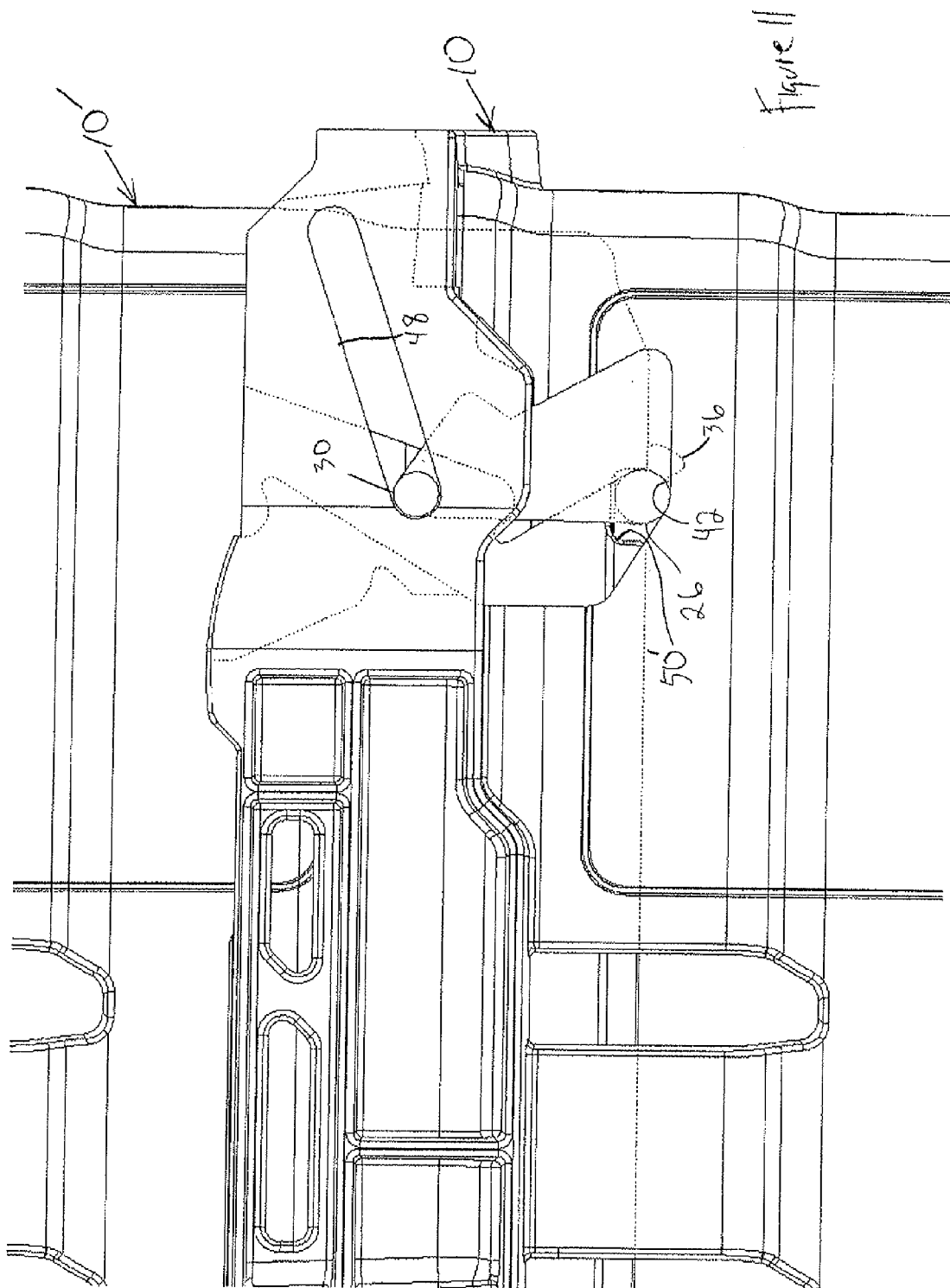
Figure 6











