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(54) **LOW DEPTH CRATE**

(52) **U.S. Cl.**
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(2013.01); **B65D 25/30** (2013.01)

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(57) **ABSTRACT**

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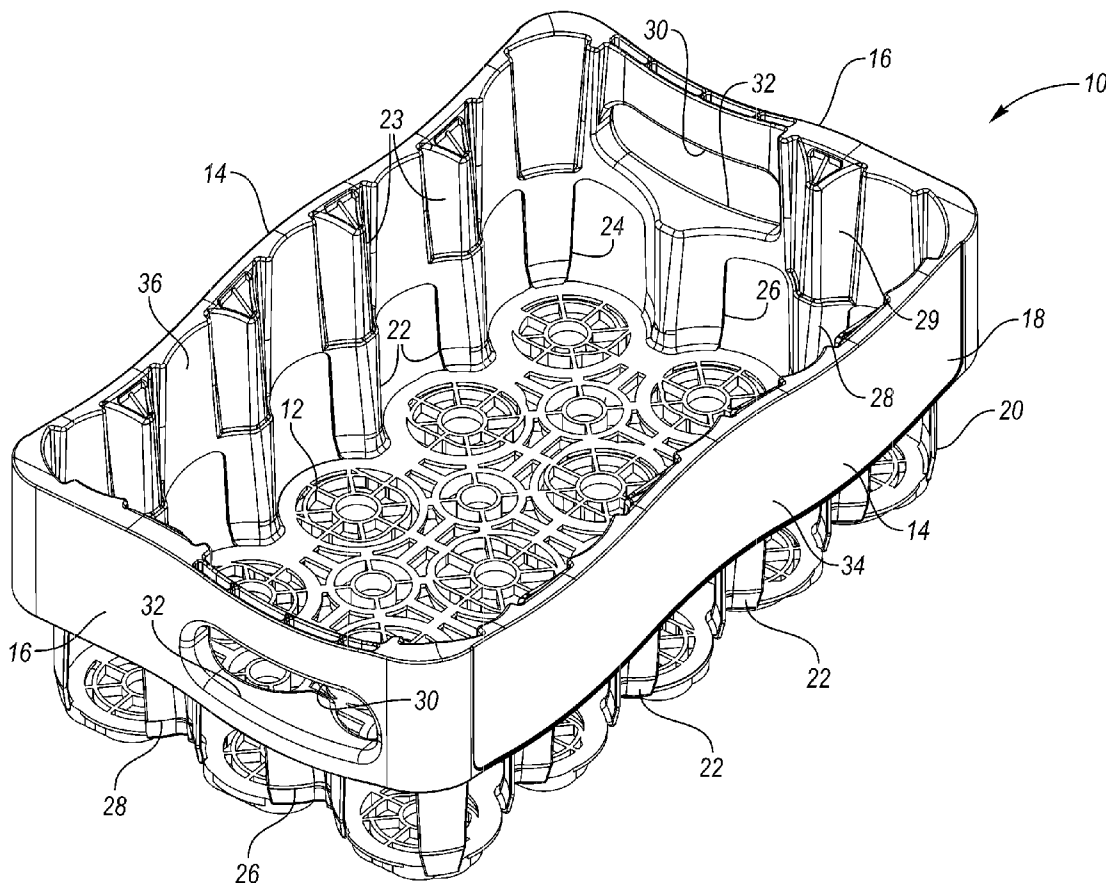
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A crate includes a base, a pair of opposed side walls extending upward from the sides of the base and a pair of end walls extending upward from ends of the base. The end walls each include a pair of spaced apart end columns that act as partial spacers between the three adjacent bottles at that end. The handles are aligned offset from the center of the end wall. The handles are each aligned with one of the end columns so they can be aligned (e.g. centered) between adjacent bottles to provide more space for a user's hand. The handles may extend from one end column, over the other end column to the corner column. In the embodiment shown, the handles may be each offset toward a different side wall to provide better balance of the weight of the crate.



