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(54) **PALLET WITH TRAY STACKING STRUCTURE**

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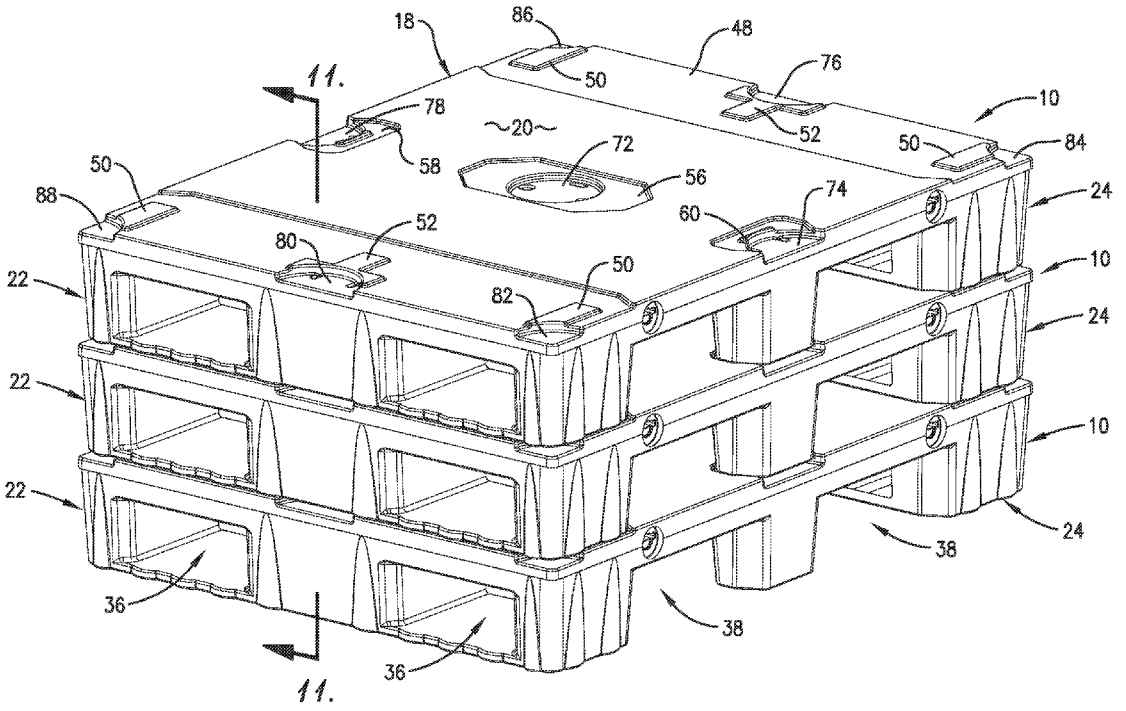
(57) **ABSTRACT**

A pallet comprises a deck having an upper support surface; a plurality of support members depending from the deck; pallet stacking structure for retaining a second pallet stacked on the pallet, and tray retaining and stacking structure for retaining a tray on the pallet. The pallet stacking structure includes a plurality of first recessed regions formed in the upper support surface for receiving support members of a second pallet stacked on the first pallet. The tray retaining and stacking structure includes a plurality of second recessed regions formed in the upper support surface of the pallet for receiving the legs of a tray when the tray is supported on the pallet. The second recessed regions are formed within the outer boundaries of the first recessed regions and are deeper than the first recessed regions. The depths of the second recessed regions are slightly less than a length of the tray legs such that the bottoms of the tray legs touch the floors of the second recessed regions to transfer the weight of the trays downwardly through the tray legs and to the pallet rather than through the upper support surfaces of the tray.



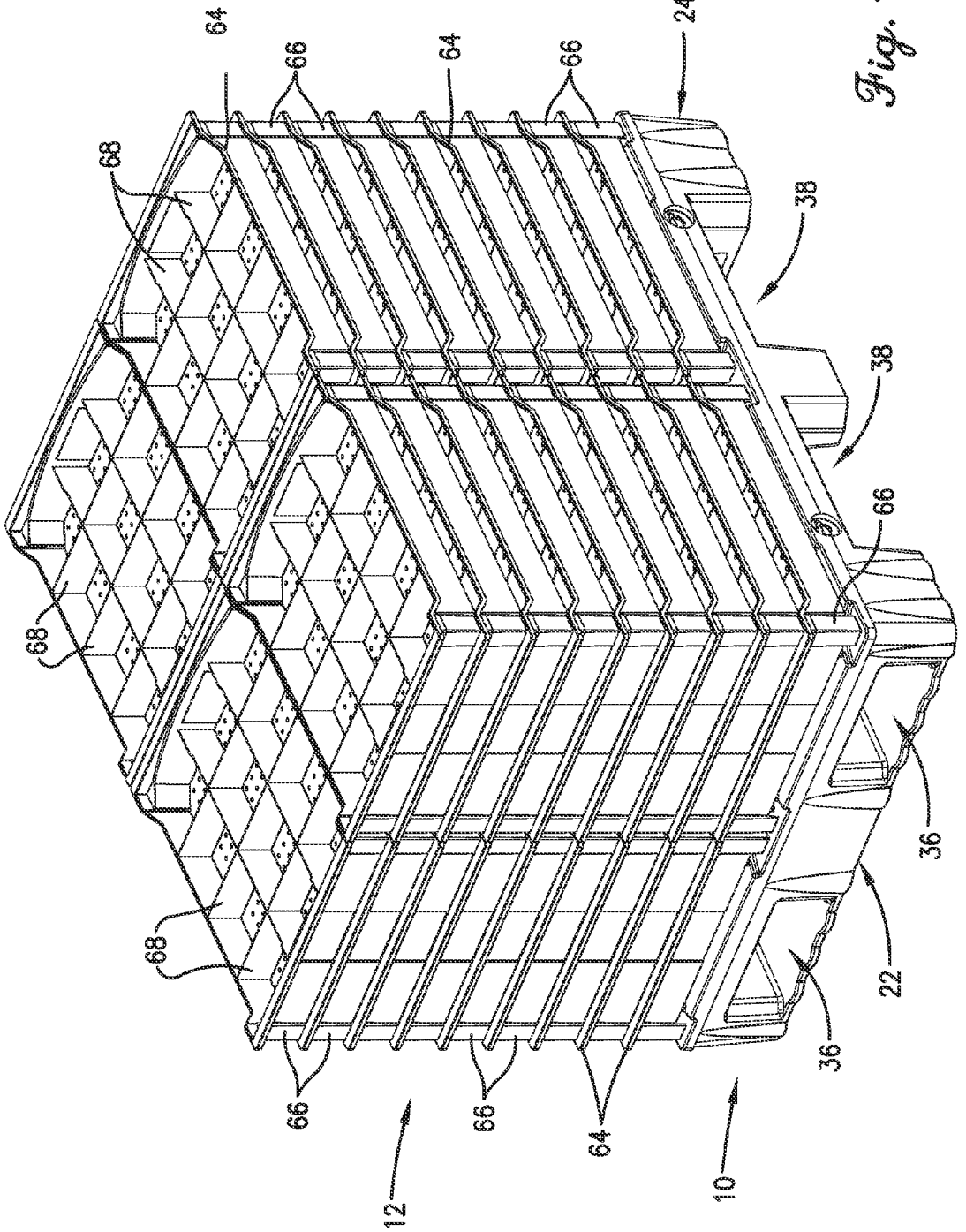


Fig. 1.

