United States Patent

Brown

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[54] **DUAL PURPOSE NESTING PALLETS**

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[52] **U.S. Cl.** **108/53**

[51] **Int. Cl.** **B65d 19/18**

[58] **Field of Search** 108/51-58; 211/74; 248/346

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Assistant Examiner—Glenn O. Finch
Attorney—Brufsky, Staas, Breiner & Halsey

[57] **ABSTRACT**

A pallet is used for supporting and transporting a load in either a single deck pallet form, or a double deck pallet form which includes a pair of the single deck units. Each single deck unit includes a deck having a side adapted to receive a load and an underside from which a plurality of spaced hollow support elements project. The single deck units are identical to each other such that the support elements of one deck unit will mate with the support elements of any other deck unit when the deck units are not in use, to permit storage of two or more deck units in overlying relation by registering and nesting the support elements of one within the support elements of the other. Two single deck units may also be placed in back-to-back relation such that the decks are spaced apart with the support elements of one deck unit abutting against the underside of the deck of the opposite deck unit. Thereby, the two deck units form a double deck pallet which enables support of a load on the pallet while maintaining the spaced apart relationship of the two decks, and mating pairs of support elements have their side portions in contact with one another to prevent lateral shifting of the decks relative to one another during loading, handling, and transit. One form of support element has a cup-like shape with a ridge or protrusion adjacent thereto shaped to surround at least a portion of the end of the respective support element on the opposite deck when the two single deck units are assembled in double deck pallet configuration. This secures and interlocks the two single deck units together to further reduce the possibility of lateral shifting. Fasteners having components integral with one or both of the decks are used to secure the two units together in the vertical double deck pallet configuration. In another embodiment, the two deck units differ from one another, in that only one has projecting support elements, the other having holes in the deck, and ridge pockets arranged to receive the projecting elements of the first. Deck units having a plurality of open U-shaped support elements attached to the underside of the respective deck in runner support configuration can be secured and interlocked together in the double deck pallet assembly by use of individual longitudinal members which are inserted through the aligned U-shaped elements when the decks are in back-to-back configuration. In still another form, the support elements may be aligned on individual runners and the runners alone used in single deck or double deck pallet configuration.