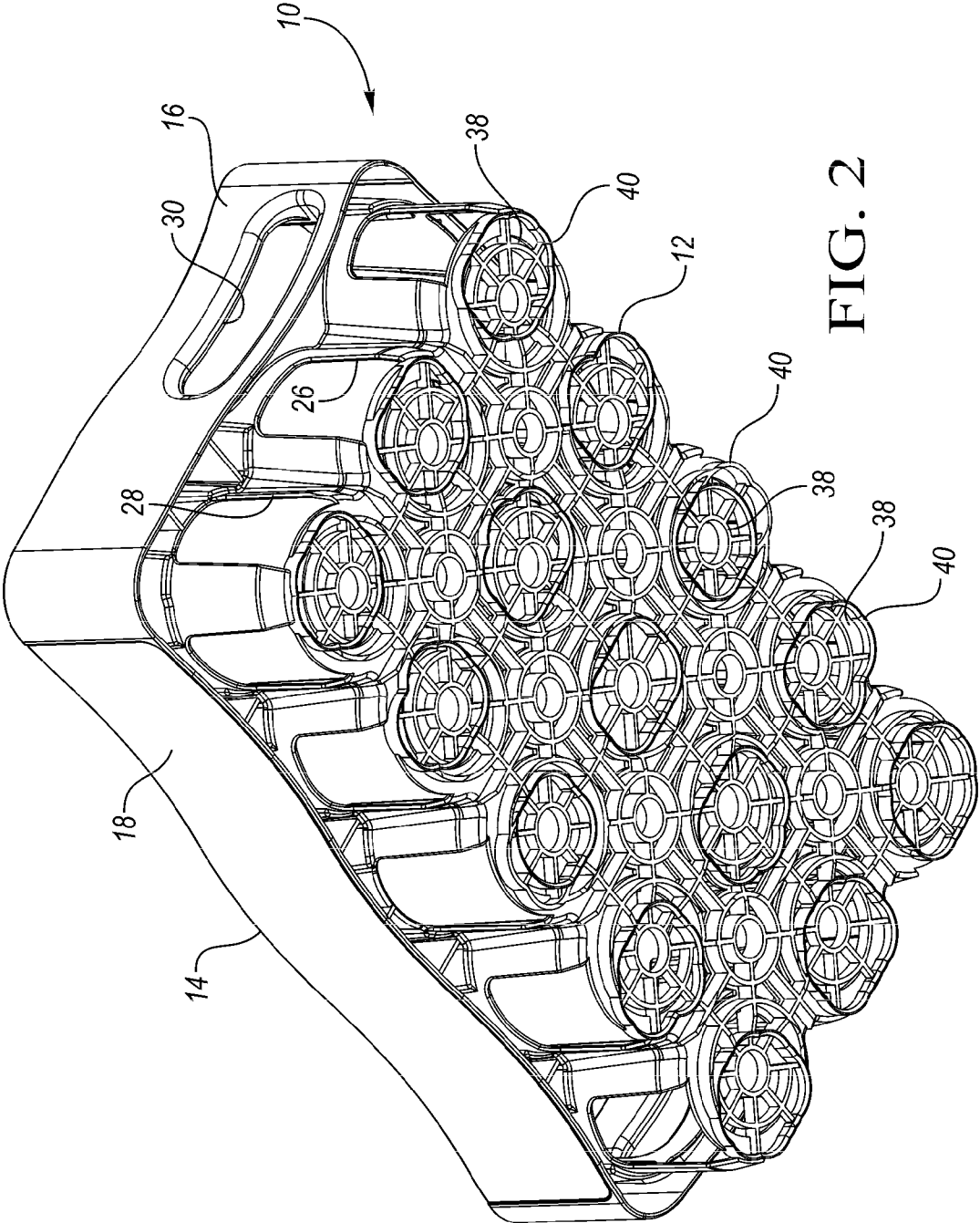


FIG. 2

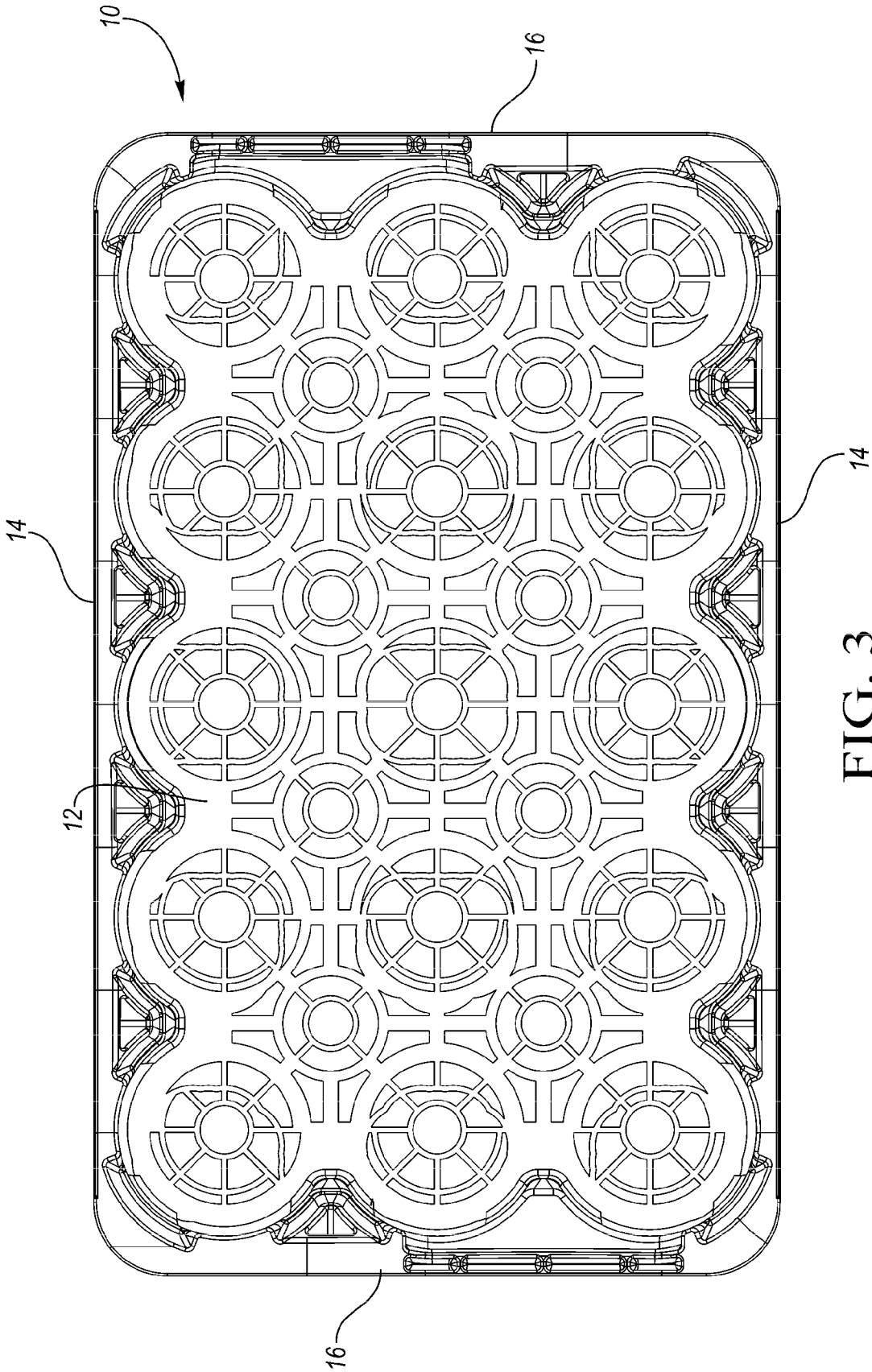


FIG. 3

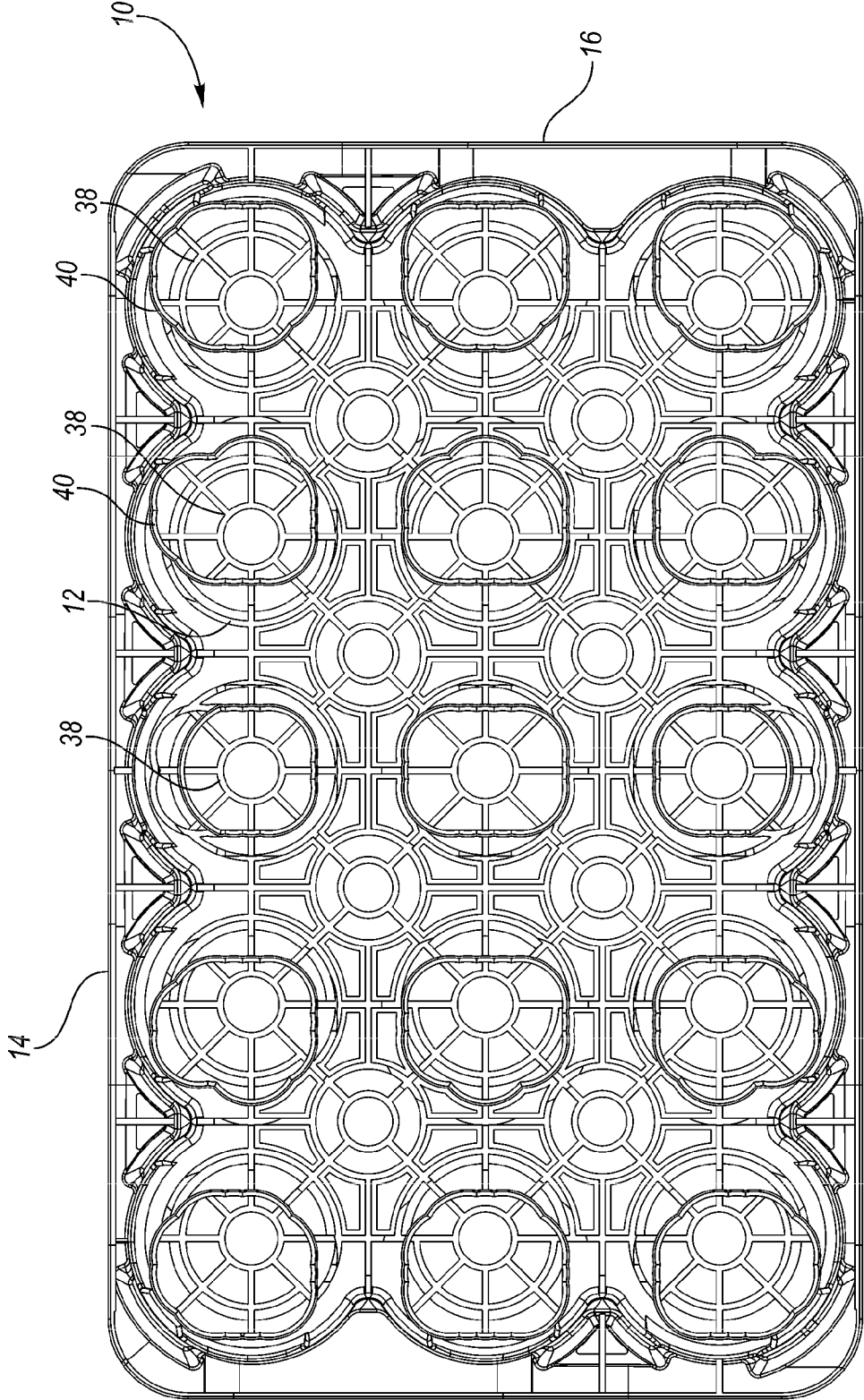


FIG. 4