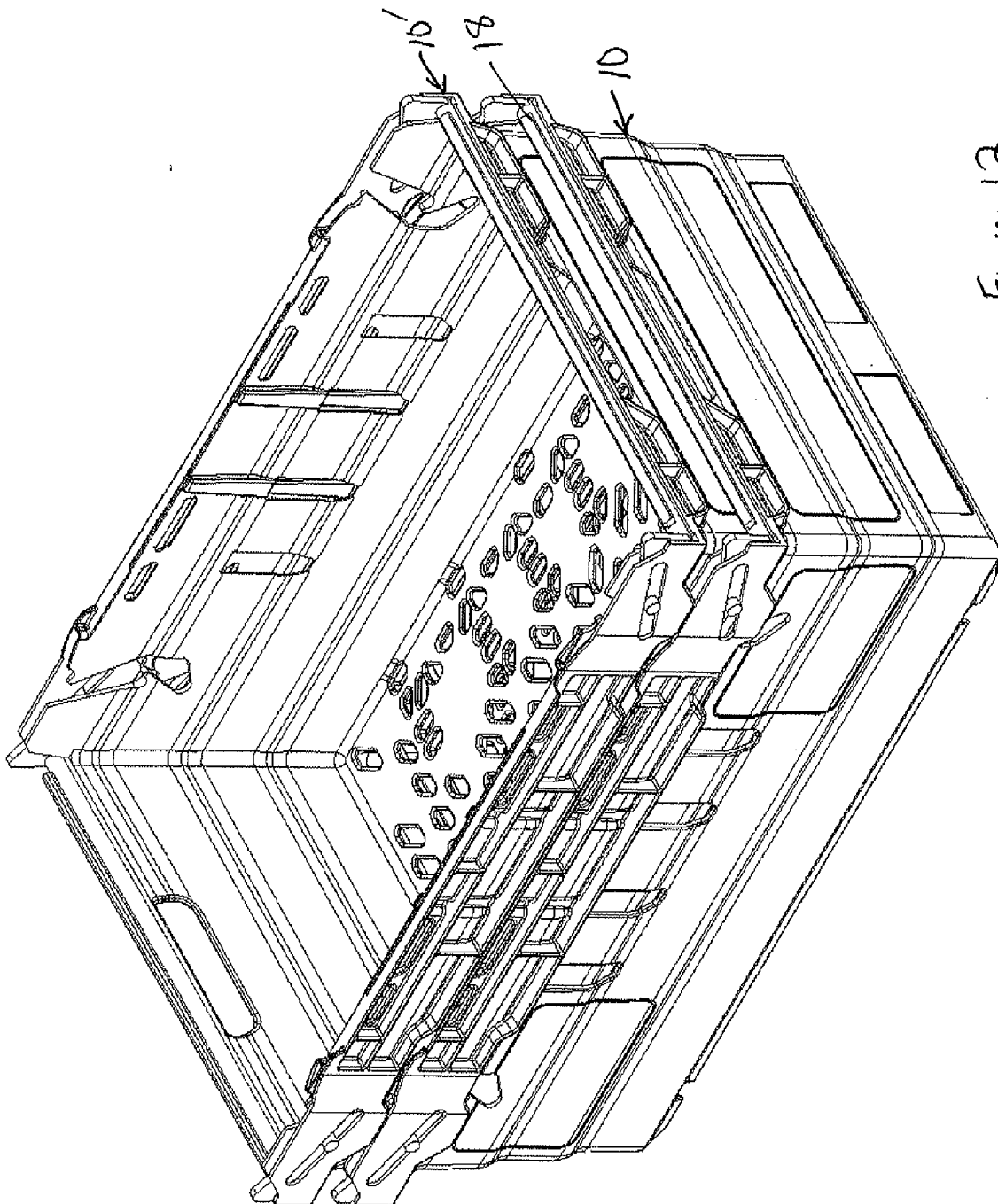


Figure 12