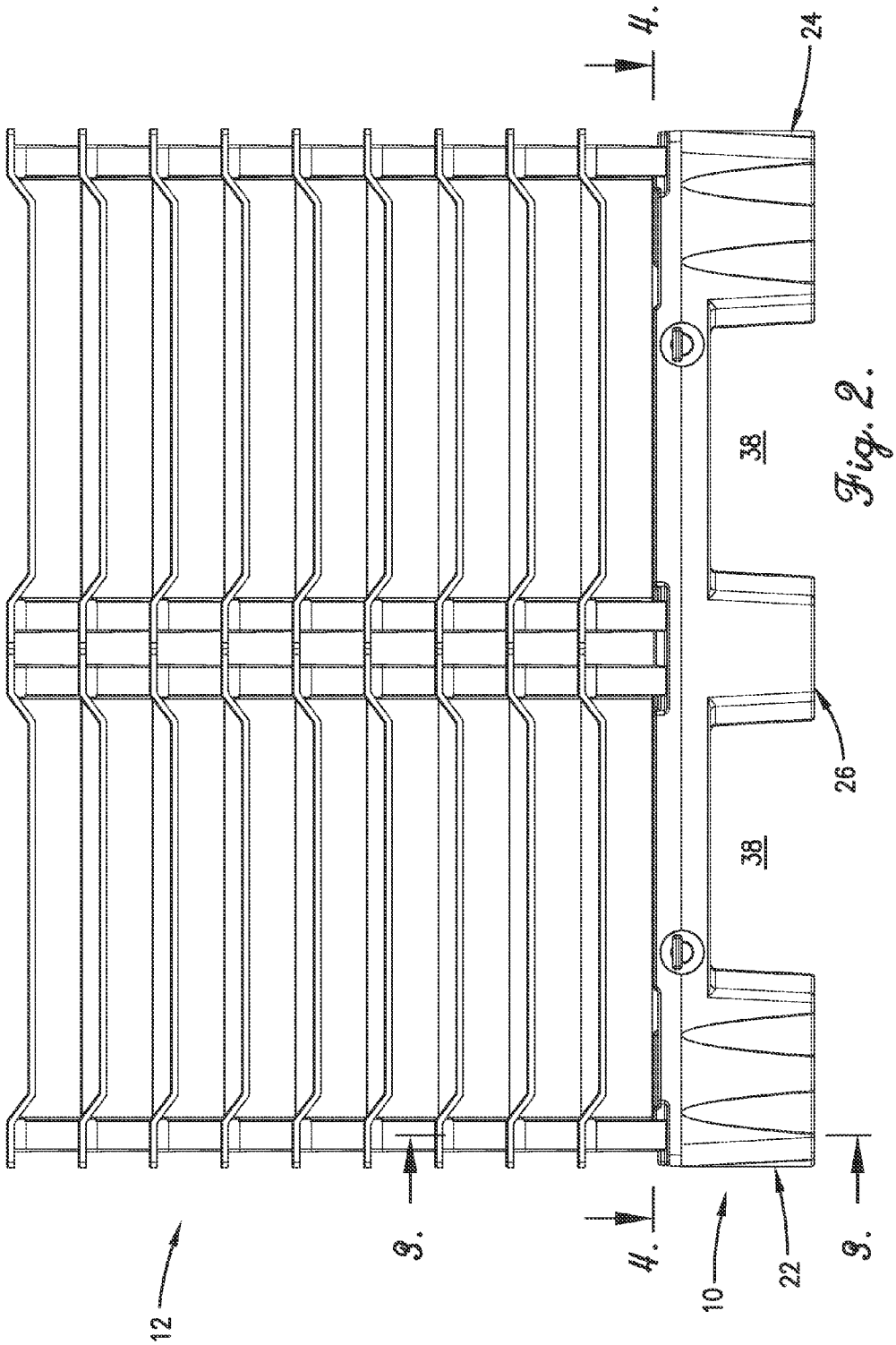


Fig. 2.

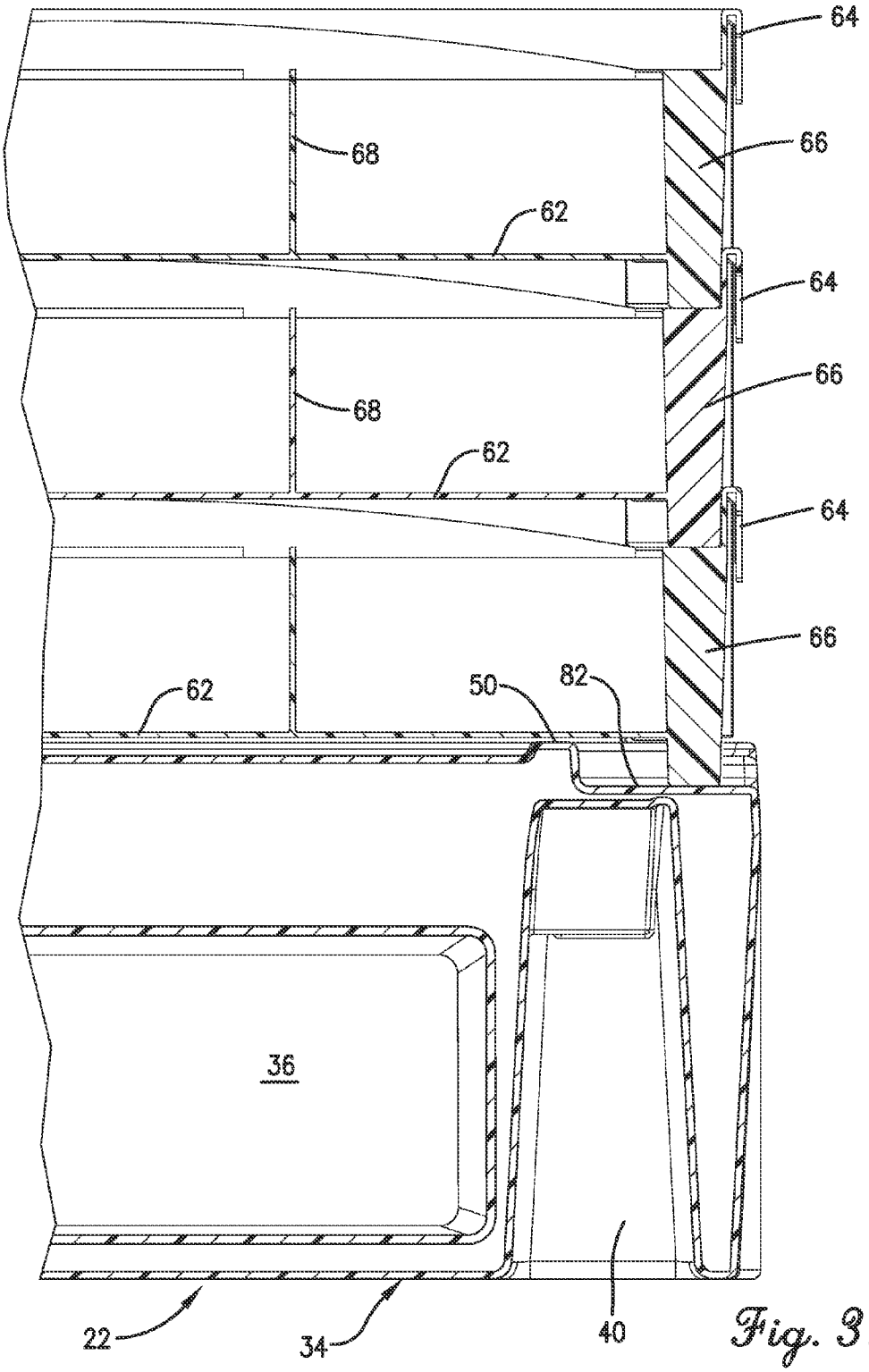


Fig. 3.