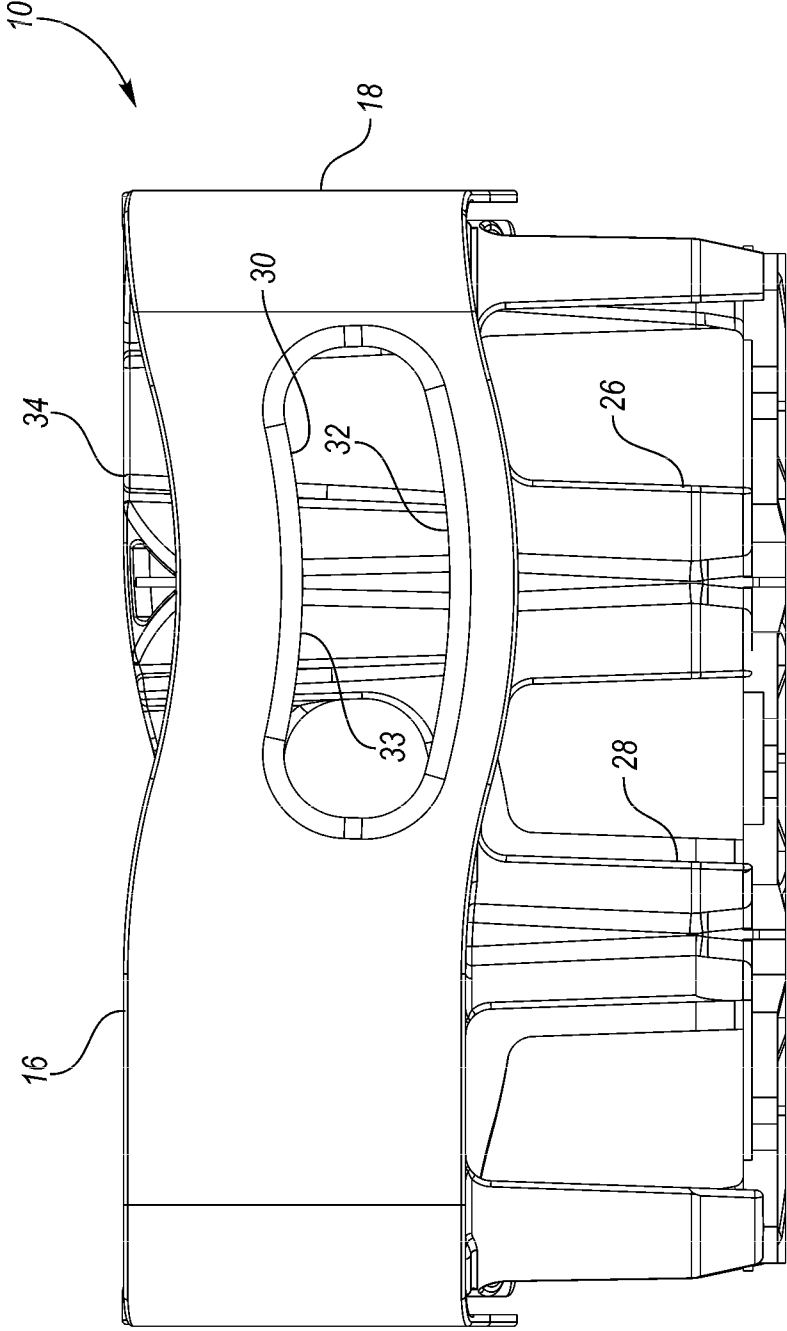


FIG. 5

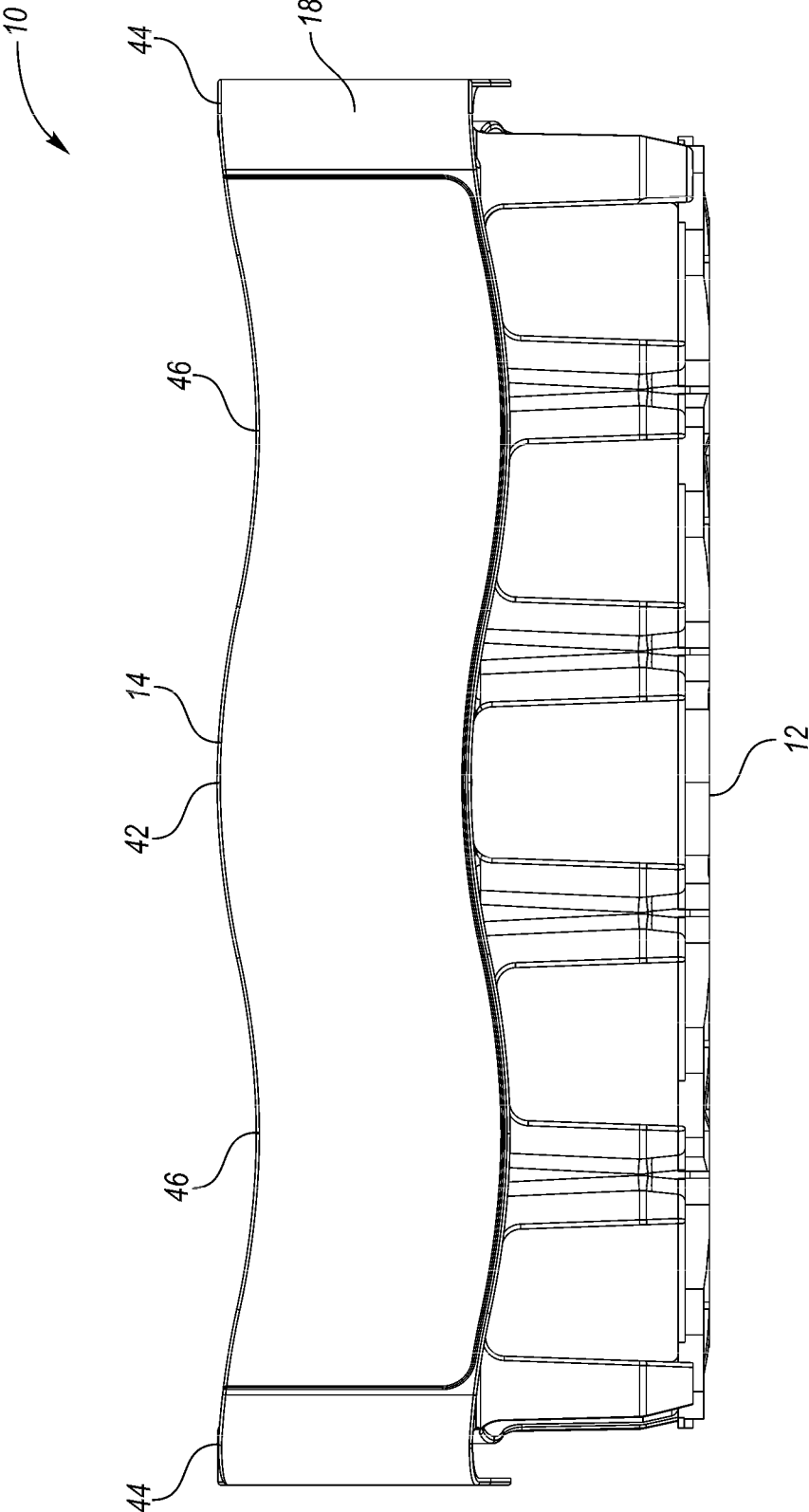


FIG. 6

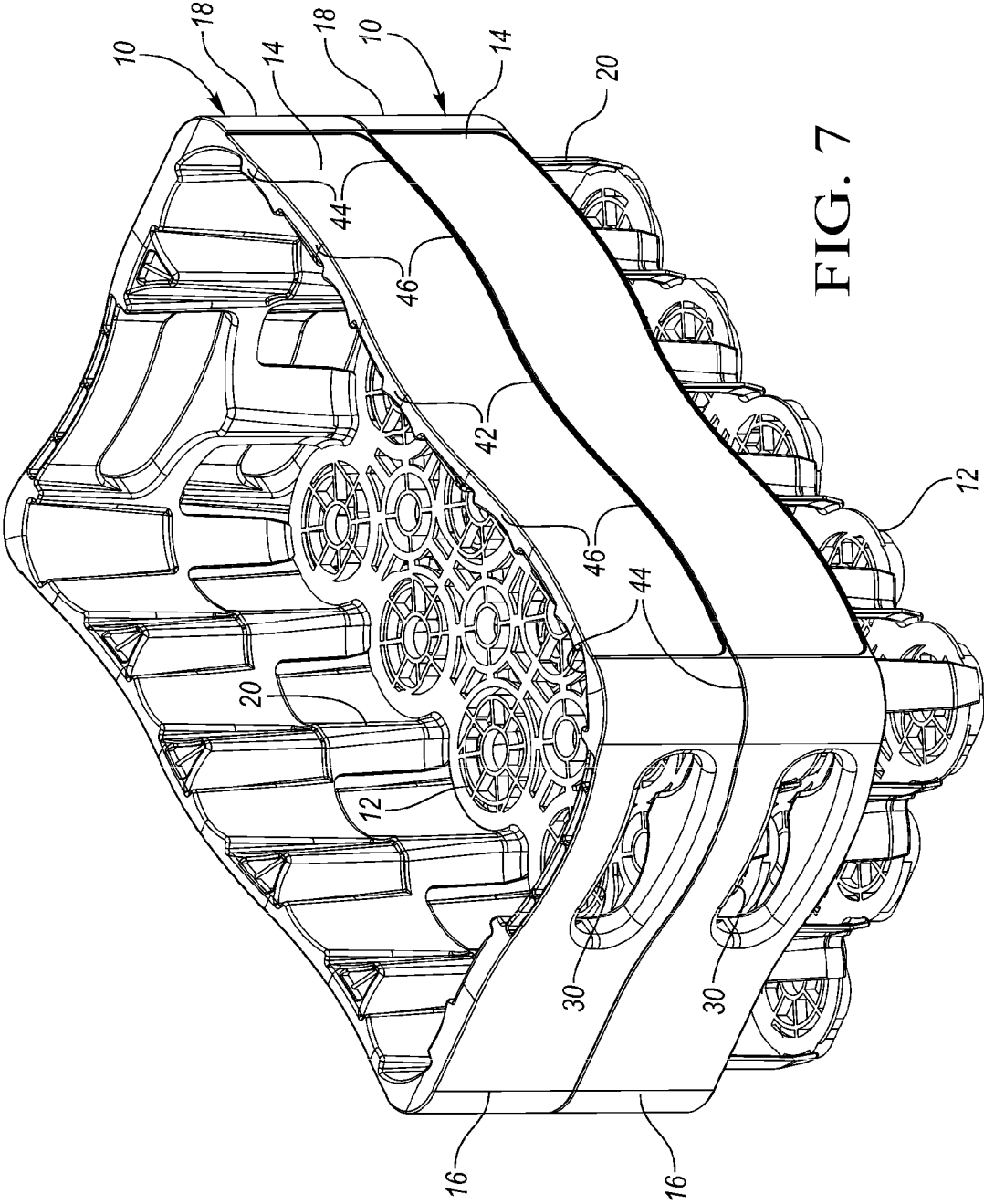


FIG. 7