6 Claims, 12 Drawing Figures

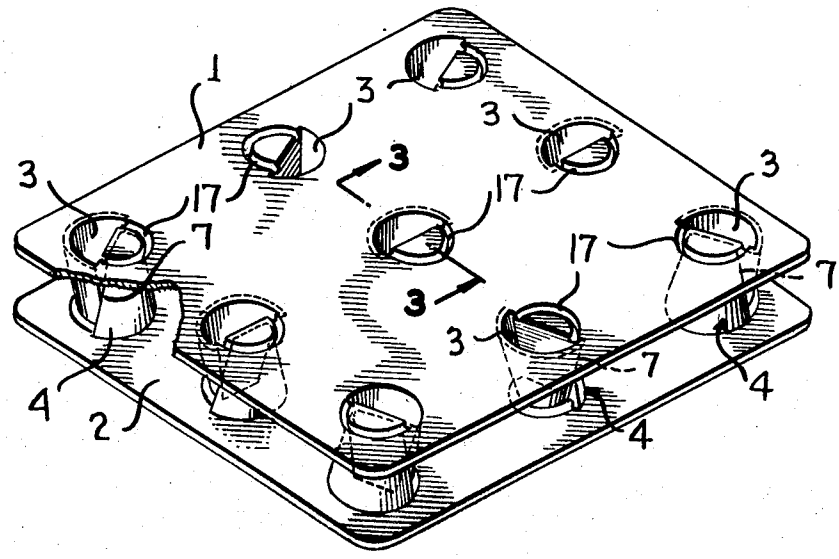

FIG. 1

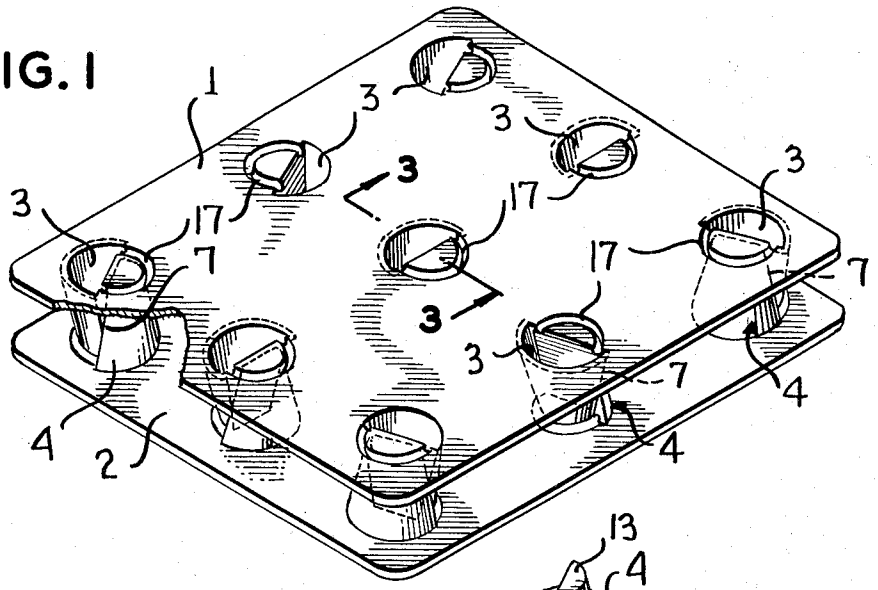

FIG. 2

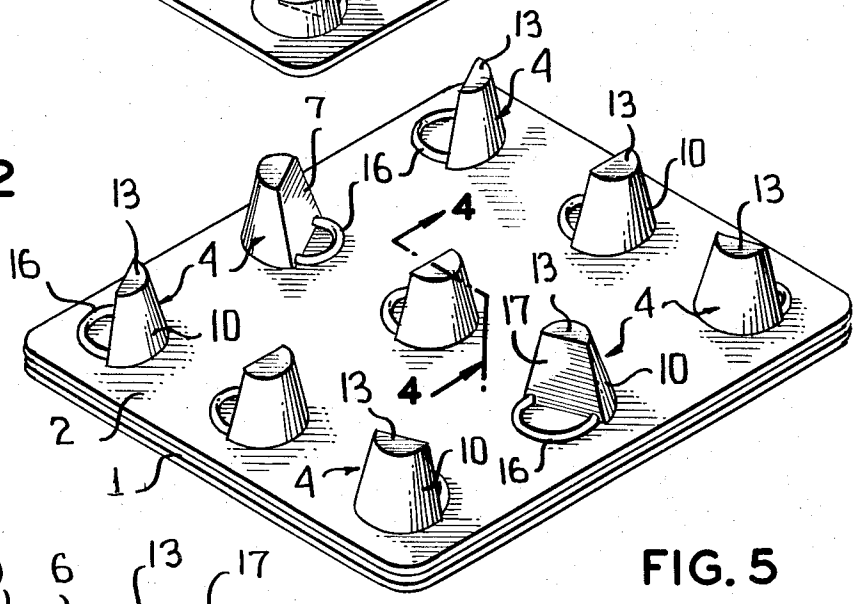

FIG. 3

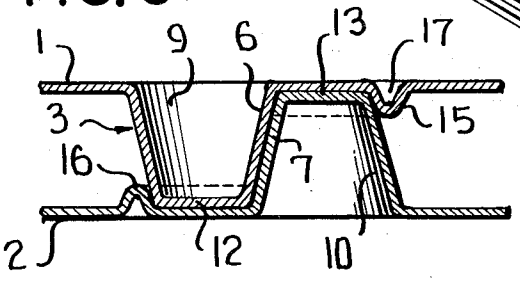

FIG. 5

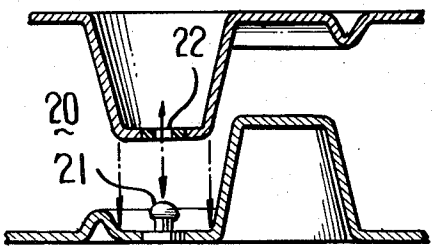

FIG. 4

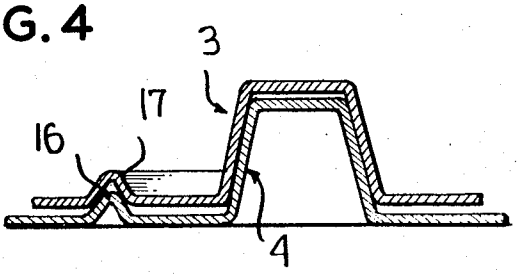

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FIG. 6

