A pallet includes a deck and a plurality of outer supports extending downwardly from the deck. An inner support and a pair of outer supports extend downwardly from the deck between the outer supports. A plurality of keg top receiving recesses are formed in the bottoms of the inner and outer supports. The recesses partially define a center portion and a pair of outer portions therebetween in the inner support. The center portion and the pair of outer portions are the lower most surfaces of the center portion and are contained in a plane in which the lower most surfaces of the outer supports are also contained, and which plane is generally parallel to the upper surface of the deck.
PALLET

BACKGROUND OF THE INVENTION

[0001] This invention relates to a pallet. Pallets are often used to store and transport goods. Pallets maintain the goods at a distance above the floor such that they can readily be lifted and moved by a forklift.

[0002] Currently some stainless steel beer kegs are transported on hard wood pallets. Each pallet supports four kegs and resembles a 2-way stringer pallet with two additional features. The first feature is an edge board on two sides of the top deck. The two top edge boards sit above the deck and prevent the kegs from moving side to side. When empty kegs are returned to the brewery they are pushed off the pallet in an automated line. For this reason top edge boards are only used on two sides.

[0003] The second feature is a pair of bottom edge boards located on the bottom of the pallet on the two edges directly below the top edge boards. These look similar to the top feature except they have an angled edge facing the kegs. This angle helps to ease stacking of the pallet on top of the kegs, because in the warehouse the pallets are typically stacked six pallets high or even eight pallets high for half kegs. Fork trucks move two pallets stacked together, which makes it difficult to locate them perfectly when stacking.

[0004] The bottom edge boards are the only part of the pallet in contact with the ground either when loaded or empty. Since the bottom edge boards are perpendicular to the stringers, the top deck bears the entire load, which can be very high for the bottom of a stack of six pallets. With a top deck thickness of slightly over an inch deflection across the length is quite high in use even with a high quality hard wood deck.

[0005] Plastic pallets are lighter and more durable than wooden pallets. A plastic deck formed in the above design could not withstand such loads. However, a plastic deck should also be able to stack with the existing wood pallets.

SUMMARY OF THE INVENTION

[0006] A pallet according to one embodiment of the present invention includes a deck and a plurality of outer supports extending downwardly from the deck. An inner support extends downwardly from the deck between the outer supports. A plurality of keg top receiving recesses are formed in the bottoms of the inner and outer supports. The recesses may be tapered for easier placement onto a plurality of kegs. The recesses partially define a center portion and a place of outer portions therebetween in the inner support. The inner portion and the pair of outer portions are the lower most surfaces of the center portion and are contained in a plane in which the lower most surfaces of the outer supports are also contained, and which plane is generally parallel to the upper surface of the deck.

[0007] Thus, the inner portion and the outer portions of the inner support of the pallet contact the floor. This improves the support provided to the deck. The inner portion and outer portions of the inner support are also disposed between kegs when the pallet is stacked on another loaded pallet, thereby providing additional stability to the stack.
outwardly opening recess 30b on the bottom of the inner support 16. Round recesses 30 are shown adapted for use with beer kegs, however, other shapes could be adapted for other containers or objects. The outer supports 14 further include elongated recesses 34 that may be contiguous with the recesses 30a as shown. The elongated recesses 34 are complementary to and aligned with the elongated protrusions 20 (FIG. 1).

[0025] The four recesses 30b formed on the bottom of the inner support 16 define outer portions 38 and an inner portion 40, which provide the lowest most surfaces of the inner support 16. The lower most surfaces of the outer portions 38 and inner portion 40 are in a plane with the lower most surfaces of the bottom of the outer supports 14, the plane being generally parallel to the upper surface of the deck 12. The outer portions 38 are generally triangular and include concave sides 39. The inner portion 40 is generally diamond-shaped and includes concave sides 41.

[0026] FIG. 4 is a sectional view taken along lines 4-4 of FIG. 3. As shown, the pallet 10 generally includes an upper deck member 50 integrally molded as a unitary structure and a lower deck member 52 integrally molded as a unitary structure with the supports 14, 16. The upper deck member 50 and the lower deck member 52 may be injection molded of a plastic, such as polypropylene or HDPE.