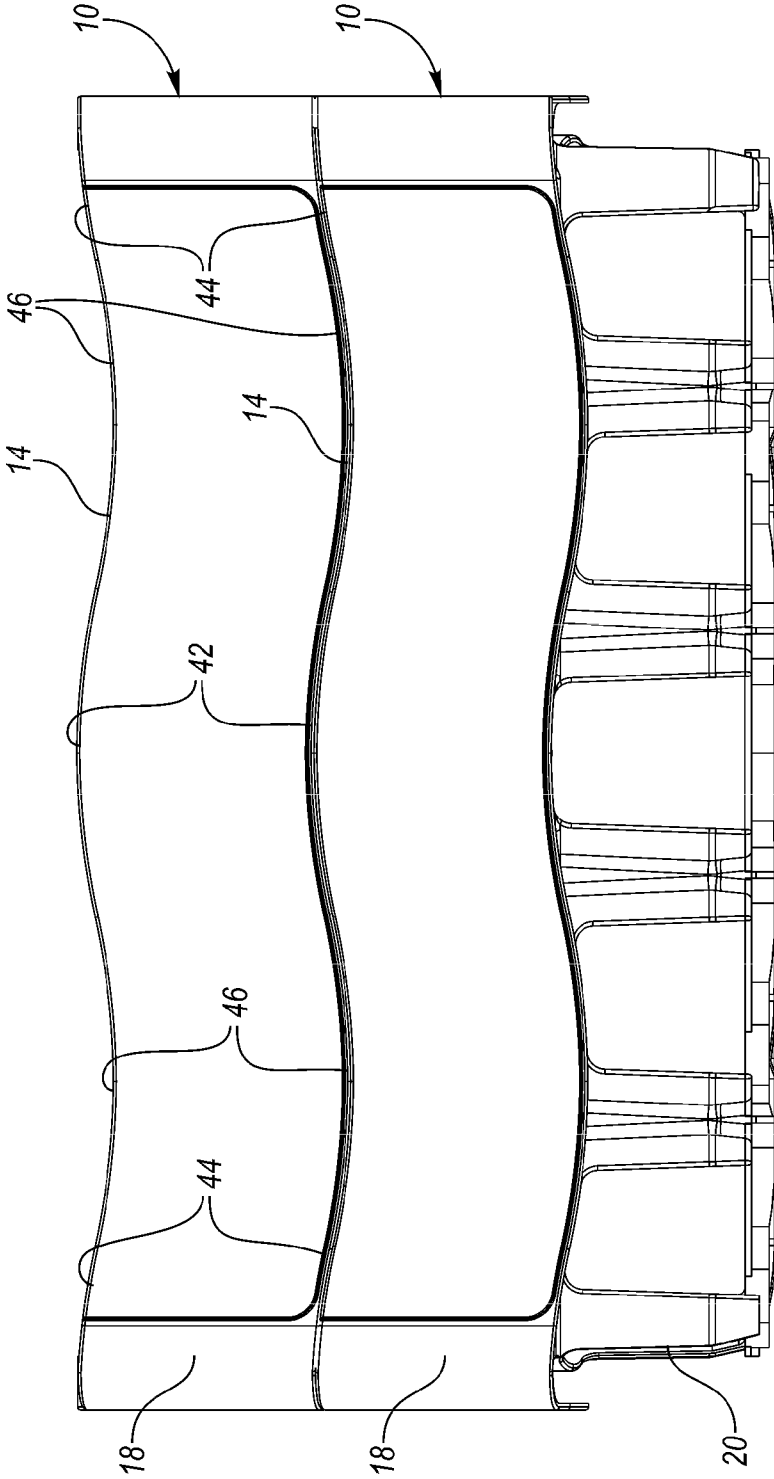


FIG. 8

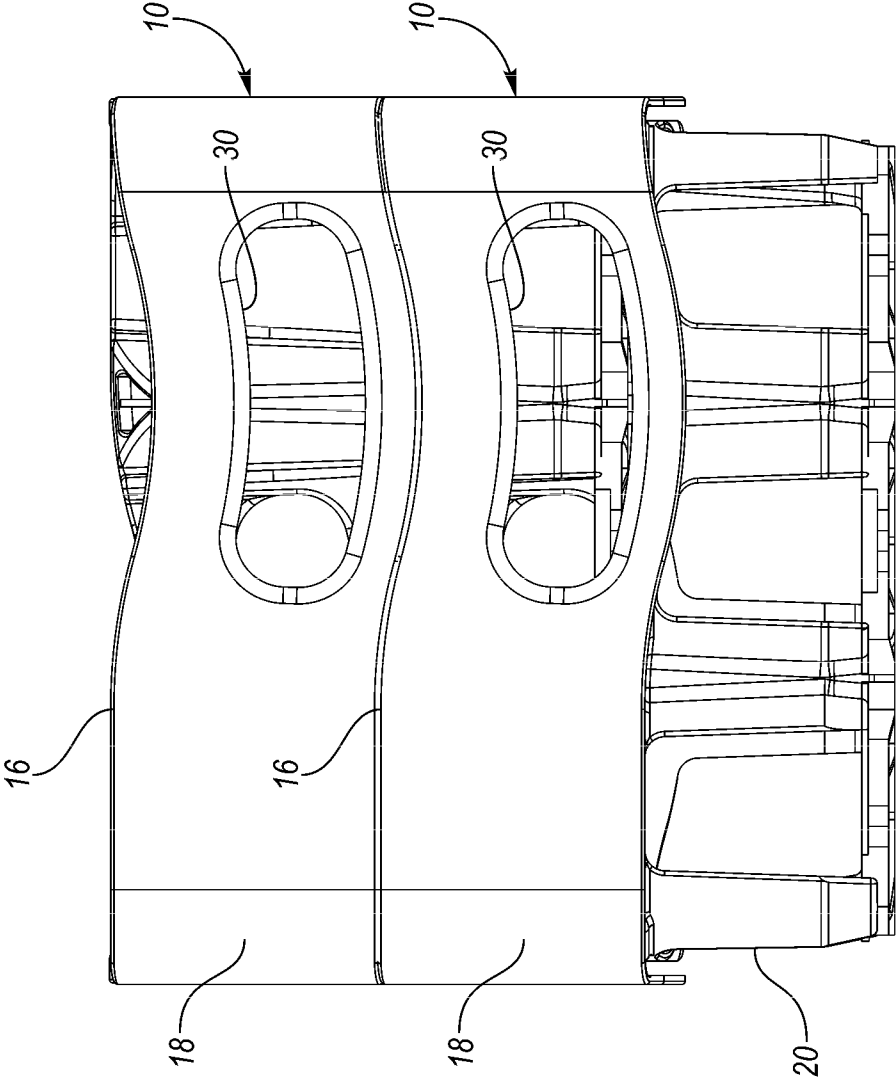


FIG. 9

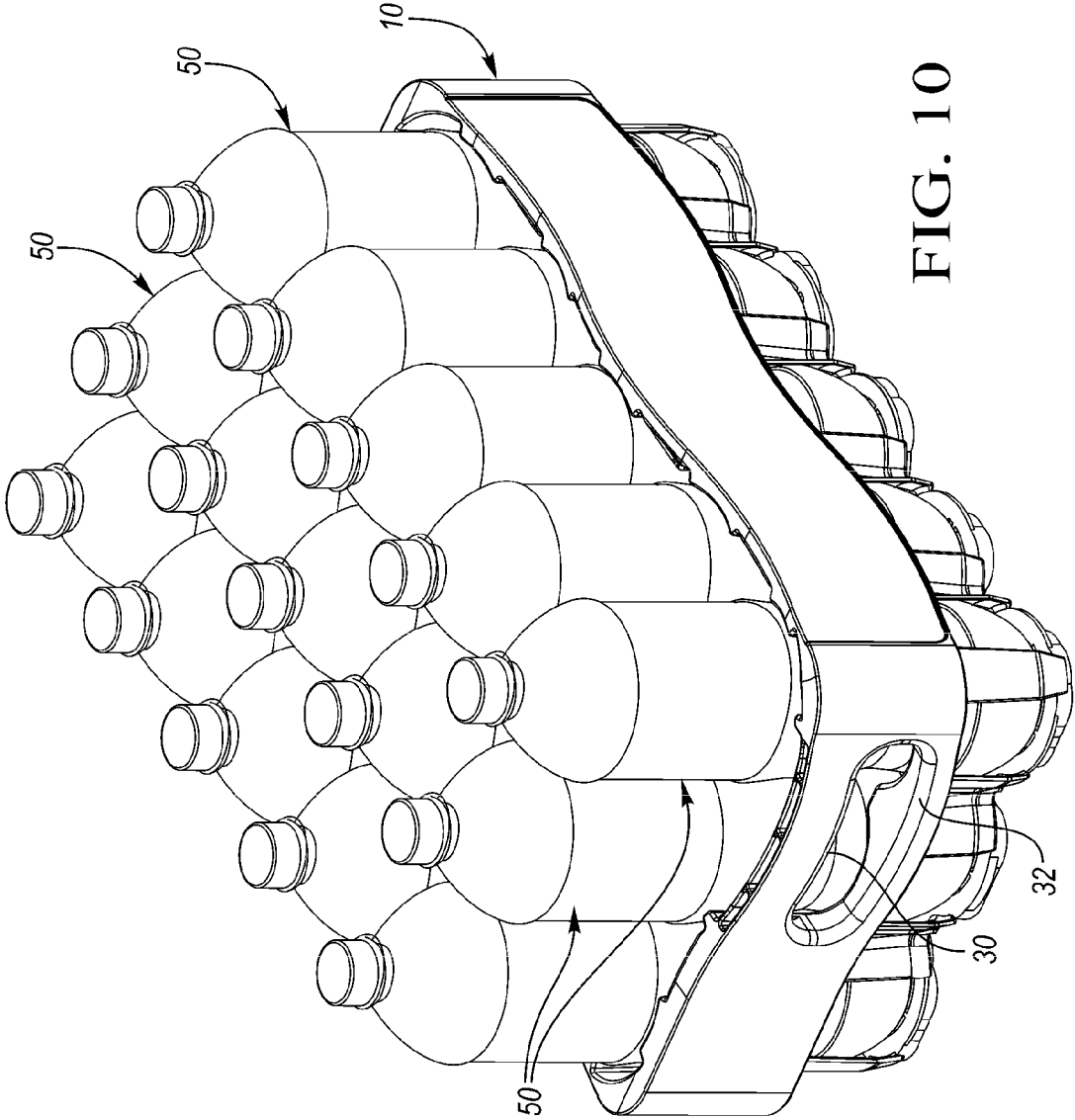


FIG. 10

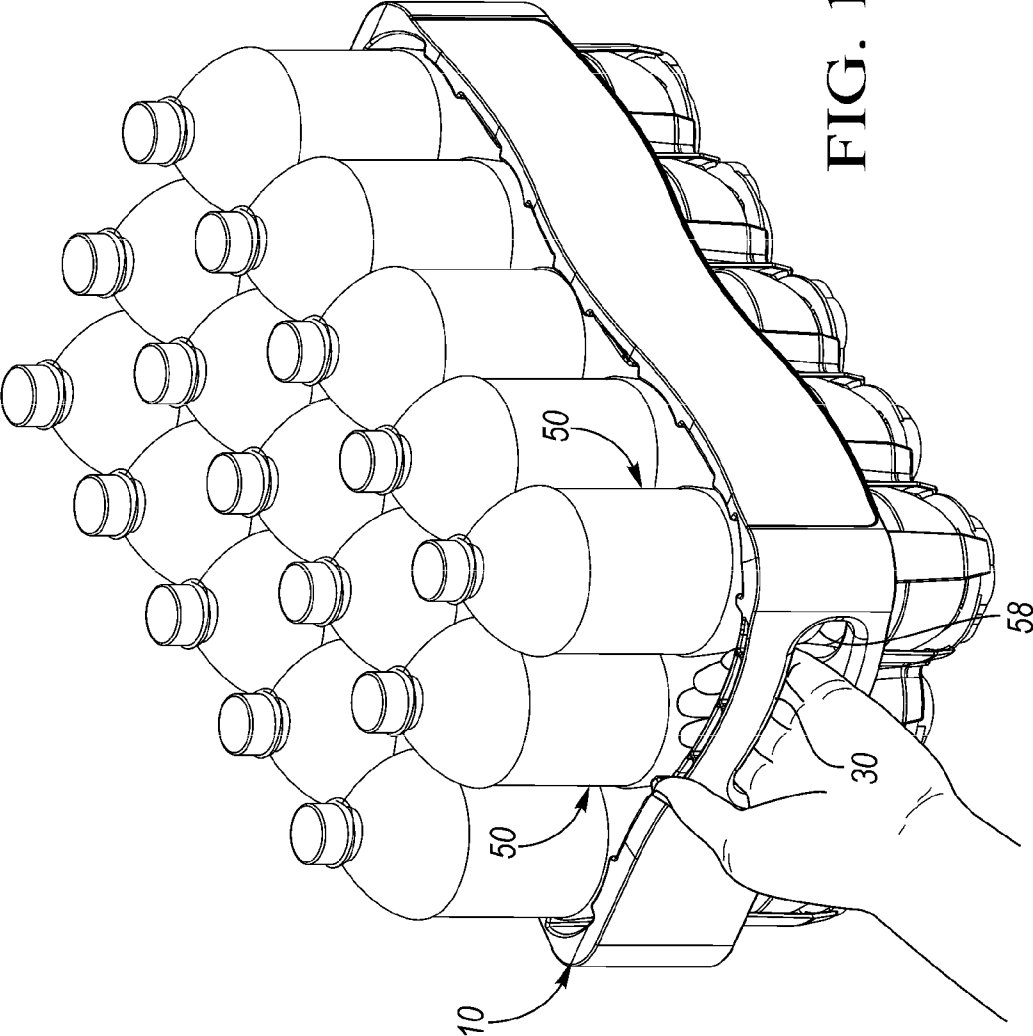


