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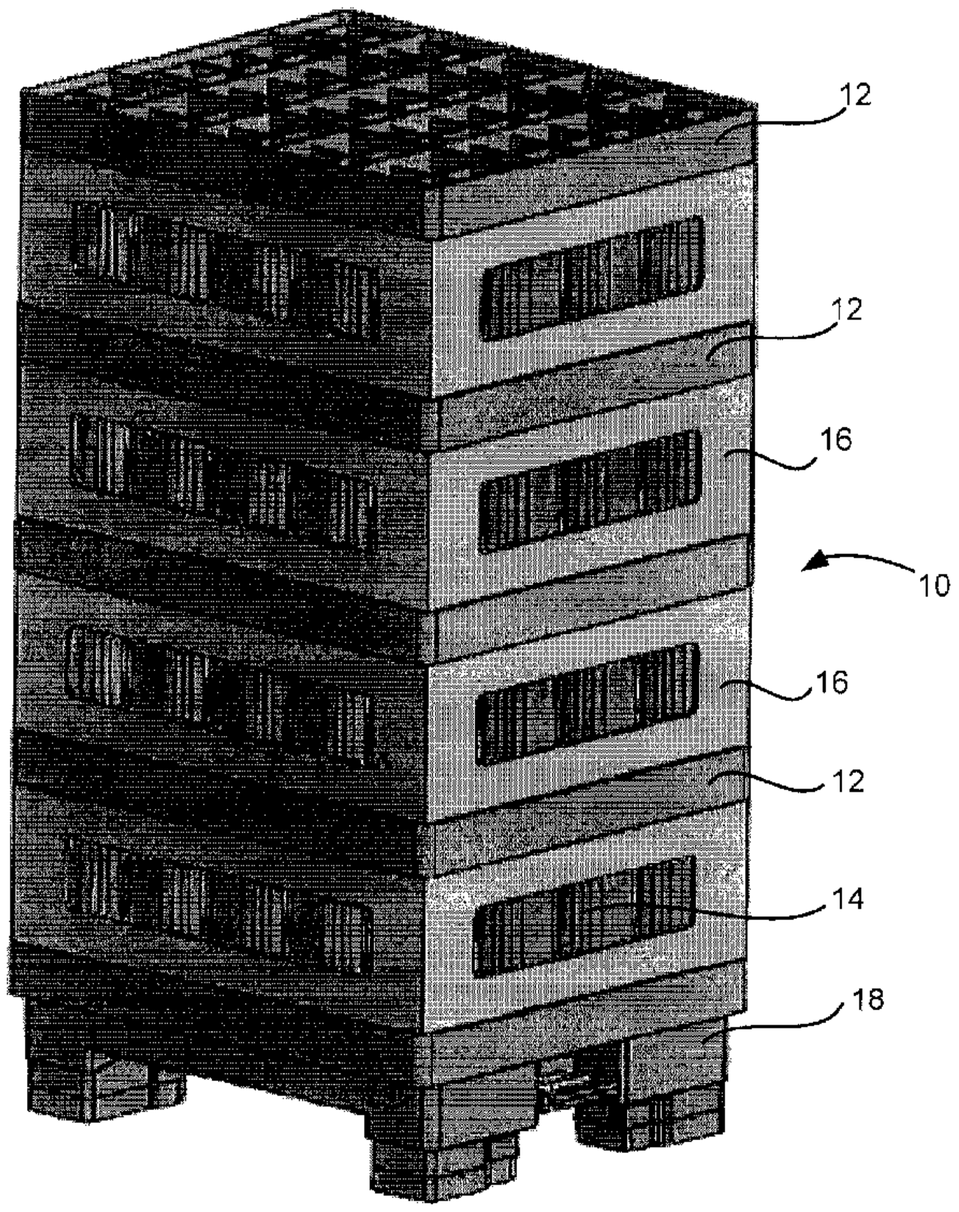
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(54) Titre : SYSTEME DE PLATEAU DESTINE A EMPILER DES COUCHES DE BOUTEILLES NON STRUCTURALES
(54) Title: TRAY SYSTEM FOR STACKING LAYERS OF NON-STRUCTURAL BOTTLES



(57) Abrégé/Abstract:
A tray system for stacking layers of non-structural bottles is provided. The system includes a plurality of generally rectangular plastic trays for supporting bottles, and a plurality of sleeves, where each sleeve is positioned about the perimeter of a tray to support a like tray above it.

ABSTRACT OF THE INVENTION

A tray system for stacking layers of non-structural bottles is provided. The system includes a plurality of generally rectangular plastic trays for supporting bottles, and a plurality of sleeves, where each sleeve is positioned about the perimeter of a tray to support a like tray above it.

TRAY SYSTEM FOR STACKING LAYERS OF NON-STRUCTURAL BOTTLES

DESCRIPTION

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The present invention claims priority to U.S. Patent Application No. 15/495,053, filed April 24, 2017, which claims the benefit of U.S. Provisional Patent Application No. 62/329,667, filed April 29, 2016, the contents of which are hereby incorporated in their entirety by reference and made a part hereof.

FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] N/A

FIELD OF THE INVENTION

[0003] The present invention generally relates to a tray system having a plurality of trays and intervening support sleeves for stacking layers of non-structural bottles.

BACKGROUND OF THE INVENTION

[0004] Currently, metal carts – referred to as "bossy" carts – are typically used to transport and present milk to customers via a series of rigidly connected racks on each cart.

[0005] The present invention provides an improved tray and sleeve structure for transporting layers of non-structural bottles.

SUMMARY OF THE INVENTION

[0006] The present invention provides a tray system having a plurality of trays and a plurality of sleeves that can be used to form layers of bottle supports.

[0007] In accordance with one aspect of the invention, a tray system for transporting bottles is provided. The tray system includes a plurality of rectangular plastic trays. Each tray has a first side, an opposing second side, a first end and an opposing second end, and a support surface formed from a plurality of ribs extending between the first side and the second side and a

plurality of ribs extending between the first end and the second end. Certain select ribs of the plurality of ribs extending between the first side and the second side and the plurality of ribs extending from the first end to the second end can extend upward above the remaining ribs to form bottle pockets or areas on the upper surface of the tray.

[0008] The system also includes a plurality of sleeves interposed between the plurality of trays. Each sleeve has a portion or panel extending along the first side, a portion or panel extending along the second side, a portion or panel extending along the first end, and a portion or panel extending along the second end of each tray. Each portion or panel of the sleeve is positioned around the periphery of the upper surface proximate a perimeter of the tray.

[0009] In accordance with another aspect of the invention, a tray system for stacking layers of bottles comprises a generally rectangular tray having a first side, an opposing second side, a first end and an opposing second end, and an upper support surface between the first and second sides and first and second ends. The tray includes a channel along a periphery of the support surface. The tray system also includes a first sleeve configured to be supported in the channel.

[0010] The support surface can be formed from a plurality of ribs. The ribs can be sized to form pockets for supporting bottles.

[0011] The sleeve can include a first panel, a second panel, a third panel and a fourth panel. The first panel of the sleeve can include a first window. Similarly, the second panel can include a second window, the third panel can include a third window and the fourth panel can include a fourth panel.

[0012] The tray can include a lower surface and a lower channel along a periphery of the lower surface to receive an upper edge of a like sleeve from a lower tray.

[0013] The tray system can further comprise a second tray and a second sleeve, the second tray configured to be supported on the first sleeve. Additional trays and sleeves can also be added to the system.

[0014] Further aspects of the invention are disclosed in the Figures, and are described herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] To understand the present invention, it will now be described by way of example, with reference to the accompanying drawings in which:

[0016] FIGURE 1 is a perspective view of a system having a plurality of trays and sleeves for transporting bottles in accordance with the present invention;

[0017] FIGURE 2 is a perspective view of the system of FIGURE 1 in a collapsed state without the bottles;

[0018] FIGURE 3 is a perspective view of a tray of the present system with a single bottle positioned thereon;

[0019] FIGURE 4 is a perspective view of a tray of the present system fully loaded with bottles and including a peripheral support sleeve; and,

[0020] FIGURE 5 is a partial cross-sectional view of the system of FIGURE 1 showing part of a layer of bottles and trays.

DETAILED DESCRIPTION

[0021] While this invention is susceptible of embodiments in many different forms, there is shown in the drawings, and will herein be described in detail preferred embodiments of the invention with the understanding that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the broad aspect of the invention to the embodiments illustrated.

[0022] As illustrated in Figure 1, the present invention is directed to a tray system 10 comprising a plurality of trays 12 configured to support a plurality of bottles 14. The plurality of trays 12 interact with a plurality of support sleeves 16. The trays 12 and support sleeves 16 allow for stacking a plurality of layers of bottles 14 on a pallet 18 (or dolly or other support structure). Figure 1 shows four layers of bottles 14 supported on the pallet 18. One tray 12 is placed on the top of the layers of bottles 16 to act as a top cap for the system 10. However, other top caps can be utilized.

[0023] Figure 2 shows a collapsed system 10 without the bottles 14. The trays 12 are supported on the pallet 18. The sleeves 16 can be collapsed or folded and placed on top of the trays 12 and pallet 18. In this manner, the system can be easily shipped back after transporting bottles to a destination. The reduced volume of the collapsed system 10 provides for cost effective and efficient shipping.

[0024] As shown in Figure 3, the trays 12 are generally rectangular and include a first side 20, a second side 22, first end 24 and a second end 26. Each of the sides 20, 22 and ends 24, 26 is a generally rectangular shaped panel. The tray 12 includes a plurality of ribs 28 that extend between the first and second sides 20, 22 and the first second ends 24, 26 to form an upper support surface for the bottles 14. Certain of the ribs can extend upward higher than others to form separate bottle pockets 30 or areas on the upper surface. The upper surface of the tray 12 can also include a channel 32 (again by varying the height of certain ribs) or other support structure along a perimeter to support a sleeve 16 on the upper surface of the tray 12. The sleeve 16 can then be used to support another like tray 12 above the tray 12 at issue. In this manner, the trays 12 and sleeves 16 can be stacked to form a plurality of layers as shown in Figure 1.