[0027] FIG. 5 is a sectional view taken along lines 5-5 of FIG. 3. As shown in FIG. 5, the upper deck member 50 includes an upper sheet 54 from which a plurality of upper ribs 56 extend downwardly. The lower deck member 52 includes a lower sheet 58 from which a plurality of lower ribs 60 extend upwardly. The lower ribs 60 are connected to the upper ribs 56 by adhesive, welding or other suitable process to form box sections.

[0028] FIG. 6 is a sectional view taken along lines 6-6 of FIG. 3, showing a side view of the inner support 16. As shown, the outer portions 38 and the inner portion 40 provide the lowest most surfaces of the pallet 10. The recesses 30 are partially defined by the concave sides 39 on the outer portions 38 and the concave sides 41 on the inner portion 40.

[0029] FIG. 7 is a side view of the pallet 10 and FIG. 8 is an end view of the pallet 10.

[0030] FIG. 9 is a perspective view of the pallet 10 of FIG. 1 loaded with kegs 70 and stacked on another pallet 10 loaded with kegs 70. A plurality of pallets 10 are also shown empty and stacked. As shown, the kegs 70 are supported on the deck 12 between the elongated protrusions 20. The deck 12 of the bottom pallet 10 is supported on the floor by the outer supports 14 and the inner support 16.

[0031] FIG. 10 is a bottom perspective view of the arrangement of pallets and kegs of FIG. 9. As can be seen more clearly in FIG. 10, the deck 12 is supported on the kegs 70 by the outer supports 14 and the inner support 16, with the tops of the kegs 70 received in the recesses 30a and recesses 30b of the outer supports 14 and inner support 16, respectively. This provides a stable stack of pallets 10 and kegs 70, with increased support for the deck 12 from the inner support 16. The outer portions 38 and inner portion 40 of the inner support 16 extend downward below the upper edge of the kegs 70 to further improve the stability of the stack.

[0032] FIG. 11 is a perspective view of a prior art wood pallet 100 stacked on the pallet 10 of FIG. 1. FIG. 12 is an end view of the stacked pallets 10, 100 of FIG. 11. Referring to FIGS. 11 and 12, the pallet 10 is designed such that it can be stacked with the prior art wood pallets 100. The prior art wood pallets 100 include a plurality of deck boards 112 connecting outer support boards 114 and an inner support board 116. Bottom edge boards 115 are disposed along outer lateral edges of the outer support boards 114 to create a gap for receiving a keg top. The inner support board 116 does not extend downward from the deck boards 112 as far as the bottom edge boards 115 to the top of the deck 12 of the bottom pallet, so that the inner support board 116 would rest on the top of the kegs of a lower pallet. Top edge boards 120 are connected along top lateral edges of the pallet 100. Referring specifically to FIG. 12, the bottom edge boards 115 of the wood pallet 100 are received outward of the elongated protrusions 20 of the bottom pallet 10, with an inner beveled surface 117 mating with the beveled outer surface 26 of the elongated protrusion 20. Thus, the improved pallet 10 can be used along with the prior art wood pallets 100 and can be intermixed and stacked with the prior art wood pallets 100.

[0033] While embodiments of the invention have been illustrated and described, it is not intended that these embodiments illustrate and describe all possible forms of the invention. Rather, the words used in the specification are words of description rather than limitation, and it is understood that various changes may be made without departing from the spirit and scope of the invention. For example, the pallet 10 could also be injection molded as a single component. Other manufacturing methods such as blow molding and rotational molding could also produce a single component pallet. Twin sheet thermoforming could also be used.

What is claimed is:

1. A pallet including:
   a. a deck;
   b. a plurality of outer supports extending downwardly from the deck; and
   c. an inner support extending downwardly from the deck between the outer supports.

2. The pallet of claim 1 wherein a bottom of the inner support has a center portion and noncontiguous outer portions.

3. The pallet of claim 2 wherein the center portion is generally diamond-shaped.

4. The pallet of claim 3 wherein the center portion has concave edges.

5. The pallet of claim 2 wherein the outer portions are generally triangular.

6. The pallet of claim 5 wherein the outer portions have concave edges.

7. The pallet of claim 2 stacked on a plurality of containers, wherein the center portion is disposed between the plurality of containers.