FIG. 11

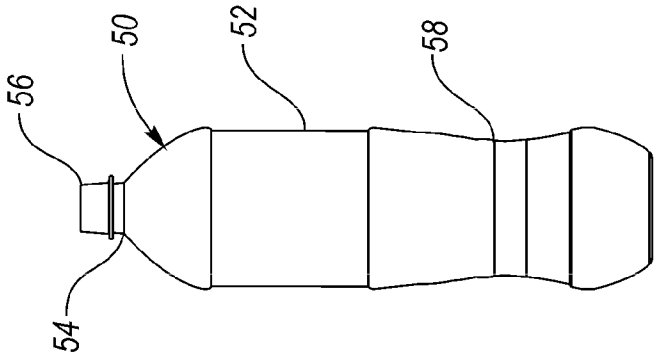


FIG. 12

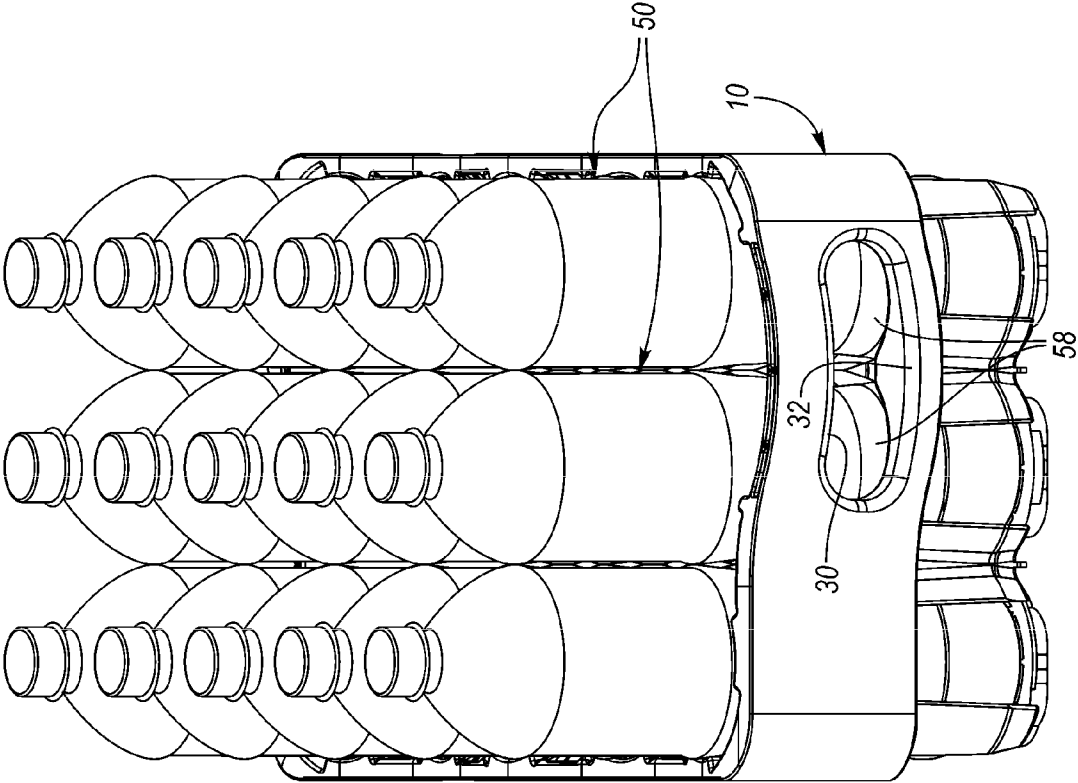
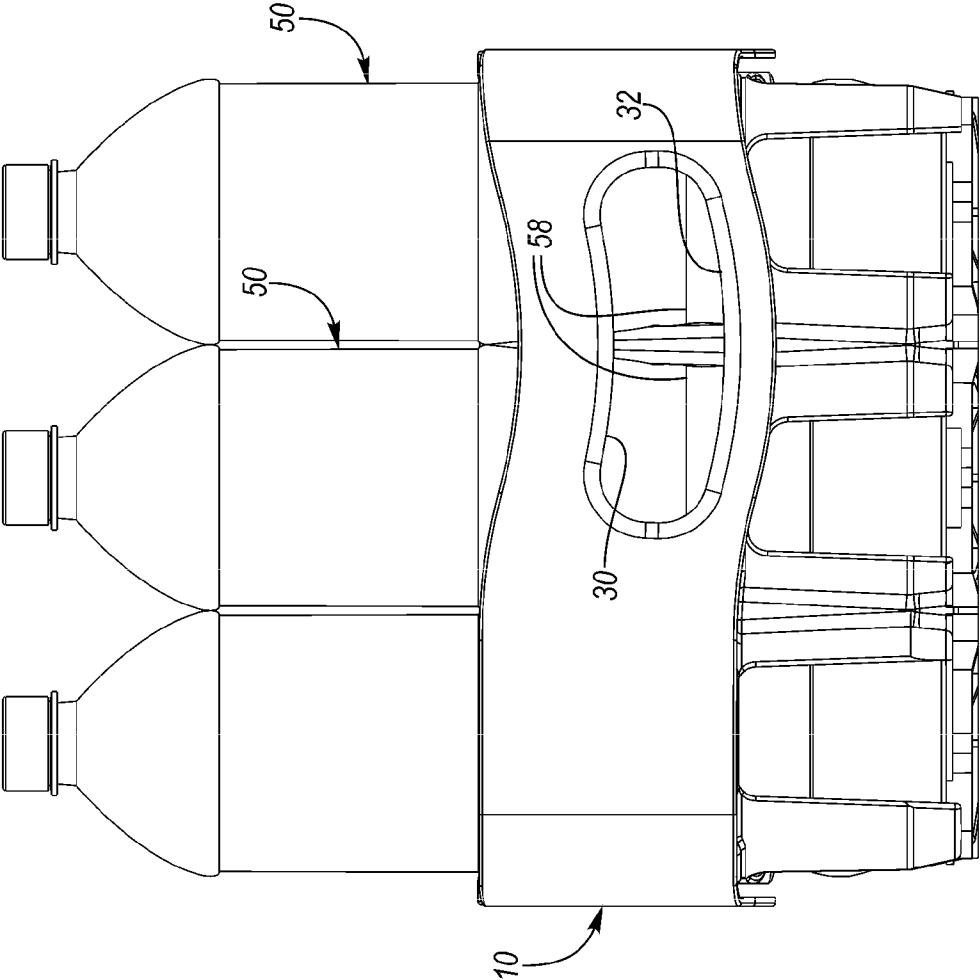