[0025] The lower surface of each tray 12 can also include a channel 34 or other structure to enable an upper tray to rest on and be supported by an upper edge of a lower sleeve 16. The upper and lower channels 34, 32 help keep the sleeves in the proper locations along the perimeter of the tray 12. As illustrated in Figure 5, the sleeves 16 can be sized so that bottles 14 on a lower tray 12 do not contact or otherwise support an upper tray 12. This keeps pressure (from the weight of upper layers) off of the bottles 14.

[0026] Figure 4 shows a single layer of bottles 14 supported on the tray 12 of Figure 3. The bottles 14 can be one gallon bottles (such as plastic milk bottles), however, other sizes and shapes can be used. A sleeve 16 is shown around the bottles 14 along the periphery of the tray 12. The sleeve 16 includes four side panels 36. Each side panel 36 of a sleeve 16 shown in Figure 4 includes a window 38 for visual inspection of the bottles 14 on the tray 12 (however, the sleeve 16 can include more than one window 38 per panel 36, or have no windows 36 on one or more of the panels 36). The window 38 is important when other layers of trays 12 are stacked on top of the tray 12, which limit inspection from the top of the tray 12.

[0027] Each sleeve 16 can be of one-piece construction. That is, the sleeve 16 can be formed from a single blank of material having four panels 26. The two ends of the blank can be connected to form a rectangular opening or shape for placement of the sleeve 16 in the channel 32 of the tray 12. The sleeve 16 can be folded (e.g., bringing two opposing corners together) to collapse the sleeve 16 when not being used. In use, the sleeve 16 is opened and positioned along the perimeter of a first or lower tray to support one or more upper trays (or a top cap for the uppermost tray/sleeve combination).

[0028] The plurality of stacked trays 12 and sleeves 16 can be supported on a pallet 18, dolly or other like structure for transport. When empty, the trays 12 can be stacked on the pallet 18 or dolly, and the sleeves 16 can be collapsed and placed thereon for return.

[0029] Figure 5 shows a cross-sectional view of a stack of trays 12 holding bottles 14. As is evident in the top tray 12 certain of the ribs 40 extend upward higher than others 42 to form the pockets 30 for each bottle 14. Similarly, ribs 44 along the perimeter are small than other ribs to form the channels 32, 34. While the channels 32, 34 can extend uninterrupted around the perimeter, some of the ribs crossing the channels 32, 34 can extend upward higher than the channel rib 44. The sleeve 16 can be provided with slots to accommodate such cross-ribs. The slots can then be used to align the sleeve on the tray 12 (this can be useful for proper placement of the sleeve if it is in two or more parts that do not extend to the corners).

[0030] Preferably, the trays are formed from a molded plastic or other suitable material. The sleeve is preferably plastic, such as a corrugated plastic, or other suitable material (such as a paperboard or corrugated paper).

[0031] Many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood within the scope of the appended claims the invention may be protected otherwise than as specifically described.

CLAIMS

I/We claim:

1. A tray system for transporting bottles comprising:

a plurality of rectangular trays, each tray having a first side, an opposing second side, a first end and an opposing second end, and a support surface formed from a plurality of ribs extending between the first side and the second side and a plurality of ribs extending between the first end and the second end wherein select ribs of the plurality of ribs extending between the first side and the second side and the plurality of ribs extending from the first end to the second end extend upward above the remaining ribs to form bottle pockets; and,

a plurality of sleeves interposed between the plurality of trays, each sleeve having a portion extending along the first side, a portion extending along the second side, a portion extending along the first end, and a portion extending along the second end wherein each portion of the sleeve is proximate a perimeter of the tray.

2. The tray system of claim 1 wherein the tray is formed from plastic.

3. The tray system of claim 1 wherein the sleeve is formed from plastic.

4. The tray system of claim 1 wherein the sleeves are collapsible.

5. The tray system of claim 1 wherein each tray includes a channel on an upper surface proximate the perimeter to hold a lower edge of one of the plurality of sleeves.

6. The tray system of claim 5 wherein each tray includes a channel on a lower surface proximate the perimeter to contact an upper edge of a lower one of the plurality of sleeves.

7. The tray system of claim 1 wherein each sleeve includes a first window in the portion extending along the first side, a second window in the portion extending along the second side, a third window in the portion extending along the first end, and a fourth window in the portion extending along the second end.

8. The system of claim 1 further comprising a pallet for supporting the trays and sleeves.

9. The system of claim 1 further comprising a dolly for supporting the trays and sleeves.

10. The system of claim 1 wherein the sleeve is collapsible.

11. A tray system for stacking layers of bottles comprising:

a generally rectangular tray having a first side, an opposing second side, a first end and an opposing second end, and an upper support surface between the first and second sides and first and second ends, the tray having a channel along a periphery of the support surface; and,

a first sleeve configured to be supported in the channel.