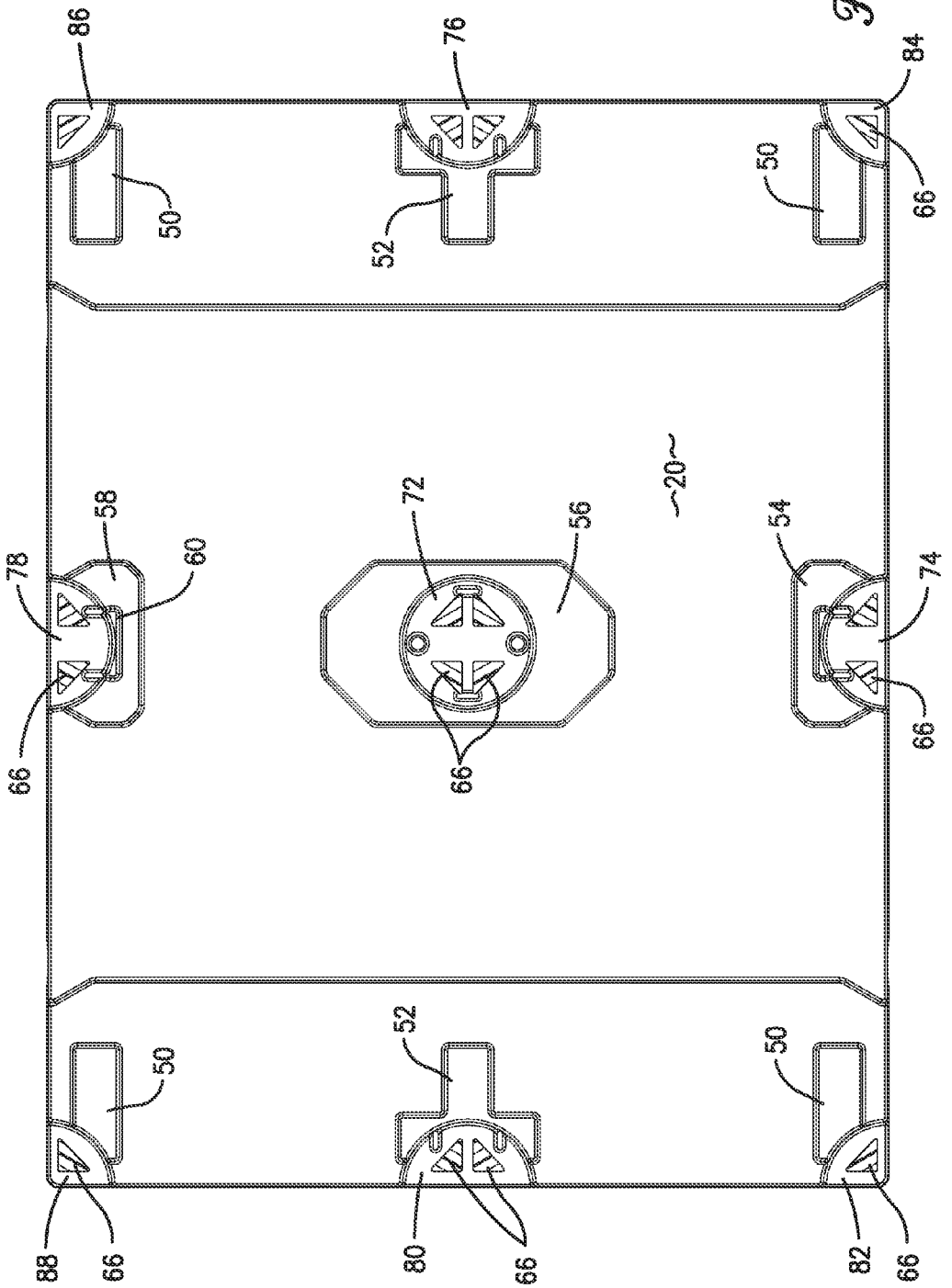

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Fig. 4.

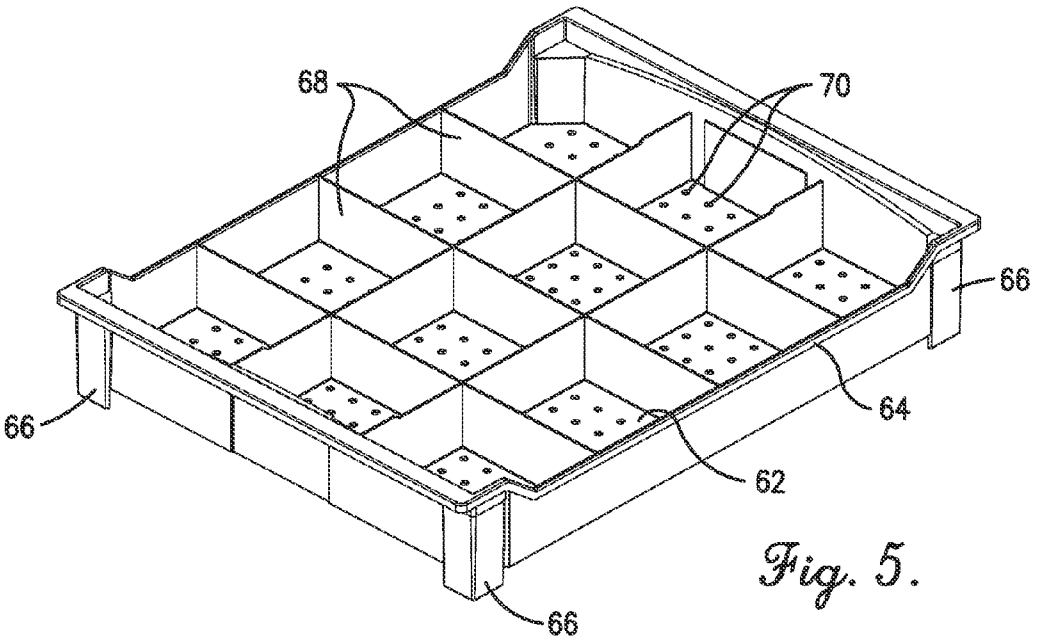


Fig. 5.

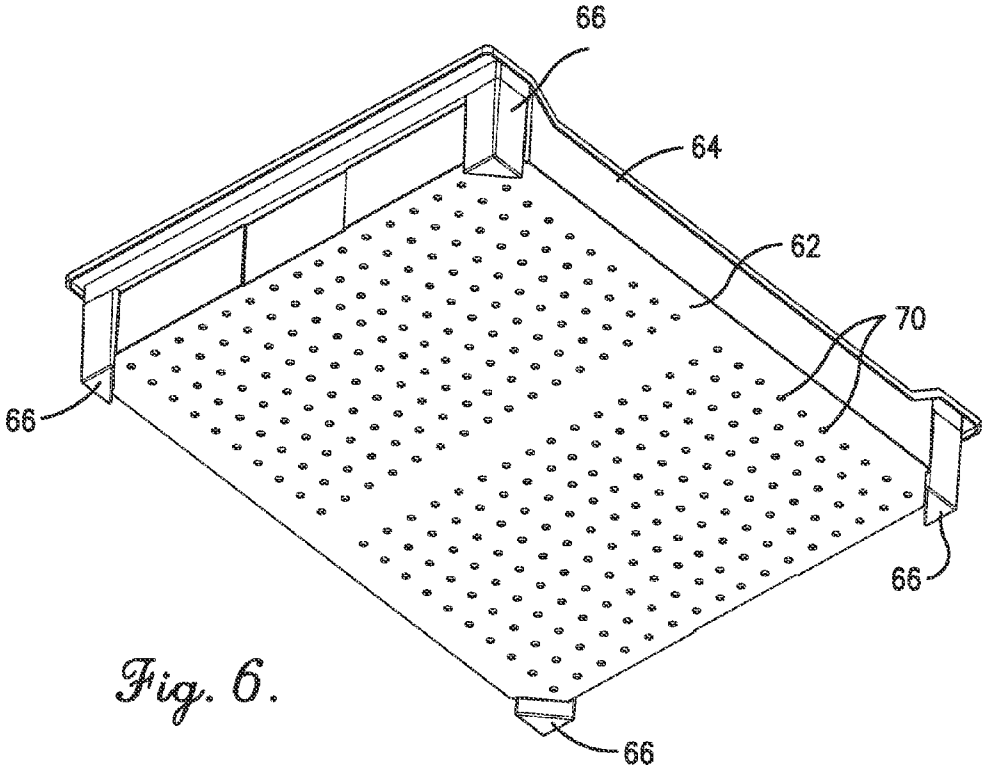
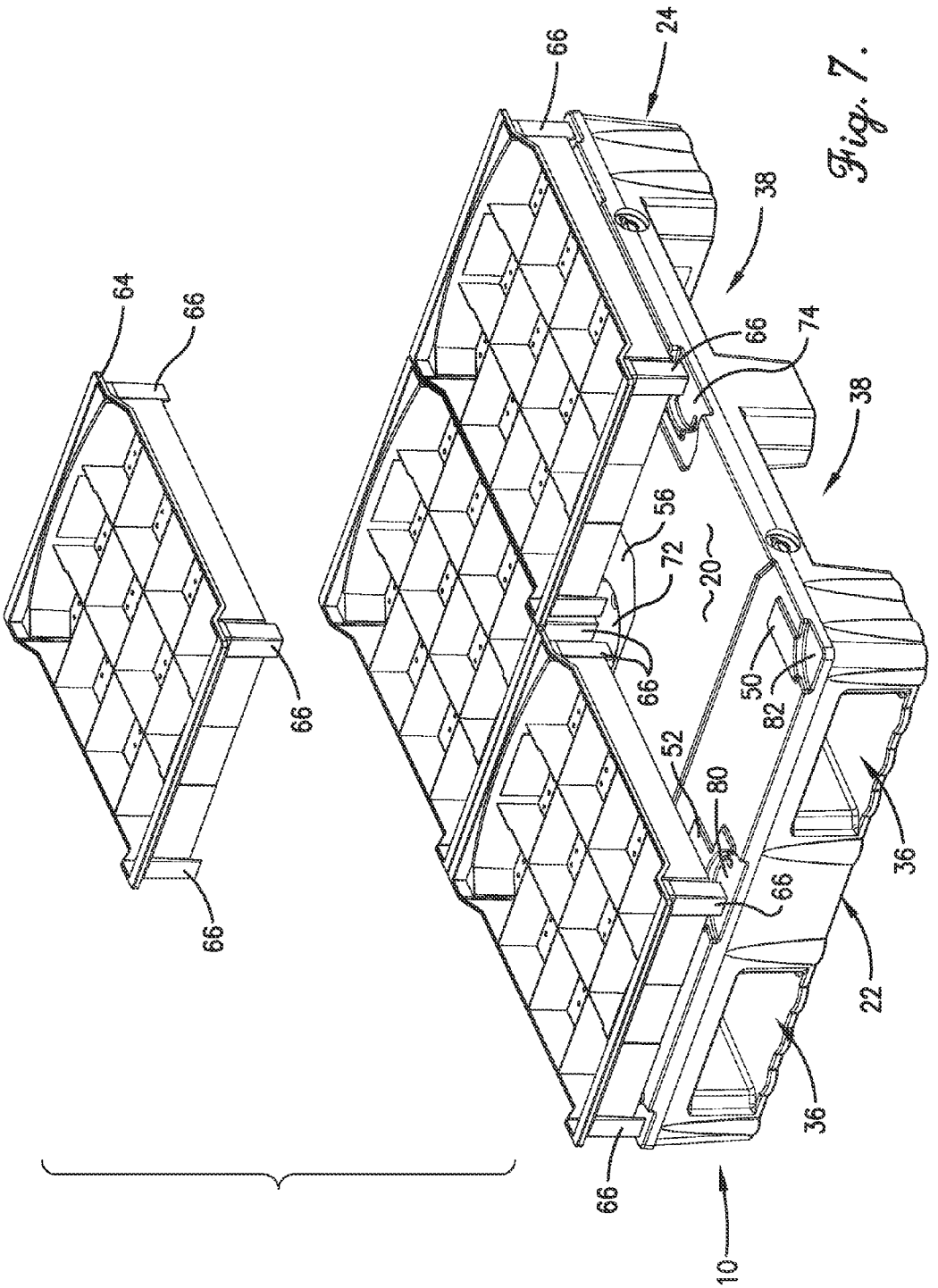