FIG. 13



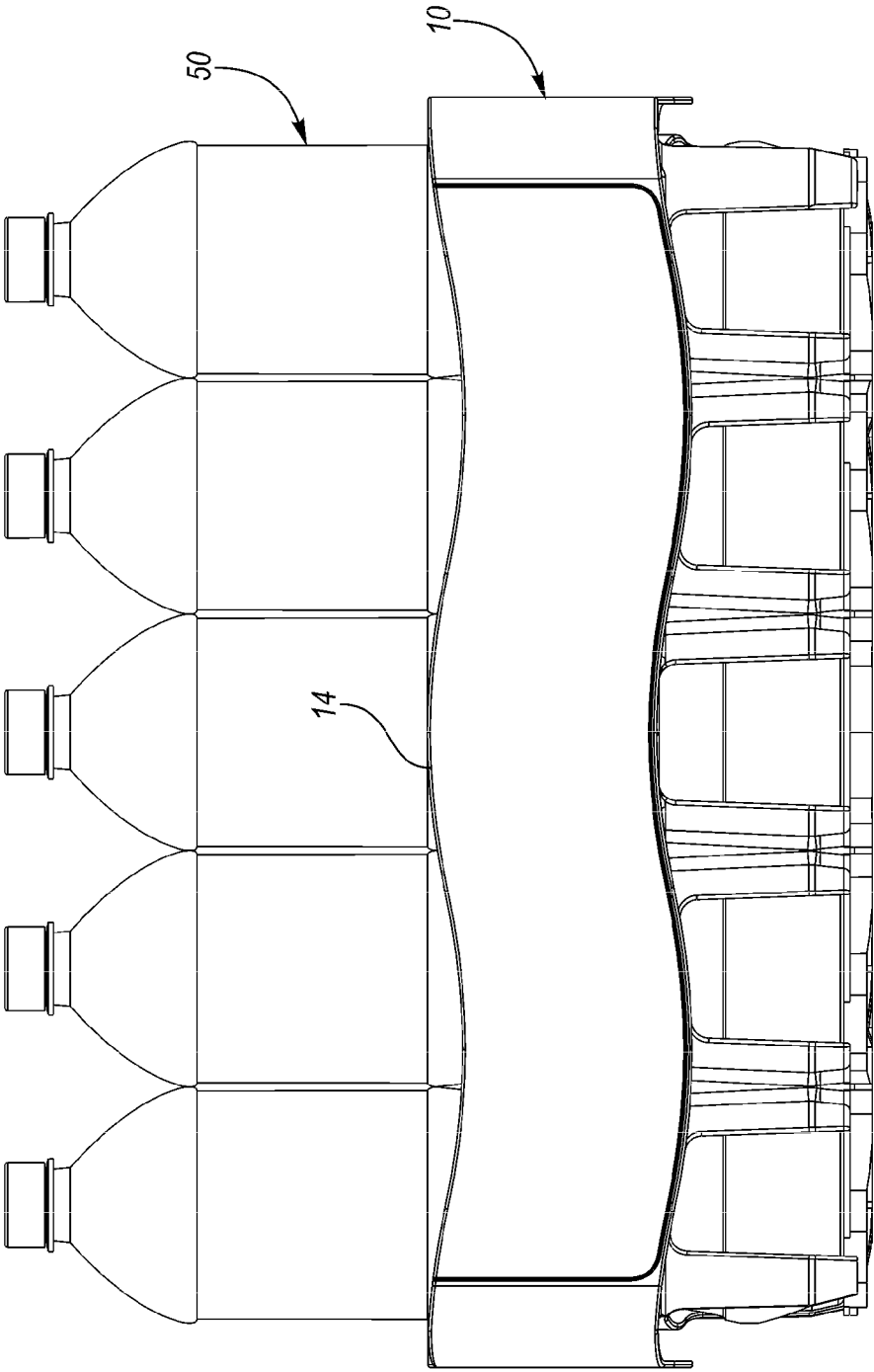


FIG. 14

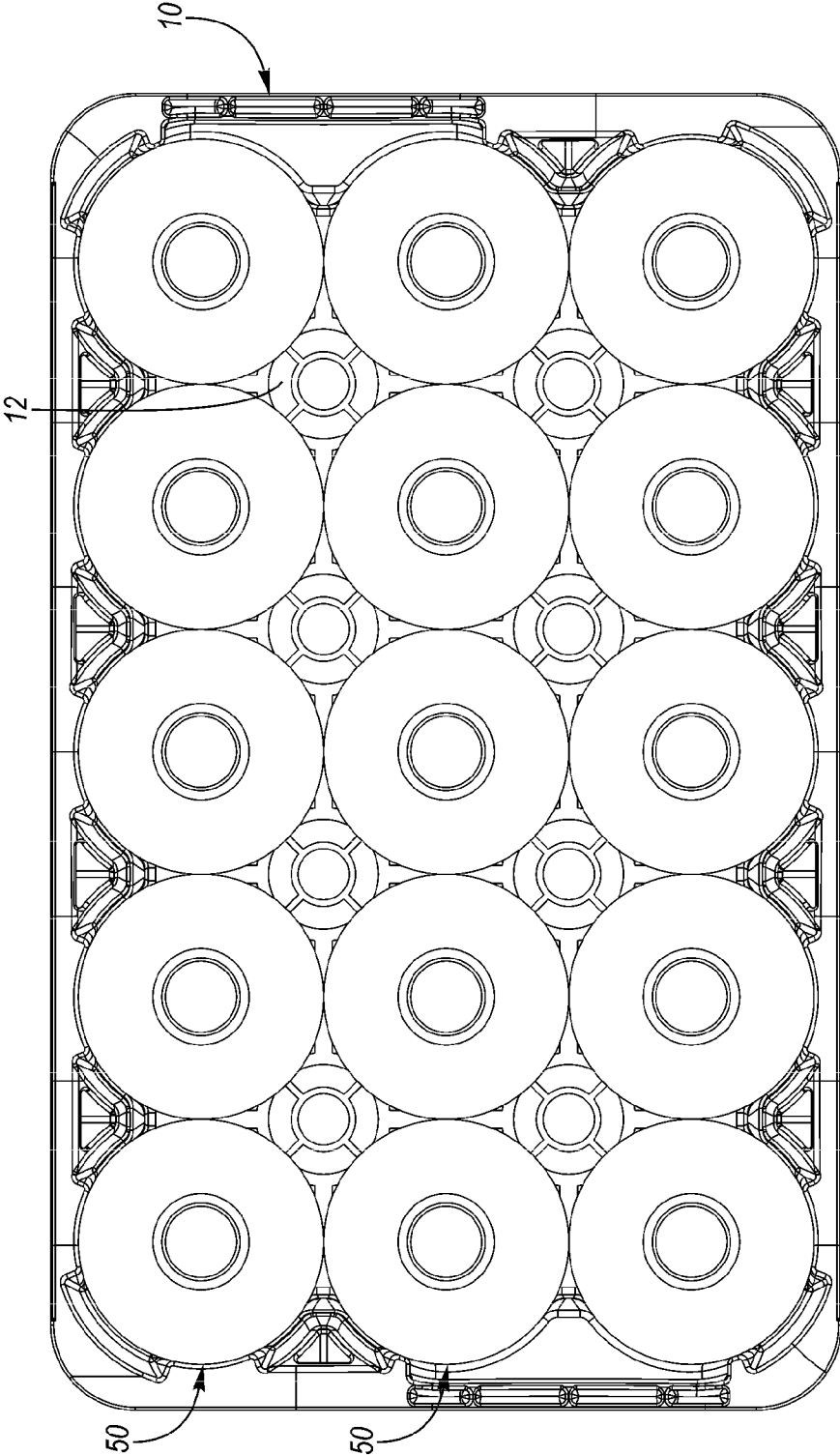
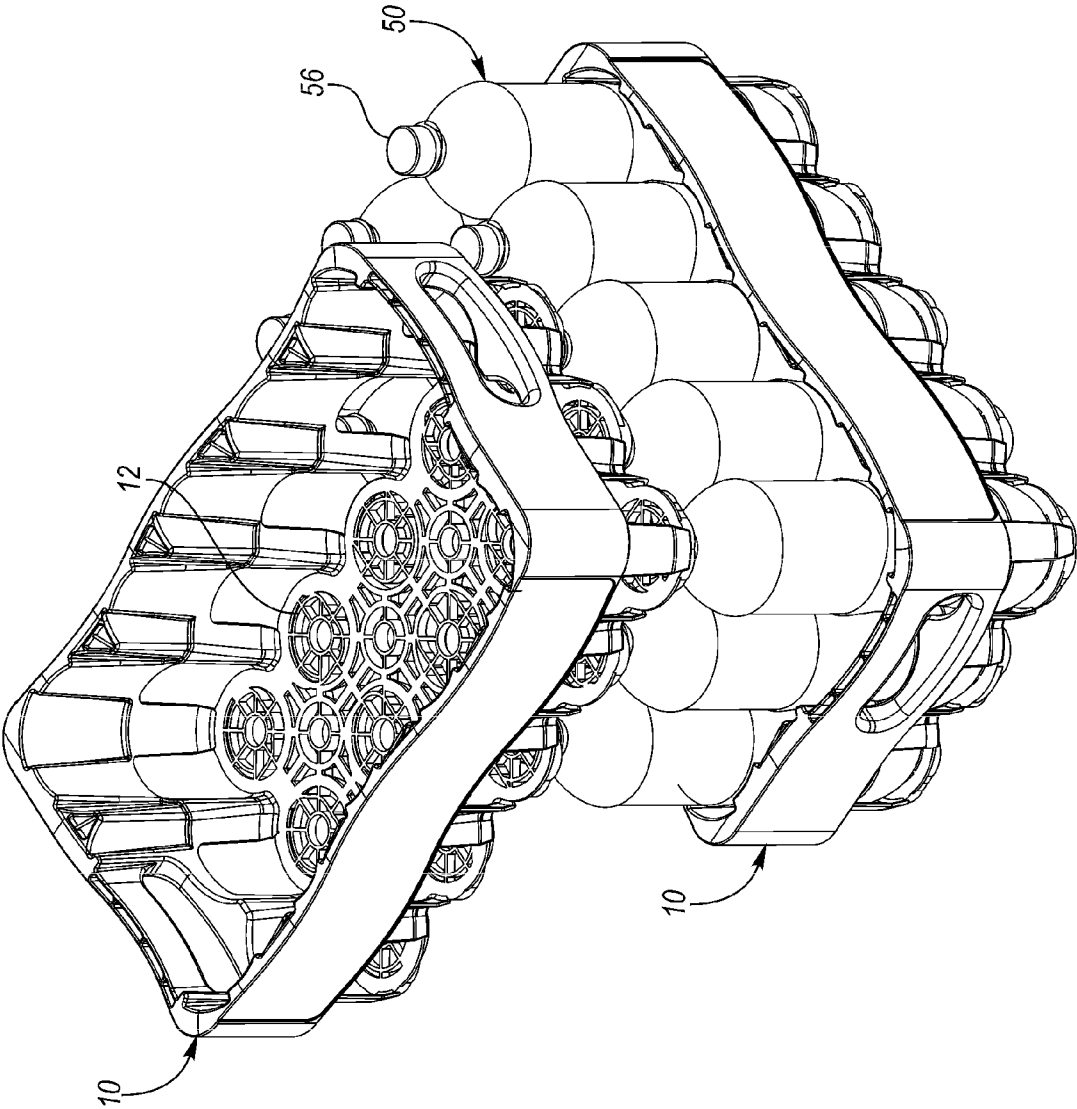