12. The tray system of claim 11 wherein the support surface is formed from a plurality of ribs.

13. The tray system of claim 12 wherein the ribs form pockets for supporting bottles.

14. The tray system of claim 11 wherein the sleeve includes a first panel, a second panel, a third panel and a fourth panel.

15. The tray system of claim 14 wherein the first panel of the sleeve includes a first window.

16. The tray system of claim 15 wherein the second panel includes a second window, the third panel includes a third window and the fourth panel includes a fourth panel.

17. The tray system of claim 11 wherein the tray includes a lower surface and a channel along a periphery of the lower surface to receive an upper edge of a lower sleeve.

18. The tray system of claim 11 further comprising a second tray and a second sleeve, the second tray configured to be supported on the first sleeve.

19. The tray system of claim 11 wherein the tray is formed from plastic.

20. The tray system of claim 11 wherein the sleeve is formed from plastic.

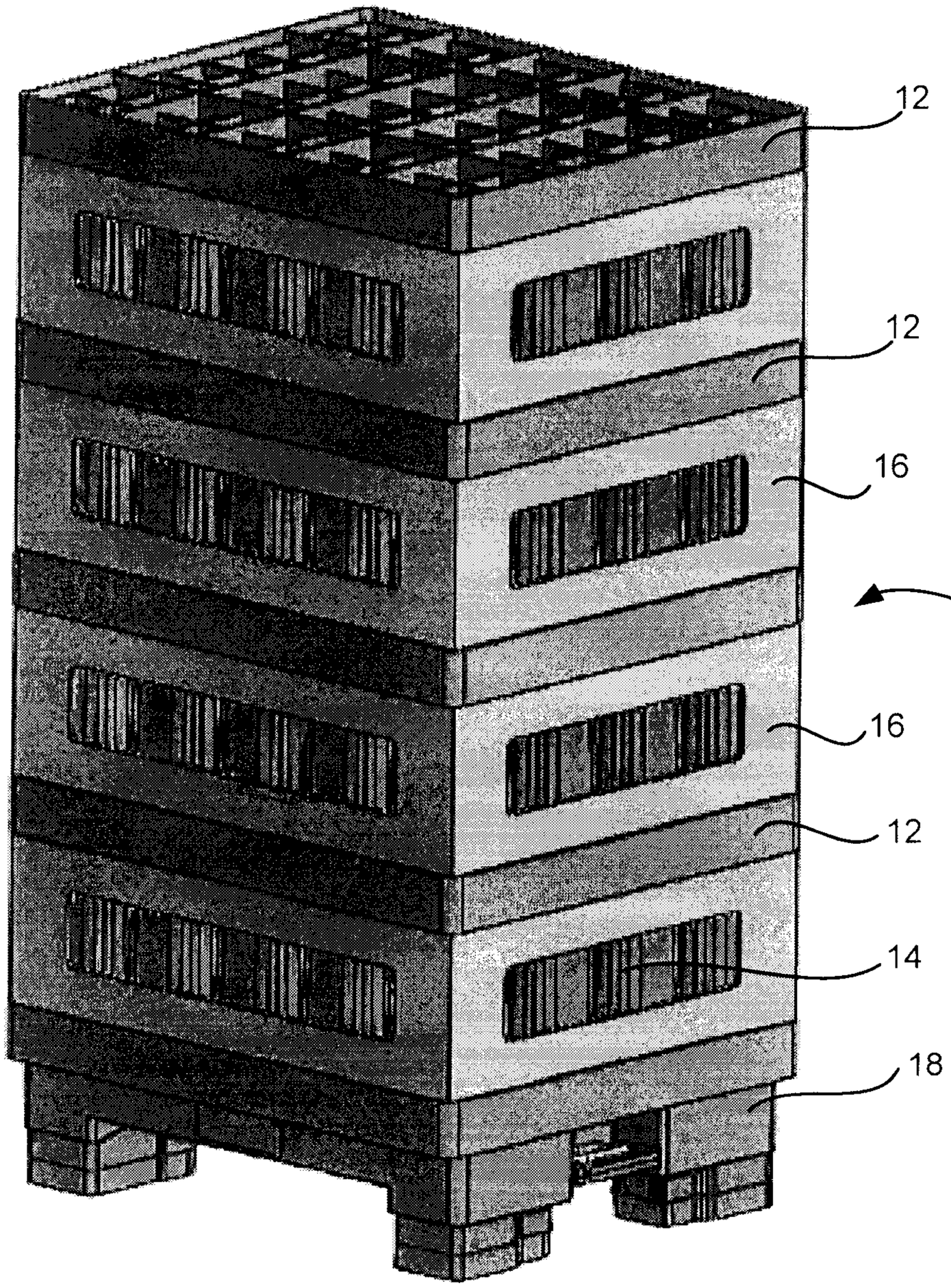


FIG. 1

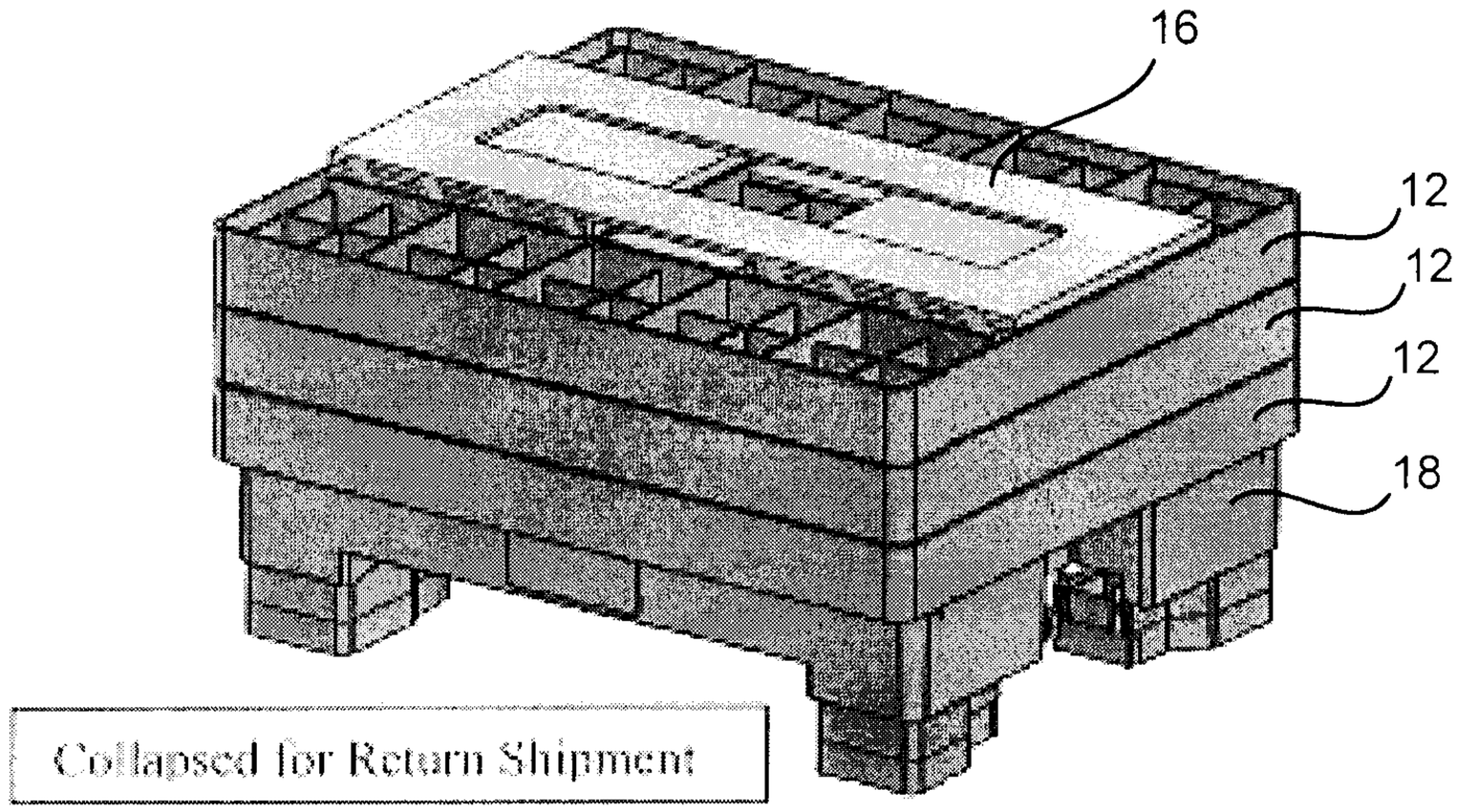

16
12
12
12
18
Collapsed for Return Shipment

FIG. 2

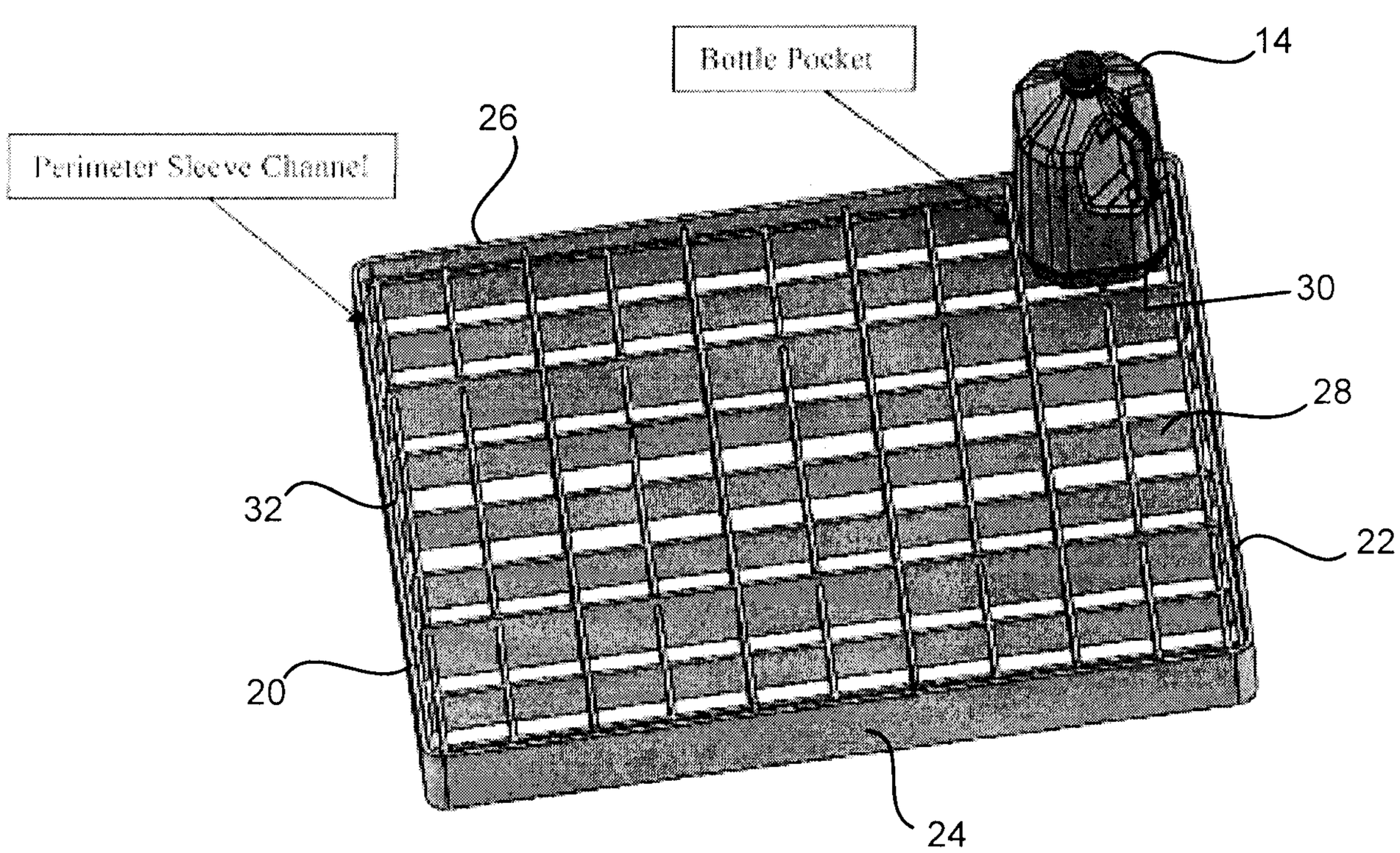

Bottle Pocket
14
26
Perimeter Sleeve Channel