Fig. 6.



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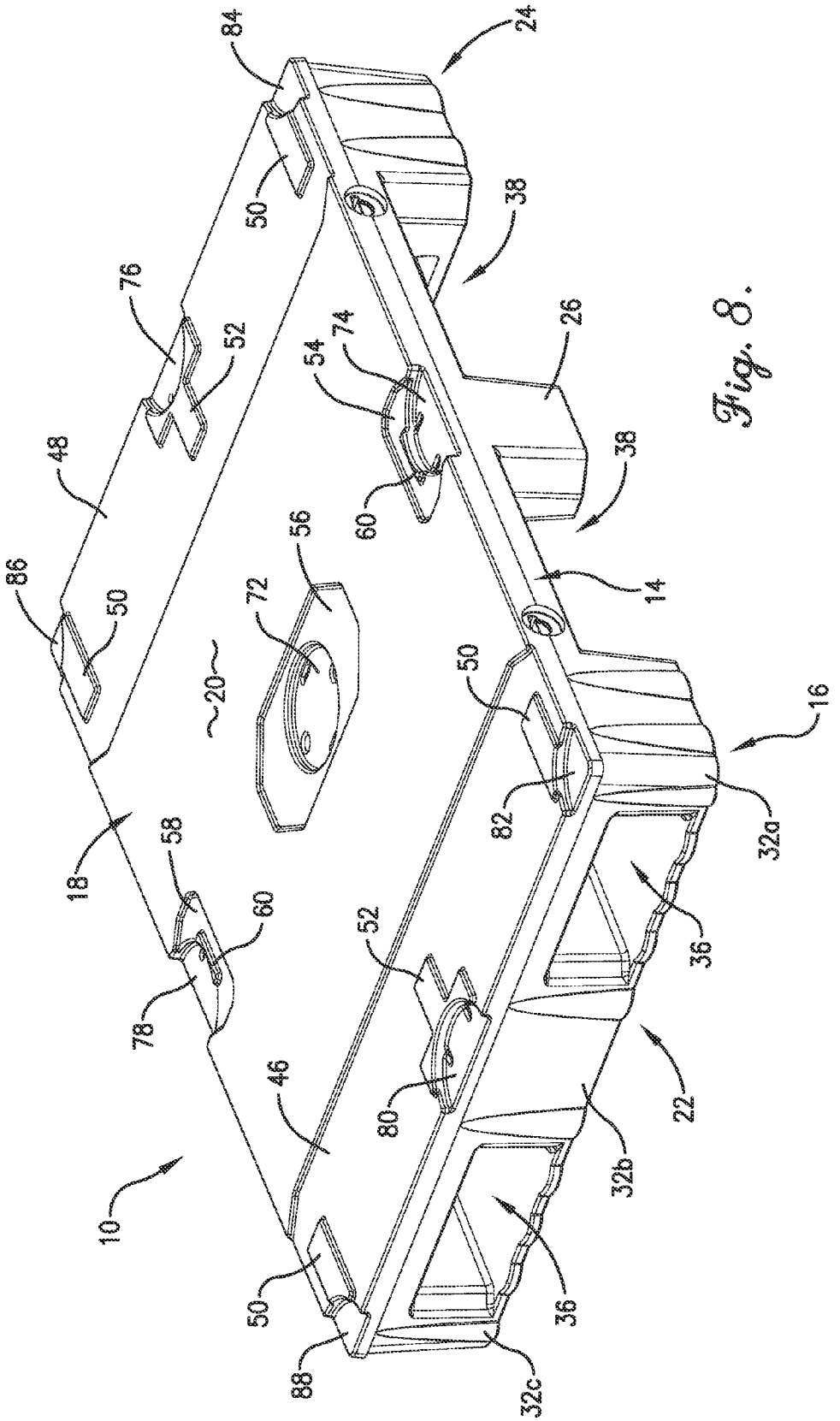
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Fig. 8.

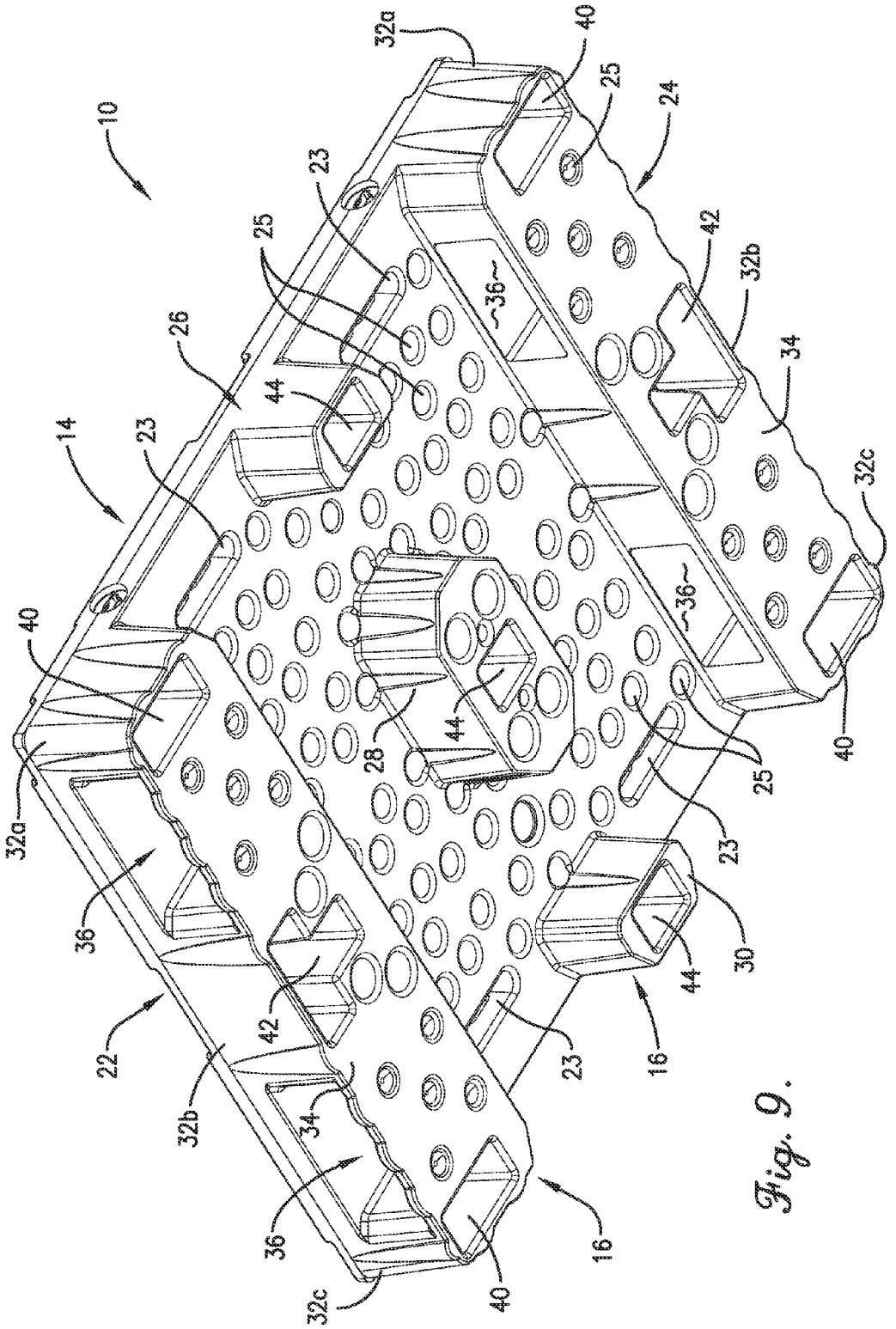

Fig. 9.