8. The pallet of claim 2 wherein the plurality of outer supports each have a lower most surface, the lower most surfaces of the plurality of outer supports and a lower most surface of the inner support are all disposed in a plane.

9. The pallet of claim 8 wherein the plane is generally parallel to an upper surface of the deck.
10. The pallet of claim 1 wherein a lower surface of the plurality of outer supports and the inner support include a plurality of circular recesses formed therein.
11. The pallet of claim 10 wherein an upper most surface of each of the circular recesses is generally parallel to an upper surface of the deck.
12. The pallet of claim 1 further including a plurality of protrusions upward from an upper surface of the deck.
13. The pallet of claim 12 wherein the plurality of protrusions are formed along lateral edges of the deck.
14. The pallet of claim 13 wherein the plurality of protrusions includes more than one protrusion along each lateral edge of the deck.
15. The pallet of claim 13 further including a plurality of recesses on bottoms of the outer supports configured to receive the plurality of protrusions of a similar pallet on which the pallet is stacked.
16. The pallet of claim 13 wherein the plurality of protrusions are spaced inwardly from the lateral edges of the deck.
17. The pallet of claim 16 wherein the plurality of protrusions each include a beveled outer surface, the beveled outer surface facing a nearer one of the lateral edges nearer the protrusion.
18. The pallet of claim 1 wherein the deck includes an upper deck member having an upper sheet from which a plurality of upper ribs extend downwardly, the deck further including a lower deck member having a lower sheet from which a plurality of lower ribs extend upwardly and mate with the upper ribs to form a plurality of box beam sections in the deck.
19. The pallet of claim 1 wherein the deck includes an upper sheet, a lower sheet and a plurality of ribs connecting the upper sheet to the lower sheet.
20. A pallet including:
a generally planar deck; and
an inner support extending downwardly from the deck generally along a centerline of the deck, wherein a bottom of the inner support has a center portion and a pair of outer portions.
21. The pallet of claim 20 wherein the center portion is spaced inwardly from the outer portions.
22. The pallet of claim 20 wherein the center portion is generally diamond-shaped.
23. The pallet of claim 22 wherein the center portion has concave edges.
24. The pallet of claim 23 wherein the concave edges of the center portion partially defines a keg top receiving recess on the bottom of the pallet.
25. A pallet including:
a deck having a plurality of protrusions protruding upward from an upper surface of the deck, the protrusions extending along lateral edges of the deck; and a plurality of supports extending downwardly from the deck.
26. The pallet of claim 25 wherein the plurality of protrusions includes more than one protrusion along each lateral edge of the deck.
27. The pallet of claim 25 further including a plurality of recesses on bottoms of the supports configured to receive the plurality of protrusions of a similar pallet on which the pallet is stacked.
28. The pallet of claim 27 wherein the plurality of protrusions are spaced inwardly from the lateral edges of the deck.
29. The pallet of claim 28 wherein the plurality of protrusions each include a beveled outer surface, the beveled outer surface facing a nearer one of the lateral edges nearer the protrusion.
30. A pallet including:
a deck having an upper surface;
a first plurality of protrusions along a first lateral edge of the upper surface and spaced inwardly from the first lateral edge;
a second plurality of protrusions along a second lateral edge of the upper surface and spaced inwardly from the second lateral edge; and
a plurality of outer supports extending downwardly from the deck.
31. The pallet of claim 30 wherein the first plurality of protrusions includes more than one protrusion along the first lateral edge of the deck.
32. The pallet of claim 30 further including a plurality of recesses on bottoms of the outer supports configured to receive the first plurality of protrusions and second plurality of protrusions of a similar pallet on which the pallet is stacked.
33. The pallet of claim 30 wherein the first plurality of protrusions and the second plurality of protrusions each include a beveled outer surface
34. The pallet of claim 30 wherein the deck, the first and second pluralities of protrusions and the outer supports are all integrally molded of plastic.
35. The pallet of claim 34 and a wooden pallet stacked thereon, the wooden pallet having a wood deck and wood supports extending downwardly, the wood supports resting on the deck outwardly of the first plurality of protrusions and the second plurality of protrusions.