30
28
32
22
20
24

FIG. 3

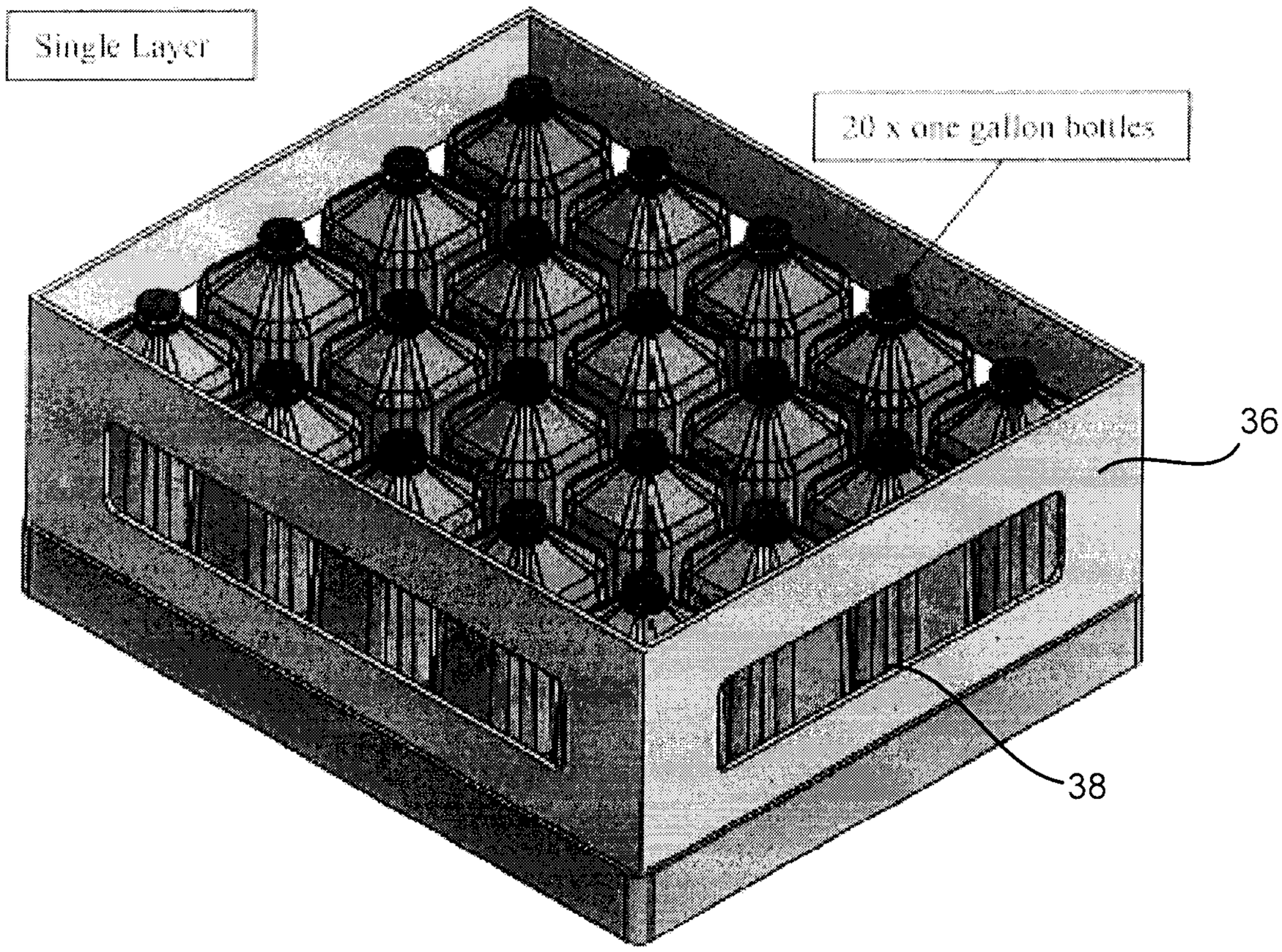


FIG. 4

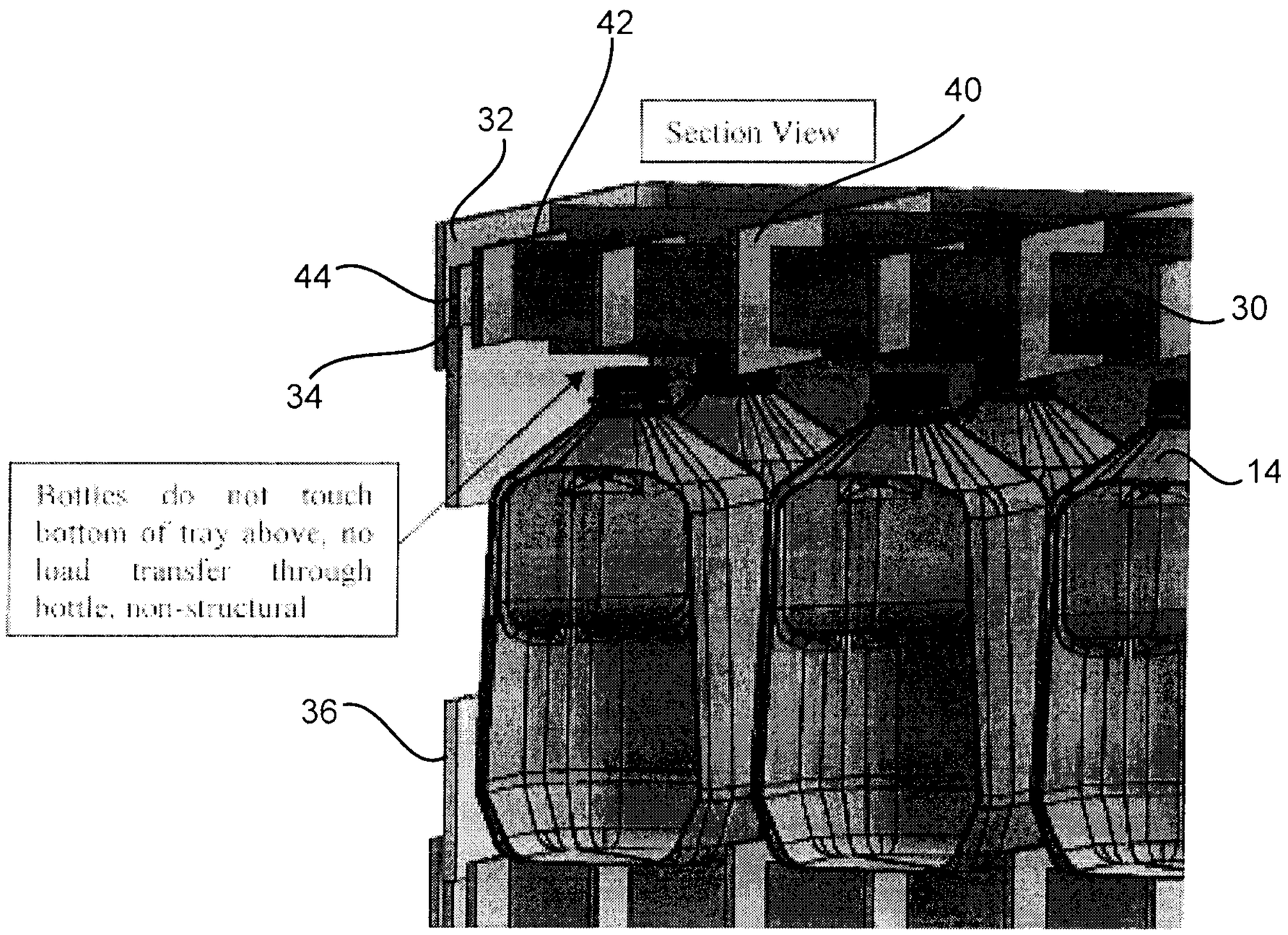
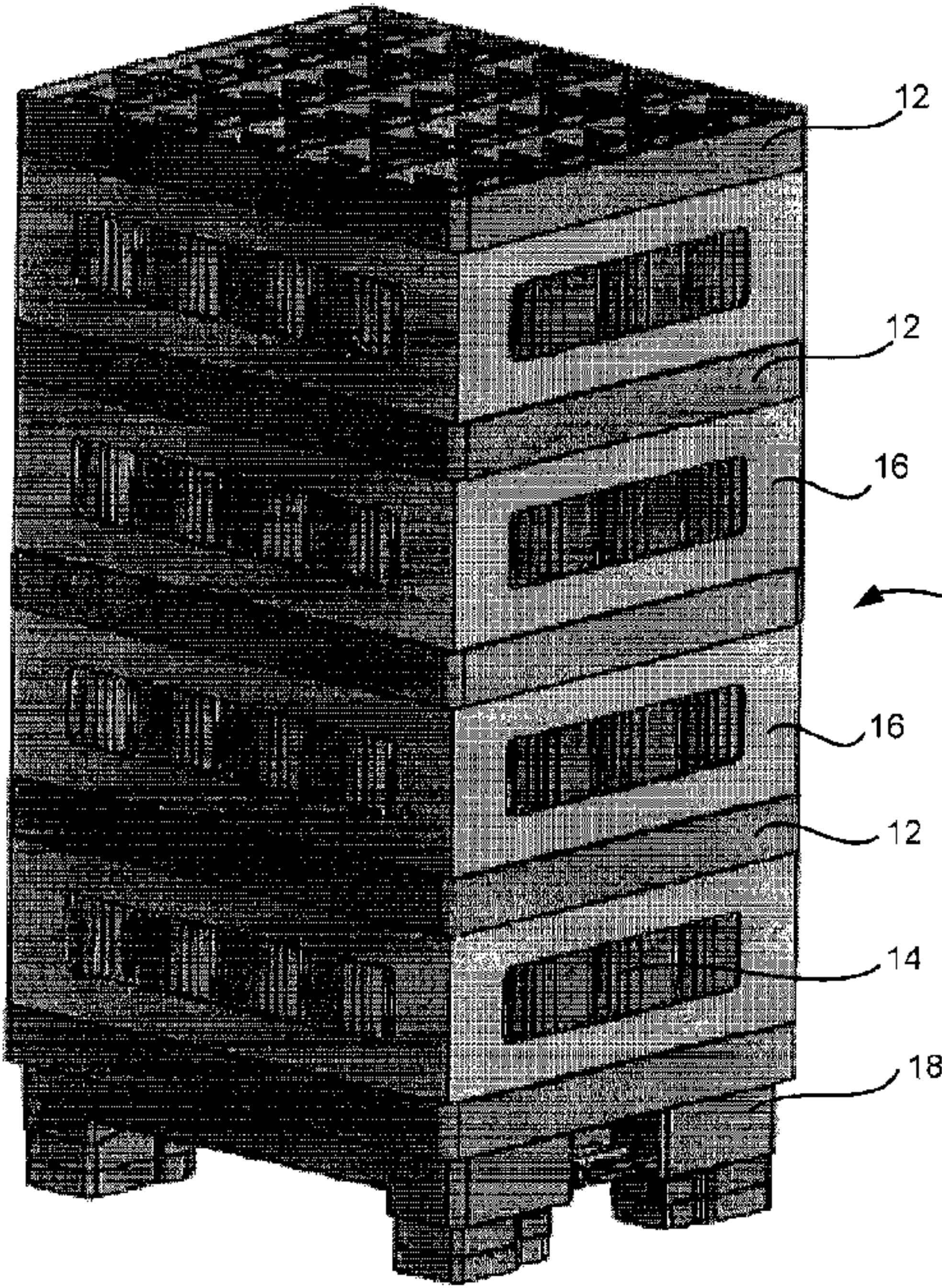

42
40
32
Section View
44
30
34
14
Bottles do not touch bottom of tray above, no load transfer through bottle, non-structural
36

FIG. 5


12
12
16
10
16
12
14
18