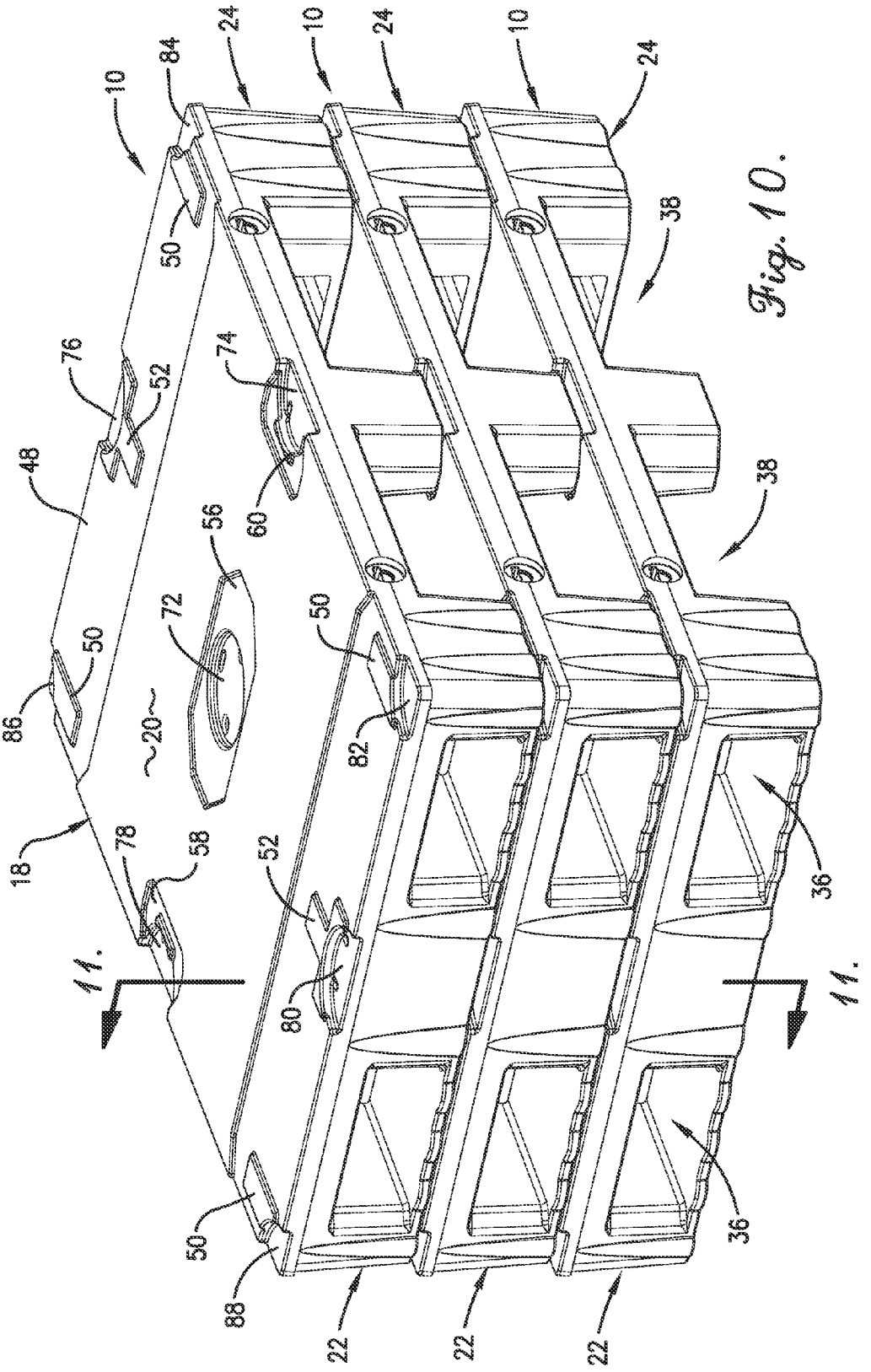

Fig. 10.

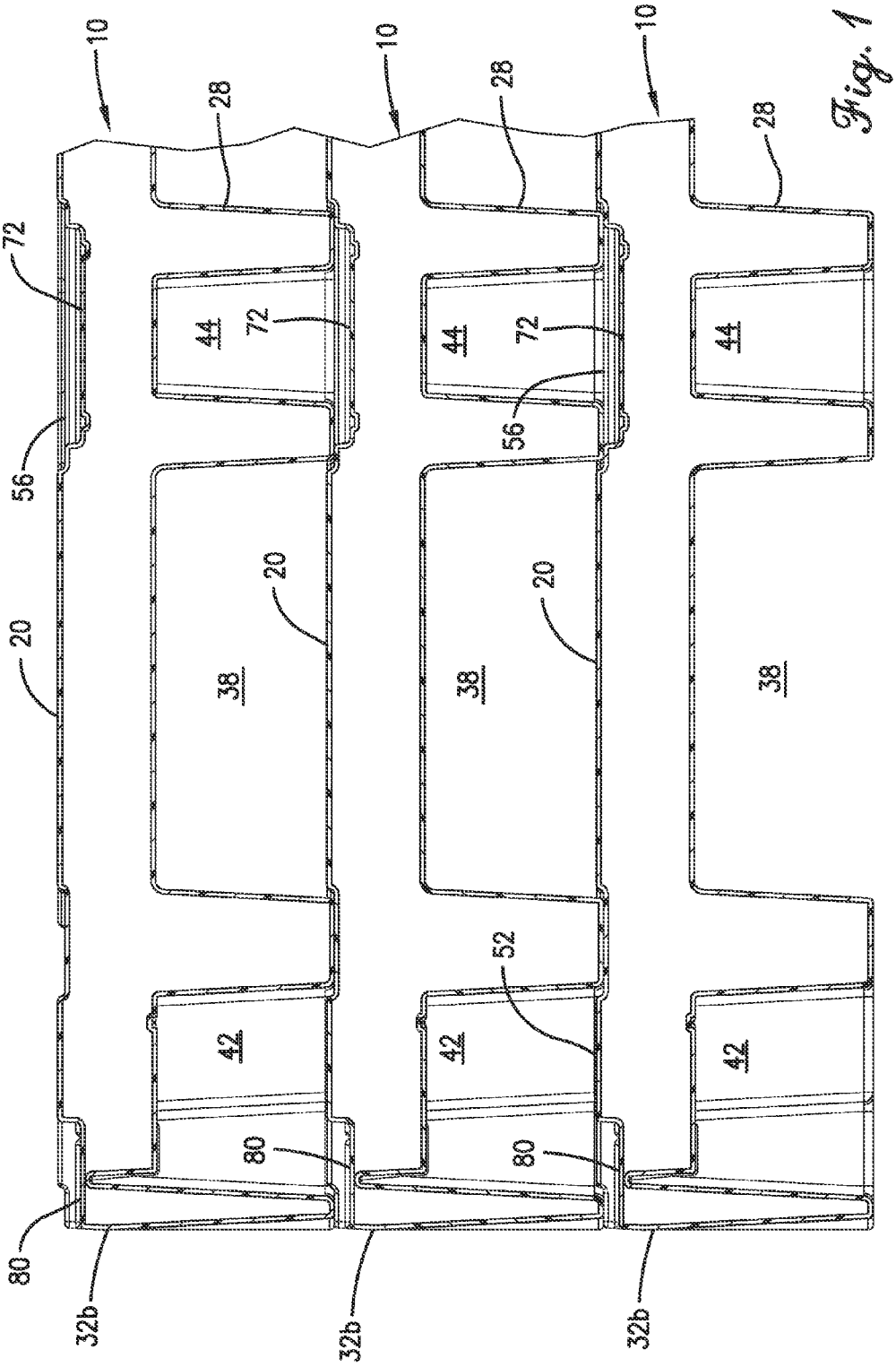
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Fig. 11.