FIG. 15

FIG. 16



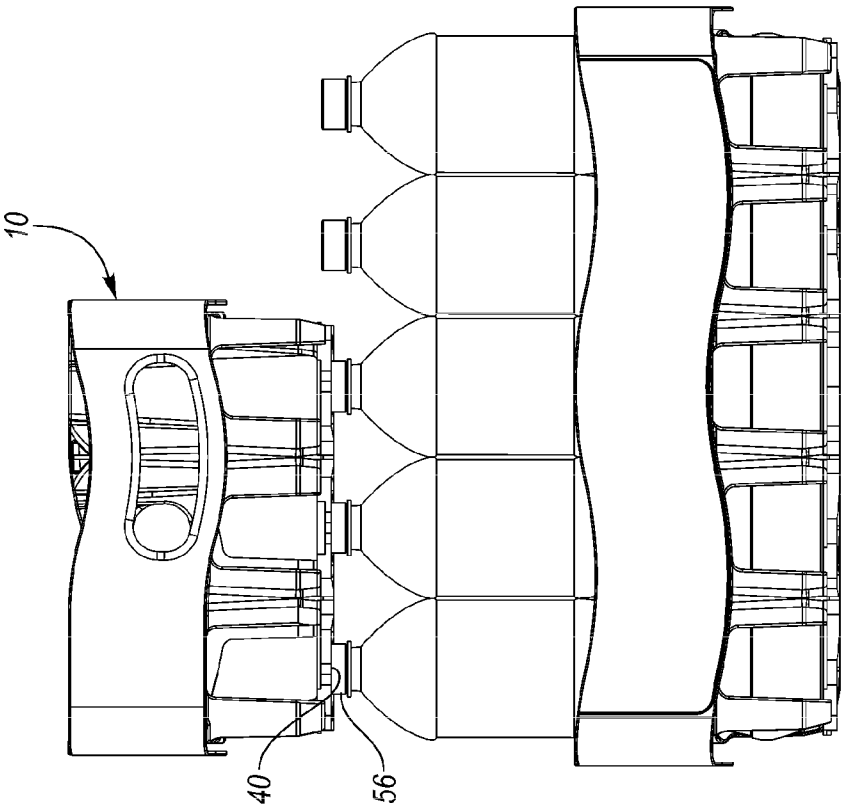


FIG. 17

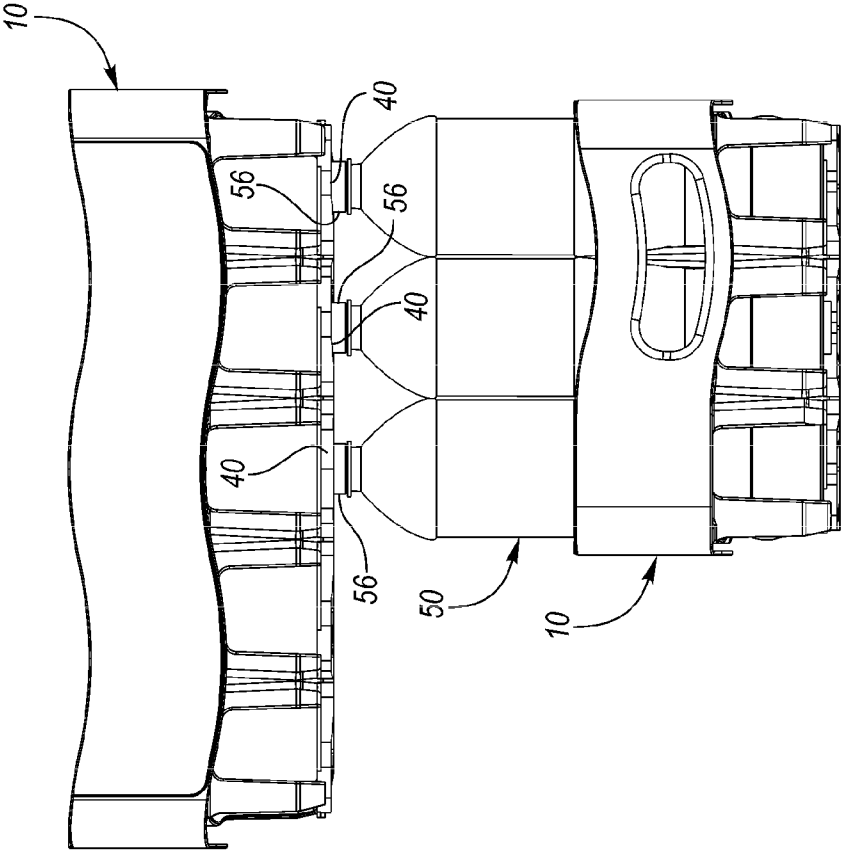
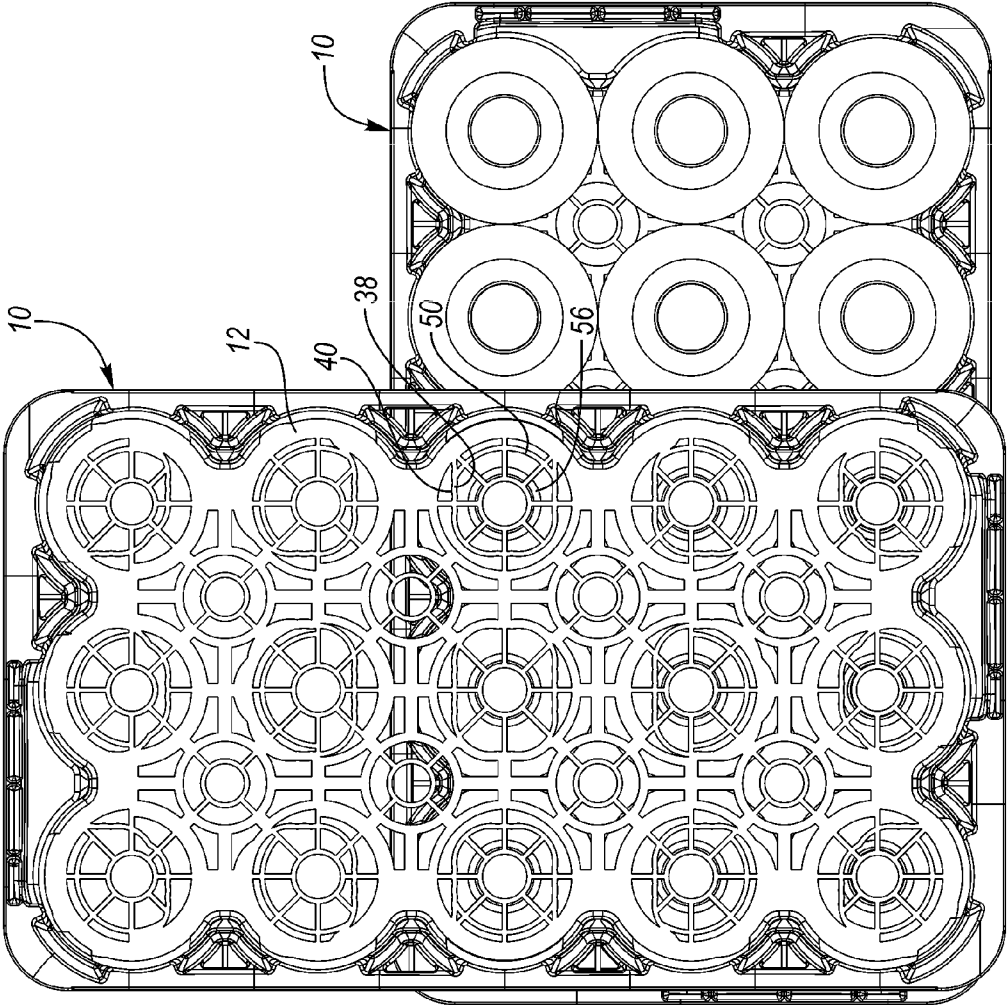


FIG. 18

FIG. 19



LOW DEPTH CRATE

BACKGROUND OF THE INVENTION

[0001] The present invention relates generally to crates and more particularly to crates for carrying beverage containers, such as bottles.

[0002] Many designs for crates for carrying beverage containers are known. Some crates include a base having a pair of opposed side walls and a pair of opposed end walls extending upwardly from the periphery of the base. For crates carrying smaller containers, e.g., approximately 16 to 24 ounce bottles, the bottles are typically arranged in a 4x6 arrangement, with four bottles arranged along each end wall. In this arrangement, the center of the handle is aligned between two of the bottles, thus providing sufficient room for the fingers of the user's hand grasping the handle. However, with bottles arranged with an odd number of bottles (e.g. three bottles) along each end wall, one of the bottles is aligned with the center of the handle, thus reducing the amount of space for the user's fingers. This is more typically done with larger bottles, such as 28 oz, 32 oz, 1 liter or 1.25 liter bottles, or larger.

[0003] Therefore, with an odd number of bottles along the end wall, the handle is moved outward from the bottle to increase the space for the user's fingers; however, this has drawbacks. First, the overall footprint of the crate is increased in that dimension. Second, if the crate is intended to be capable of cross-stacking, a certain ratio of length-to-width of the crate must be maintained. Therefore, the width of the crate must be increased as a result of moving the handle outward, further increasing the footprint. As another result of the increased width of the crate, bottle capture areas (recesses) on the bottom of the crate must be eliminated or opened up in order to accept the bottle caps of bottles of a crate cross-stacked therebelow. The bottle capture recesses may not fully capture the caps of the bottles and thus not provide stacking that is as stable as fully-captured bottles.

[0004] This problem is even more difficult with a high-band beverage crate having a band at the upper edges of columns In a high-band crate, the base of the crate must be able to nest into an identical crate below, so base has a smaller footprint than the upper edges of the band, leaving even less room for bottle capture on the bottom of the crate.

SUMMARY OF THE INVENTION

[0005] A crate according to one embodiment of the present invention includes a base, a pair of opposed side walls extending upward from the sides of the base and a pair of end walls extending upward from ends of the base. The end walls each include a pair of spaced apart end columns that act as partial spacers between the three adjacent bottles at that end. The handles are aligned off the center of the end wall. The handles are each aligned with one of the end columns so they can be aligned (e.g. centered) between adjacent bottles to provide more space for a user's hand. The handles may extend from one end column, over the other end column to the corner column In the embodiment shown, the handles may be each offset toward a different side wall to provide better balance of the weight of the crate.

[0006] The height of each handle may be aligned with a portion of the bottle having a reduced diameter. For example, some bottles have a tapered or contoured middle portion to

facilitate grasping the bottle. By aligning the height of the handle with the taper or contour, the space for the user's hand may be further increased.

[0007] The arrangement of the handles off-center allows the handle to be moved inward, which reduces the overall length of the crate. The reduced length of the crate then permits a reduced width of the crate per the required ratio for cross-stacking. The reduced width then permits a full bottle capture on the bottom surface of the crate.

[0008] These and other features of the application can be best understood from the following specification and drawings, the following of which is a brief description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1 is a perspective view of a crate according to one embodiment of the present invention.

[0010] FIG. 2 is a bottom perspective view of the crate of FIG. 1.

[0011] FIG. 3 is a top view of the crate of FIG. 1.

[0012] FIG. 4 is a bottom view of the crate of FIG. 1.

[0013] FIG. 5 is an end view of the crate of FIG. 1.

[0014] FIG. 6 is a side view of the crate of FIG. 1.

[0015] FIG. 7 is a perspective view of the crate nested with an identical crate.

[0016] FIG. 8 is a side view of the crates of FIG. 7.

[0017] FIG. 9 is an end view of the crates of FIG. 7.

[0018] FIG. 10 illustrates the crate of FIG. 1 loaded with bottles.

[0019] FIG. 11 illustrates a user's hand grasping one of the handles of the crate of FIG. 10.

[0020] FIG. 12 is an end perspective view of the crate and bottles of FIG. 10.

[0021] FIG. 13 is an end view of the crate and bottles of FIG. 10.

[0022] FIG. 14 is a side view of the crate and bottles of FIG. 10.

[0023] FIG. 15 is a top view of the crate and bottles of FIG. 10.

[0024] FIG. 16 is a perspective view of the crate of FIG. 1 cross stacked on an identical crate loaded with bottles.

[0025] FIG. 17 is a side view of the crates and bottles of FIG. 16.

[0026] FIG. 18 is an end view of the crates and bottles of FIG. 16.

[0027] FIG. 19 is a top view of the crates and bottles of FIG. 16.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0028] A crate 10 according to one embodiment of the present invention is shown in FIG. 1. The crate 10 includes a base 12, which may include a plurality of interconnected ribs. The crate 10 further includes a pair of opposed side walls 14 extending upward from side edges of the base 12. End walls 16 extend upward from end edges of the base 12. The crate interior is defined between the side walls 14 and end walls 16. The side walls 14 and end walls 16 include an upper band portion 18 and a lower wall portion 20.

[0029] A plurality of side columns 22 project upwardly from the base 12 to the upper band portion 18. Upper side column portions 23 continue upward and project inward from the upper band portion 18, aligned above the side columns 22.

Corner columns **24** project upwardly from the base **12** at the intersection of the end walls **16** and side walls **14**.

[0030] End columns **26** and **28** project upwardly from the base **12**. In each end wall **16**. Each end column **26** is aligned below a handle opening **30** in each end wall **16**. A lower handle portion **32** extends from each end column **28** across the adjacent end column **26** and connects to the corner column **24**. The end columns **26**, **28** are tapered toward the interior of the crate **10**. Upper column portions **29** project inward from the upper band portion **18**.