PALLET WITH TRAY STACKING STRUCTURE

RELATED APPLICATIONS

[0001] This patent application is a continuation, and claims priority benefit with regard to all common subject matter, of earlier-filed U.S. patent application Ser. No. 14/570,039 filed on Dec. 15, 2014, and entitled "PALLET WITH TRAY STACKING STRUCTURE." The earlier-filed patent application is hereby incorporated by reference in its entirety into the present application.

BACKGROUND

[0002] Pallets are often used for supporting and moving various types of articles. Pallets may be constructed from many different materials, including wood, metal, fiberglass or plastic, and are typically designed to be loaded and moved by forklifts, hand trucks, cranes or other specialized handling or loading equipment.

[0003] Most pallets have a deck with an upper support surface and a number of support members depending from the deck to elevate the deck and hence the articles supported on its upper surface above the ground to prevent moisture, dirt and other debris from coming into contact with the supported articles. When not in use, the pallets are often stacked to conserve floor space. Some pallets are therefore formed with pallet stacking structure that supports and stabilizes multiple pallets when stacked.

[0004] Pallets are often used to support trays that may be used to hold miscellaneous small objects such as fruit. The trays typically have an upper support surface with a circumscribing outer lip or wall and a number of legs that depend from the support surface to support the upper support surface above a pallet or other surface. The trays are typically designed to be stacked on top of one another such that a number of the trays may be supported on a single pallet. Unfortunately, when multiple trays are stacked on a pallet in this manner, the weight of the trays and the parts held in the trays can exert tremendous forces on the trays at the bottom of the stack and damage the trays. Such damage can be exacerbated by the pallet stacking structure described above because it often interferes with the proper placement and alignment of the trays on the pallet.

SUMMARY

[0005] The present invention solves the above-described problems and provides a distinct advance in the art of pallets by providing a pallet with both pallet stacking structure and tray retaining and stacking structure. The pallet stacking structure is integrated in the upper surface of the pallet deck and facilitates the stacking of multiple pallets when they are not in use. The tray retaining and stacking structure is also integrated in the upper surface of the pallet deck and facilitates the stacking of multiple trays on the pallet. Importantly, the pallet stacking structure and tray retaining and stacking structure are cooperatively designed and configured so as not to interfere with one another as described below.

[0006] A pallet constructed in accordance with one embodiment of the invention may be molded from plastic or other synthetic resin materials and broadly comprises a deck; a plurality of support members; the pallet stacking structure briefly described above; and the tray retaining and stacking structure briefly described above.

[0007] The deck has an upper support surface on which trays, other pallets, and other items may be supported. The support members, which may include runners, legs, or feet, depend from the bottom of the deck for elevating the deck above the ground.

[0008] An embodiment of the pallet stacking structure includes a plurality of first recessed regions formed in the upper support surface. The first recessed regions receive the support members of a second pallet stacked on the first pallet to "lock" adjacently stacked pallets together and prevent them from shifting laterally relative to one another.

[0009] An embodiment of the tray retaining and stacking structure includes a plurality of second recessed regions formed in the upper support surface of the pallet. The second recessed regions receive the legs of a tray supported on the pallet and prevent the tray, and any trays stacked on top the tray, from shifting laterally relative to the pallet.

[0010] Importantly, the pallet stacking structure and tray retaining and stacking structure are cooperatively designed and configured so as not to interfere with one another. Specifically, the second recessed regions of the tray retaining and stacking structure are formed within the outer boundaries of the first recessed regions of the pallet stacking structure and are deeper than the first recessed regions. This facilitates the alignment of trays on the pallet and reduces the likelihood that the tray legs will seat within the recesses of the pallet stacking structure.

[0011] The tray retaining and stacking structure is also designed and configured to more effectively support the weight of multiple stacked trays. Specifically, the depths of the second recessed regions are slightly less than the length of the tray legs so that the bottoms of the tray legs touch the floors of the second recessed regions and elevate the upper support surfaces of the trays slightly above the pallet. This transfers the weight of the trays, and the contents in the trays, downwardly through the tray legs and to the pallet rather than through the upper support surfaces of the trays. When multiple trays are stacked on top of one another, the weight of the trays is channeled linearly downwardly through all the tray legs and to the upper surface of the pallet. This is advantageous because the tray legs are typically thicker and stronger than the upper support surfaces of the tray and can therefore more effectively support and transfer the weight of the trays.

[0012] This summary is provided to introduce a selection of concepts in a simplified form that are further described in the detailed description below. This summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used to limit the scope of the claimed subject matter. Other aspects and advantages of the present invention will be apparent from the following detailed description of the embodiments and the accompanying drawing figures.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

[0013] Embodiments of the present invention are described in detail below with reference to the attached drawing figures, wherein:

[0014] FIG. **1** is a perspective view of a pallet constructed in accordance with an embodiment of the present invention and shown with a number of trays stacked thereon.

[0015] FIG. **2** is a side elevational view of the pallet and trays of FIG. **1**.

[0016] FIG. **3** is a fragmentary vertical sectional view of the pallet and trays taken along line **3-3** of FIG. **2**.

[0017] FIG. **4** is a top plan sectional view taken along line **4-4** of FIG. **2** and showing the upper support surface of the pallet and the feet of four trays supported on the pallet.

[0018] FIG. **5** is a top perspective view of an exemplary tray that may be placed on the pallet.

[0019] FIG. **6** is a bottom perspective view of the tray of FIG. **5**.

[0020] FIG. **7** is a perspective view of the pallet with three trays supported thereon and a fourth tray shown removed from the pallet.

[0021] FIG. **8** is a top perspective view of the pallet without any trays supported thereon.

[0022] FIG. **9** is a bottom perspective view of the pallet.

[0023] FIG. **10** is a perspective view of three pallets in a stacked configuration.

[0024] FIG. **11** is a fragmentary vertical sectional view of the three structured pallets taken along line **11-11** of FIG. **10**.

[0025] The drawing figures do not limit the present invention to the specific embodiments disclosed and described herein. The drawings are not necessarily to scale, emphasis instead being placed upon clearly illustrating the principles of the invention.

DETAILED DESCRIPTION

[0026] The following detailed description of embodiments of the invention references the accompanying drawings. The embodiments are intended to describe aspects of the invention in sufficient detail to enable those skilled in the art to practice the invention. Other embodiments can be utilized and changes can be made without departing from the scope of the claims. The following detailed description is, therefore, not to be taken in a limiting sense. The scope of the present invention is defined only by the appended claims, along with the full scope of equivalents to which such claims are entitled.

[0027] In this description, references to "one embodiment", "an embodiment", or "embodiments" mean that the feature or features being referred to are included in at least one embodiment of the technology. Separate references to "one embodiment", "an embodiment", or "embodiments" in this description do not necessarily refer to the same embodiment and are also not mutually exclusive unless so stated and/or except as will be readily apparent to those skilled in the art from the description. For example, a feature, structure, act, etc. described in one embodiment may also be included in other embodiments, but is not necessarily included. Thus, the present technology can include a variety of combinations and/or integrations of the embodiments described herein.

[0028] Referring now to the drawings, and initially to FIG. **1**, a pallet **10** constructed in accordance with an embodiment of the invention is shown supporting a number of stacked trays **12**. As described in more detail below, the pallet **10** is designed and configured such that forces associated with the weight of the trays, and any contents in the trays, are directed through the legs of the trays and to the upper support surface of the pallet. This allows the weight of the trays and their contents to be supported by the tray legs, which are designed to support such loads, rather than other parts of the trays, which are not designed to support heavy loads. The pallet is also configured to facilitate stacking with multiple other pallets when they are not in use. Importantly, the structure that facilitates the stacking of multiple pallets does not interfere with the structure that supports and retains the stacked trays, and vice versa, as described in more detail below.

[0029] An embodiment of the pallet **10** will now be described in more detail, primarily with reference to FIGS. **8** and **9**. The pallet broadly comprises a deck **14**; a plurality of support members **16** depending from the deck; pallet stacking structure, specific portions of which are numbered and described in detail below, for retaining a second pallet stacked on the pallet; and tray retaining and stacking structure, specific portions of which are numbered and described in detail below, for supporting and retaining one or more trays on the pallet. The pallet **10** may be made of any suitable materials and in one embodiment is rotationally molded from plastic or other synthetic resin materials.

[0030] The deck **14** has an upper support surface **18** on which trays, other pallets, and/or other items may be supported as shown in FIGS. **1** and **10**. The upper support surface **18** has a central, generally planar surface **20** and a number of recessed regions and projections that are described in more detail below. In one embodiment, the deck **14** is generally rectangular and approximately 47" long, 36" wide, and 2 ½" thick, but it may be formed in any shape and size without departing from the scope of the invention.

[0031] As shown in FIG. **9**, the underside of the deck **14** may include a number of molded handles **23** for use in handling the pallet **10** and a number of dimples **25** that provide structural support and reduce the weight of the pallet. The deck **14** may include other features not relevant to the present invention.

[0032] The support members depend **16** from the bottom of the deck **14** to elevate the deck and hence the trays or other articles supported on its upper surface **18** above the ground to prevent moisture, dirt and other debris from coming into contact with the supported articles. In one embodiment, the support members **16** consist of two runners **22**, **24**, positioned below opposite ends of the deck, and three center leg supports or feet **26**, **28**, **30** positioned below a center line of the pallet.

[0033] The runners **22**, **24** each include three spaced-apart legs **32**A, **32**B, **32**C, the bottoms of which are interconnected by a strap **34**. The legs and strap of each runner cooperatively define two channels **36**, also known as cores, extending through the runner. The cores **36** of the two runners are aligned and allow for insertion of forklift tines, pallet jacks or hand jacks for handling the pallets. The straps **34** are relatively thin, typically having a height on the order of ½", so that a pallet jack may be rolled over the top of the straps and inserted in the cores **36**. The straps also provide structural support to the runners.

[0034] The center leg supports **26**, **28**, **30** are spaced between the sides of the pallet so as not to block insertion of forklift tines, pallet jacks or hand jacks in the cores **36** of the runners **22**, **24**. The center leg supports are also positioned about midway between the runners to create channels **38** extending between the sides of the pallet for insertion of forklift tines, pallet jacks or hand jacks. This allows fork lifts or pallet jacks to lift the pallet **10** from all four sides.

[0035] As best shown in FIG. **9**, the bottoms of the straps **34** include recesses that nest with features on the upper support surface of an adjacent pallet when two or more pallets are stacked as described in more detail below. Specifically, the bottom of each strap **34** has two rectangular-shaped recesses **40** positioned on the ends of the strap and a T-shaped recess **42** positioned near the midpoint of the strap. Similarly, the bottom of each center leg support **26**, **28**, **30** includes a rectan-

gular-shaped recess **44**. In one embodiment, the recesses **40**, **42**, **44** are approximately 4½" deep.

[0036] An embodiment of the pallet stacking structure will now be described in more detail. The pallet stacking structure is formed in the upper surface **18** of the pallet deck **14** and facilitates stacking of multiple pallets when they are not in use. An embodiment of the pallet stacking structure includes a plurality of recessed regions, collectively referred to herein as "first recessed regions", formed in the upper support surface of the pallet deck for receiving the support members **16** of a second pallet stacked on top of the first pallet. The first recessed regions "lock" adjacently stacked pallets together and prevent them from sliding and shifting laterally relative to one another.

[0037] Embodiments of the first recessed regions are shown in FIG. **8** and include a pair of generally rectangular-shaped recesses **46**, **48** on opposite ends of the pallet deck **14** that are sized and shaped to receive and nest with the bottoms of the runners **22**, **24** of an adjacently stacked pallet. In one embodiment, the recesses **46**, **48** are approximately 3/16" deep as measured from the deck's central planar surface **20**. Two rectangular-shaped projections **50** and a T-shaped projection **52** extend upwardly from the floor of each recess **46**, **48** for nesting within the two rectangular-shaped recesses **40** and the T-shaped recess **42** on the runners **22**, **24** of an adjacently stacked pallet stacked. In one embodiment, the projections **50**, **52** extends approximately 3/16" upwardly from the floor of each recess **46**, **48** so that the projections **50**, **52** are flush with and occupy the same plane as the deck's central planar surface **20**.

[0038] The first recessed regions may also include three recesses **54**, **56**, **58** spaced along a centerline of the central surface **20** between the sides of the pallet deck. These recesses **54**, **56**, **58** are sized and shaped to receive and nest with the bottoms of the center leg supports **26**, **28**, **30** of an adjacently stacked pallet. As with the recesses, **46**, **48** the recesses **54**, **56**, **58** are approximately 3/16" deep as measured from the deck's central planar surface **20**. A rectangular-shaped projection **60** extends upwardly from the floor of each of the end recesses **54**, **58** for nesting within one of the rectangular-shaped recesses **44** on the bottoms of the center leg supports **26**, **30**. In one embodiment, the projections **60** extend approximately 3/16" upwardly from the floor of each recess **54**, **58** so that the projections are flush with and occupy the same plane as the deck's central planar surface **20**. This maximizes the level surface area on the pallet while minimizing the areas of the recesses to limit the size of openings in which objects may fall.

[0039] The above-described pallet stacking structure allows multiple pallets to be stacked when not in use as shown in FIGS. **10** and **11**. When stacked, the support members of an upper pallet nest within the first recessed regions of an adjacent lower pallet to align the pallets on top of one another and to prevent lateral shifting of the pallets relative to one another.

[0040] Embodiments of the tray retaining and stacking structure will now be described in more detail, primarily with reference to FIGS. **1-4**, **7** and **8**. The tray retaining and stacking structure is formed in the upper surface of the pallet deck **14** and supports and retains a stack of trays on the pallet and facilitates the proper transfer of forces exerted by the weight of the trays as described below.

[0041] Exemplary trays **12** that may be supported on the pallet are shown in FIGS. **5** and **6**. The trays are conventional and may each include an upper support surface **62** with a circumscribing outer lip or wall **64** and a number of legs **66** that depend from the support surface to support the tray on a pallet or other surface. The upper support surface **62** may include dividers **68** for creating a number of smaller compartments and drainage holes **70**. The trays may be of any shape and size, and in one embodiment, are approximately 23 ¼" long, 18" wide, and 4" tall such that four trays may be supported. The tray legs **66** may be of any shape and size, and in one embodiment, extend approximately 0.66" below the bottom of the support surface **62**. As shown in the drawing figures, the tray legs may be configured to nest on top of the circumscribing wall **64** of an adjacent tray so that the trays may be stacked on top of one another.

[0042] An embodiment of the tray retaining and stacking structure includes a plurality of recessed regions, collectively referred to herein as "second recessed regions", formed in the upper support surface of the pallet for receiving the legs of a tray supported on the pallet. As best shown in FIGS. **4** and **8**, the second recessed regions may include a circular-shaped recess **72**; four semi-circular shaped recesses **74**, **76**, **78**, **80**; and four quarter circular shaped recesses **82**, **84**, **86**, **88**. The recesses may be formed in other shapes such as triangular shapes. The recess **72** is formed near a center point of the upper support surface, and as best shown in FIGS. **4** and **7**, is sized and configured for simultaneously receiving the bottom of one leg **66** from four adjacent trays supported on the pallet. The recesses **74**,**76**, **78**, **80** are each formed near a midpoint of one side or end of the top of the pallet deck, and are each sized and configured for simultaneously receiving the bottom of one leg from two adjacent trays on the pallet. The recesses **82**, **84**, **86**, **88** are each positioned near a corner of the top of the pallet deck, and are each sized and configured for receiving the bottom of one leg from one of the trays on the pallet.

[0043] In one embodiment, the above-described circular, semi-circular, and quarter circle recesses **72-88** each have a radius of 2 13/16" and a depth of 0.60" as measured from the central planar surface **20** of the pallet deck.

[0044] Importantly, the tray retaining and stacking structure is formed within the outer boundaries of the pallet stacking structure. Specifically, the recess **72** of the tray retaining and stacking structure is formed within the boundaries of the recess **56** of the pallet stacking structure; the recess **74** of the tray retaining and stacking structure is formed within the boundaries of the recess **54** of the pallet stacking structure; the recesses **76**, **84**, **86** of the tray retaining and stacking structure are formed within the boundaries of the recess **48** of the pallet stacking structure; the recess **78** of the tray retaining and stacking structure is formed within the boundaries of the recess **58** of the pallet stacking structure; and the recesses **80**, **82**, **88** of the tray retaining and stacking structure are formed within the boundaries of the recess **46** of the pallet stacking structure.