[0031] This alignment maximizes space for the user's hand. By aligning the handle with the column **26**, the handle is aligned with the column **26** that is positioned between the bottles. The handles **30** may be offset relative to one another. The handles **30** may be offset off the center of each end wall **16**. As shown, the handles **30** may be offset toward opposite side walls to balance the load in the crate **10** when it is loaded and being lifted and carried by a user's two hands (one in each handle opening **30**).

[0032] FIG. 2 is a bottom perspective view of the crate **10**. As shown, the base **12** includes a plurality of bottle-receiving recesses **38** for receiving the cap of a bottle on which the crate **10** is stacked. Each bottle-receiving recess **38** is completely circumscribed by a capture rib **40**. In this embodiment, the bottle-receiving recesses **38** are arranged in three rows (i.e. with three bottle-receiving recesses **38** aligned adjacent each end wall), but the advantages of the invention would be useful for any odd number of rows). In this embodiment, the bottle-receiving recesses **38** are arranged in a 3x5 array on the underside of the base **12**. Each capture rib **40** captures a bottle cap of a bottle on which the crate **10** is stacked. Obviously, the capture rib **40** does not need to be completely continuous, as small breaks in the capture rib **40** would not affect its function. In the disclosed crate **10**, the capture rib **40** is able to include portions at the periphery of the crate **10** because of the minimal footprint of the crate **10** relative to the bottles themselves. The capture rib **40** does not have breaks along the periphery of the base **12** that are larger than the caps of the bottles to be received.

[0033] FIG. 3 is a top view of the crate **10**. As shown, the handles **30** are positioned at the outer periphery of the footprint of the crate **10**. As is also shown in FIG. 3 (which is to scale), the ratio of the length (end to end) of the footprint of the crate **10** relative to the width (side to side) is the same as the bottle ratio, in this example, 5x3. Other ratios could also be used (such as 4x3), but the benefit is primarily for an odd number of bottles along the end walls **16**. Again, one handle **30** is offset toward one side wall **14** while the other handle **30** is offset toward the opposite side wall **14**.

[0034] FIG. 4 is a bottom view of the crate **10**. Again, the base **12** includes the bottle-receiving recess **38** which may be each completely circumscribed by one of the capture ribs **40**.

[0035] FIG. 5 is an end view of the crate **10**. Each handle **30** includes an opening defined between the lower handle portion **32** and an upper handle portion **33**. The handle **30** is aligned with a valley **34** in the upper band portion **18**. The upper handle portion **33** includes a convex lower surface for increased user comfort. The curve in the lower surface of the upper handle portion **33** is similar to the curve in the uppermost surface of upper band portion **18** of the end wall **16** just above the handle **30**. The valley **34** in the upper band portion **18** moves the handle **30** downward to align to a narrower portion of the bottles, as described further below.

[0036] FIG. 6 is a side view of the crate **10**. The upper band portion **18** includes a wave shape including a center peak portion **42**, end peak portions **44** and valley portions **46** between the center peak portion **42** and each end peak portion **44**. The uppermost and lowermost edges of the upper band portion **18** follow this same path and define the wave shape of the upper band portion **18** on the side walls **14**. In this embodiment, the upper band portion **18** is 3.25" tall from the upper edge to the lower edge, but taking into account the wave shape, it is 3.5" from peak to peak. This provides an increased contact surface on the sides of the crate **10** for grasping with equipment (such as the Tygard Claw). The large upper band portion **18** reduces the height of the lower wall portion **20**. The taper on the lower wall portion **20** (due to mold constraints) causes the base **12** to get smaller as the lower wall portion **20** gets taller. Therefore, the large upper band portion **18** and the relatively short lower wall portion **20** further contribute to the full bottle cap capture on the base **12**.

[0037] FIG. 7 shows the crate **10** nested with an identical crate **10**. The lower wall portion **20** of the upper crate **10** is received between the upper band portion **18** of the lower crate **10**. This reduces the overall stacking height of the empty crates **10**. The matched wave shapes of the upper band portions **18** of the crates fit together, such that peaks in the upper surface of the upper band portion **18** of the lower crate **10** are received in recesses in the lower most edge of the upper band portion **18** of the upper crate **10**. FIG. 8 is a side view of the crates **10** of FIG. 7. FIG. 9 is an end view of the crates **10** of FIG. 7. As shown in FIGS. 7-9, the lower wall portion **20** of the upper crate **10** nests completely within the upper band portion **18** of the lower crate **10**.

[0038] FIG. 10 is a perspective view of the crate **10** with a plurality of bottles **50** stored therein. As shown, one of the bottles **50** abuts the end columns **26**. The bottles **50** in this example are 1 liter and include a body **52** having a middle portion of reduced diameter **58** (FIG. 11) relative to portions of the body **52** below and above. The bottle **50** further includes a neck portion **54** on which is secured a bottle cap **56**.

[0039] As shown in FIG. 11, the handle **30** is aligned (centered) between two of the three end bottles **50**, such that the user will have more room for their hand. The handle **30** of the crate **10** may also be vertically aligned with the portion of reduced diameter **58** of the bottle **50**. These factors permit the handle **30** to be moved inward toward the interior of the crate **10** and reduce the footprint of the crate **10**. There is a gap between the inner surface of upper handle portion **33** and the reduced portion **58** of the adjacent bottles **50** in which the user can place their fingers when grasping the handle **30**.

[0040] FIG. 12 is an end perspective view of the crate **10** and bottles **50**. Because the upper band portion **18** dips down, the handle opening is positioned to permit a barcode scanner to read a barcode on one of the bottles **50** through the handle opening.

[0041] FIG. 13 is an end view of the crate **10** and bottles **50**. FIG. 14 is a side view of the crate **10** and bottles **50**. FIG. 15 is a top view of the crate **10** and bottles **50**.

[0042] The caps **56** of the bottles **50** of a crate **10** would be received within the capture ribs **40** of the crate **10** stacked or cross-stacked thereon. With a 3x5 arrangement, the cross-stacking is more complicated than a 2x4 arrangement, but the cross-stacking arrangements are known and are accommodated by the capture ribs **32** of the crate **10**.

[0043] FIG. 16 is a perspective view of the crate **10** of FIG. 1 cross stacked on an identical crate **10** loaded with bottles **50**.

FIG. 17 is a side view of the crates 10 and bottles 50 of FIG. 16. FIG. 18 is an end view. The bottle caps 56 of the bottles 50 in the lower tray 10 are received in the bottle-receiving recesses 38 each within the capture ribs 40. FIG. 19 is a top view of the crates 10 and bottles 50 of FIG. 19. As can be seen in FIG. 18, the bottle caps 56 of the bottles 50 in the lower tray 10 are received in the bottle-receiving recesses 38 each within the capture ribs 40.

[0044] As is known, the crates 10 are injection molded as a single piece of a suitable plastic, such as polypropylene, polyethylene or other suitable material.

[0045] 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 spirit or scope.

What is claimed is:

1. A nestable crate comprising:
 - a base having opposed side edges and opposed end edges, the base having an array of bottle capture areas on an underside thereof including an odd number of bottle capture areas adjacent each end edge;
 - a plurality of side columns extending upward from each of the side edges of the base;
 - at least one end column extending upward from one of the end edges of the base; and
 - an upper band portion at an upper end of the at least one end column, a handle formed in the upper band portion above the at least one end column.
2. The crate of claim 1 wherein the upper band portion includes a valley aligned with the handle.
3. The crate of claim 1 wherein the handle includes an opening between an upper handle portion and a lower handle portion, the upper handle portion including a convex lower surface.
4. The crate of claim 3 wherein the lower handle portion is connected to the base via the at least one end column.
5. The crate of claim 4 wherein the lower handle portion curves downward and can be received in the valley of an upper handle portion of an identical crate in which the crate is nested.
6. The crate of claim 1 wherein the upper band portion extends along upper ends of the plurality of side columns and the upper band portion includes at least one valley portion and at least one peak portion.
7. The crate of claim 1 wherein the bottle capture areas are at least partially circumscribed by capture ribs and wherein the capture ribs do not have any breaks along a periphery of the base.
8. A nestable crate comprising:
 - a base;
 - a pair of opposed side walls extending upward the base, a longitudinal centerline of the crate equally spaced between the side walls; and

a pair of opposed end walls extending upward from the base, each end wall having a handle formed therein, wherein the handles are offset from the longitudinal centerline of the crate.

9. The crate of claim 8 wherein the base has an array of bottle capture areas on an underside thereof including an odd number of bottle capture areas adjacent each end wall.

10. The crate of claim 9 wherein the handles are aligned between two of the bottle capture areas adjacent the respective end walls of the crate.

11. The crate of claim 8 wherein one of the handles is offset toward one of the side walls and the other of the handles is offset toward the other of the handles.

12. The crate of claim 11 further including an end column extending from the base to the handle.

13. The crate of claim 8 further including a plurality of bottles therein, wherein the bottles have a reduced diameter portion aligned with the handles.

14. The crate of claim 8 wherein each of the end walls includes at least one end column extending upward from the base and an upper band portion at an upper end of the at least one end column.

15. A nestable crate comprising:

- a base having opposed side edges and opposed end edges, the base having an array of bottle capture areas on an underside thereof including an odd number of bottle capture areas adjacent each end edge;
- a plurality of side columns extending upward from each of the side edges of the base;
- a plurality of end columns extending upward from each of the end edges of the base; and

- an upper band portion extending about a periphery of the crate at upper ends of the plurality of end columns and plurality of side columns, a handle formed in the upper band portion above at least one of the plurality of end columns, a handle opening through the upper band portion at each end of the crate, wherein the plurality of end columns and the plurality of side columns are nestable within an upper band portion of an identical crate, wherein the crate can be cross-stacked on the identical crate loaded with bottles.

16. The nestable crate of claim 15 wherein the crate is cross-stacked on the identical crate loaded with bottles, with bottle caps of the bottles fully captured by the bottle capture areas of the crate.

17. The nestable crate of claim 16 wherein the handles are each aligned with one of the plurality of end columns at the respective ends of the crate.

18. The nestable crate of claim 15 wherein one of the handles is offset closer to one of the sides of the crate and the other of the handles is offset closer to the other of the sides of the crate.

19. The nestable crate of claim 15 wherein the upper band portion includes a valley aligned with the handles at each end of the crate.

* * * * *