[0045] Also, the recesses of the second recessed regions are deeper than the recesses of the first recessed regions as measured from the central surface **20**. The relative positioning and depths of the recesses of the tray retaining and stacking structure versus the recesses of the pallet stacking structure prevents the pallet stacking structure from interfering with the proper operation of the tray retaining and stacking structure. Specifically, when four trays are supported and centered on the pallet **10** in a single layer as shown in FIGS. **4** and **7**, the tray legs align with the second recessed regions **72-88** of the tray retaining and stacking structure rather than the first recessed regions **46**, **48**, **54**, **56**, **58** of the pallet stacking

structure so that the pallet stacking structure doesn't interfere with the operation of the tray retaining and stacking structure.

[0046] The tray retaining and stacking structure is also designed and configured to more effectively direct and transfer the loads from the stacked trays to the pallet deck **14**. As best depicted in FIGS. **2** and **3**, the depths of the recesses **72-88** are slightly less than a length of the tray legs **66**. This allows the bottoms of the tray legs to touch the floors of the second recessed regions and elevate the upper support surface of the tray slightly above the pallet, thus transferring forces related to the weight of the tray, and the parts held in the tray, downwardly through the tray legs and to the pallet rather than through the upper support surfaces of the tray. When multiple trays are stacked on top of one another, the weight of the trays is channeled linearly downwardly through all the tray legs and to the upper surface of the pallet. This is beneficial because the tray legs are typically thicker and stronger than the upper support surfaces of the tray.

[0047] In summary, above-described tray retaining and stacking structure prevents the trays **12** from shifting laterally relative to the pallet. The tray retaining and stacking structure also directs forces from the cumulative weight of multiple stacked trays downwardly thought the trays' legs **66** and on to the pallet deck **14** so that the trays aren't damaged as described below.

[0048] Although the invention has been described with reference to the preferred embodiment illustrated in the attached drawing figures, it is noted that equivalents may be employed and substitutions made herein without departing from the scope of the invention as recited in the claims. For example, the pallets, recessed areas, projections, and other features of the present invention may be formed of shapes and sizes and of materials not specifically disclosed herein without departing from the scope of the invention.

[0049] Having thus described the preferred embodiment of the invention, what is claimed as new and desired to be protected by Letters Patent includes the following:

1. A pallet for supporting a tray including a support surface and legs having a length, the pallet comprising:

a deck having an upper support surface including an upper portion;

a plurality of support members depending from the deck; and

tray retaining and stacking structure for retaining the tray when supported on the pallet, the tray retaining and stacking structure including a plurality of tray stacking recessed regions formed in the upper support surface of the deck for receiving the tray legs when the tray is supported on the deck of the pallet, each tray stacking recessed region having a floor positioned below the upper portion of the upper support surface of the deck, the tray stacking recessed regions having a depth that is less than the length of the tray legs such that the floors support weight of the tray through the tray legs and the upper portion of the upper support surface of the deck does not touch the support surface of the tray when the tray legs touch the floors.

2. The pallet as set forth in claim **1**, further comprising pallet stacking structure for facilitating stacking of a second pallet on the pallet, the pallet stacking structure including a plurality of pallet stacking recessed regions formed in the upper support surface of the deck for receiving support members of the second pallet when the second pallet is stacked on the deck of the pallet.

3. The pallet as set forth in claim **2**, wherein the tray stacking recessed regions of the tray retaining and stacking structure are formed within boundaries of the pallet stacking recessed regions of the pallet stacking structure such that the tray stacking recessed regions do not extend beyond the boundaries of the pallet stacking recessed regions, the tray stacking recessed regions being deeper than the pallet stacking recessed regions.

4. The pallet as set forth in claim **2**, wherein the tray stacking recessed regions are approximately 0.6" deep.

5. The pallet as set forth in claim **1**, wherein the pallet stacking recessed regions are approximately 3/16" deep.

6. The pallet as set forth in claim **1**, wherein the tray stacking recessed regions includes multiple recesses that are circular, semi-circular, or quarter-circular in shape.

7. The pallet as set forth in claim **1**, wherein the plurality of tray stacking recessed regions of the tray retaining and stacking structure comprises:

a circular-shaped recess near a center point of the upper support surface of the deck;

four semi-circular shaped recesses, each positioned near a midpoint of a side of the upper support surface of the deck; and

four quarter-circular shaped recesses, each positioned near a corner of the upper support surface of the deck.

8. The pallet as set forth in claim **1**, wherein the pallet is formed of rotationally molded synthetic materials.

9. The pallet as set forth in claim **1**, wherein the tray retaining and stacking structure permits multiple trays to be stacked on the pallet and directs forces related to the weight of the trays, and parts held in the trays, downwardly through the tray legs and to the tray stacking recessed regions.

10. A pallet for supporting a tray including a support surface and legs depending from the support surface, the pallet comprising:

a deck having an upper support surface including an upper portion;

a plurality of support members depending from the deck; and

tray retaining and stacking structure for retaining the tray when supported on the pallet, the tray retaining and stacking structure including a plurality of tray stacking recessed regions formed in the upper support surface of the deck for receiving the tray legs when the tray is supported on the deck of the pallet, each tray stacking recessed region having a floor positioned below the upper portion of the upper support surface of the deck, the tray stacking recessed regions having a depth of approximately 0.6" such that the floors support weight of the tray through the tray legs and the upper portion of the upper support surface of the deck does not touch the support surface of the tray when the tray legs touch the floors.

11. The pallet as set forth in claim **10**, further comprising pallet stacking structure for retaining a second pallet stacked on the pallet, the pallet stacking structure including a plurality of pallet stacking recessed regions formed in the upper support surface of the deck for receiving support members of the second pallet when the second pallet is stacked on the pallet deck.

12. The pallet as set forth in claim **11**, wherein the tray stacking recessed regions of the tray retaining and stacking structure are formed within boundaries of the pallet stacking recessed regions of the pallet stacking structure such that the

tray stacking recessed regions do not extend beyond the boundaries of the pallet stacking recessed regions, the tray stacking recessed regions being deeper than the pallet stacking recessed regions.

13. The pallet as set forth in claim **11**, wherein the pallet stacking recessed regions are approximately 3/16" deep.

14. The pallet as set forth in claim **10** wherein the tray stacking recessed regions include a plurality of recesses that are circular, semi-circular, or quarter-circular in shape.

15. The pallet as set forth in claim **14**, wherein the tray stacking recessed regions each have a radius of approximately 2-13/16" inches.

16. The pallet as set forth in claim **10**, wherein the plurality of tray stacking recessed regions of the tray retaining and stacking structure comprises:

a circular-shaped recess near a center point of the upper support surface of the deck;

four semi-circular shaped recesses, each positioned near a midpoint of a side of the upper support surface of the deck; and

four quarter-circular shaped recesses, each positioned near a corner of the upper support surface of the deck.

17. The pallet as set forth in claim **10**, wherein the pallet is formed of rotationally molded synthetic materials.

18. The pallet as set forth in claim **10**, wherein the tray retaining and stacking structure permits multiple trays to be stacked on the pallet and directs forces related to the weight of the trays, and parts held in the trays, downwardly through the tray legs and to the tray stacking recessed regions.

19. A pallet for supporting a plurality of trays each including a support surface and legs having a length, the pallet comprising:

a deck having an upper support surface including an upper portion;

a plurality of support members extending below the deck; and

tray retaining and stacking structure for retaining the trays when supported on the pallet, the tray retaining and stacking structure including a plurality of tray stacking recessed regions including a circular-shaped recess near a center point of the upper support surface of the deck for receiving legs of one or more of the trays, four semi-circular shaped recesses, each positioned near a midpoint of a side of the upper support surface of the deck for receiving legs of up to two of the trays, and four quarter-circular shaped recesses, each positioned near a corner of the upper support surface of the deck for receiving a leg of one of the trays, the tray stacking recessed regions being formed in the upper support surface of the deck for receiving the tray legs when the trays are supported on the deck of the pallet, each tray stacking recessed region having a floor positioned below the upper portion of the upper support surface of the deck, the tray stacking recessed regions having a depth of approximately 0.6" such that the floors support weight of the trays through the tray legs and the upper portion of the upper support surface of the deck does not touch the support surfaces of the trays when the tray legs touch the floors.

20. The pallet as set forth in claim **19**, wherein the pallet is configured to directly support as few as one tray and up to four trays simultaneously on the deck.

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