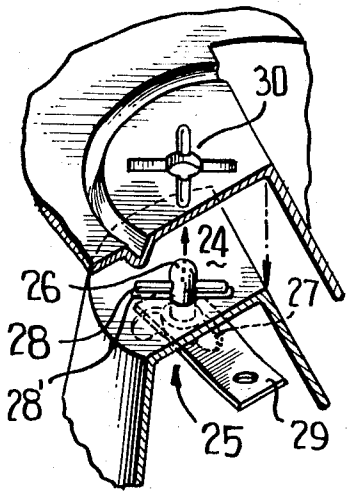

FIG. 7

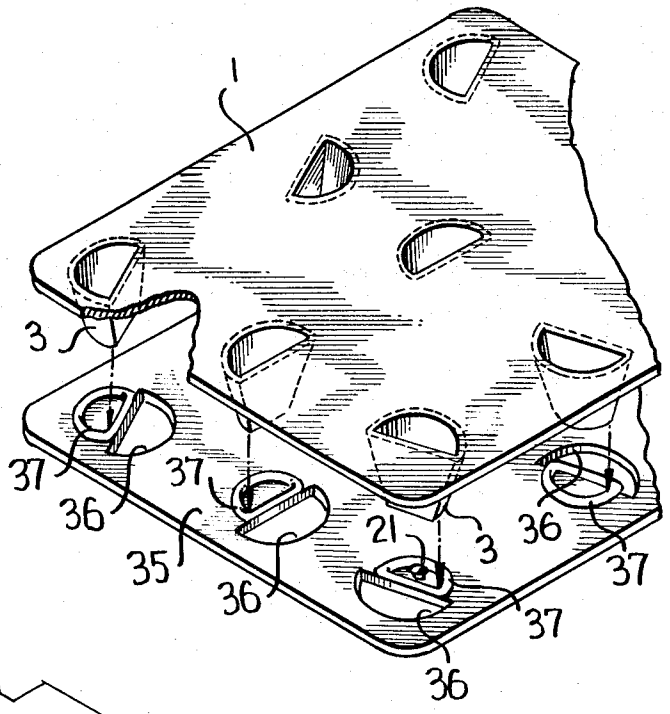

FIG. 8

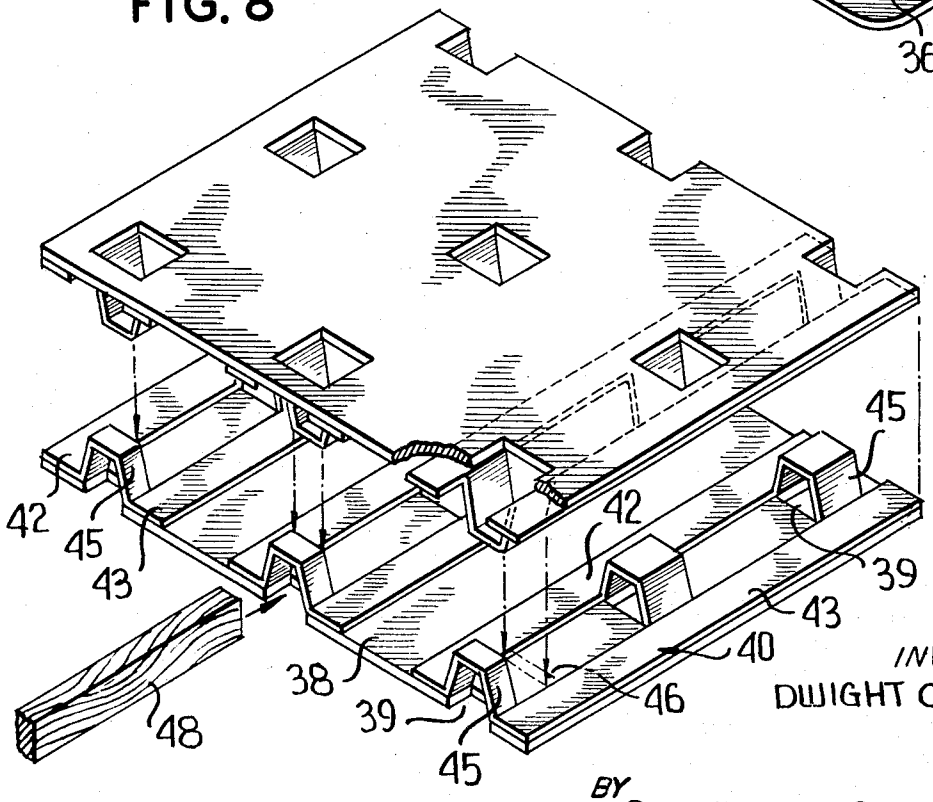

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FIG. 9

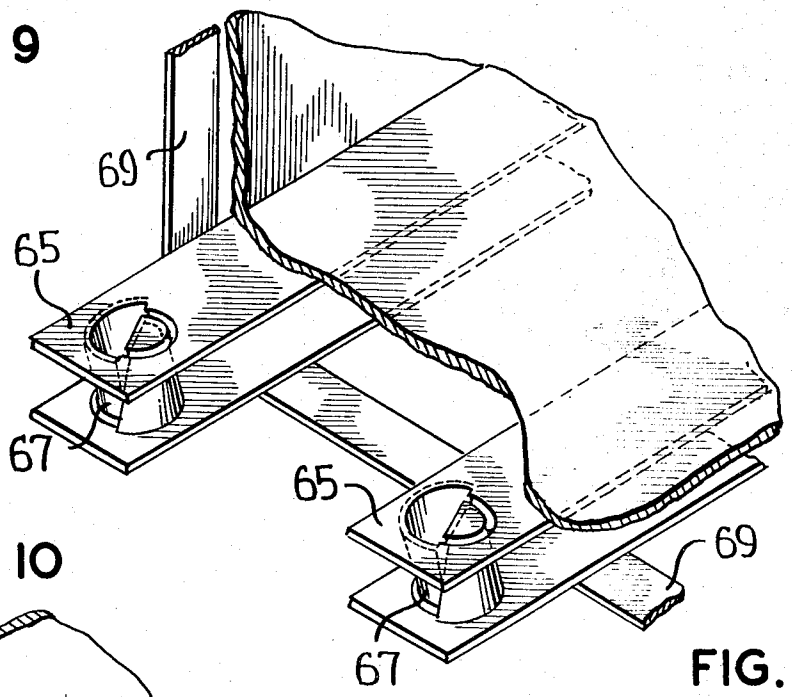


FIG. 10

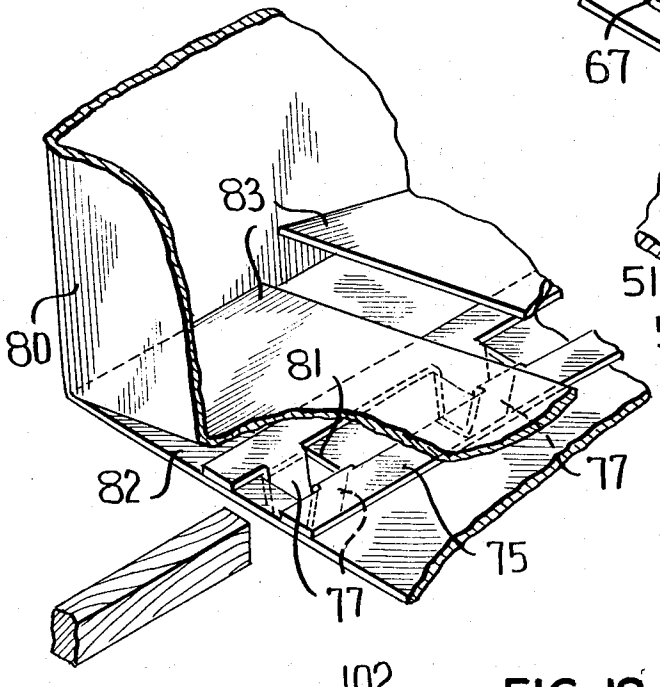


FIG. 11

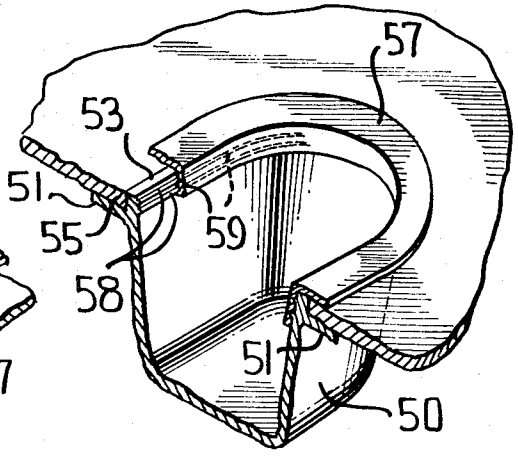
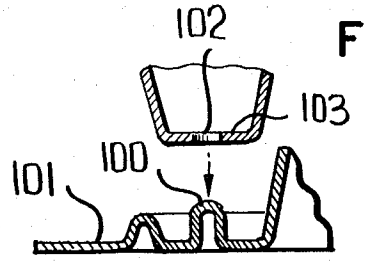


FIG. 12



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DUAL PURPOSE NESTING PALLETS

BACKGROUND OF THE INVENTION:

The present invention relates generally to pallets which are used in the storage and shipment of merchandise and equipment to permit common or unitized handling by the use of forklift or palletlift truck equipment.

In my prior U.S. Pat. No. 2,973,931 entitled "Dual Purpose Nesting Type Pallets," granted Mar. 7, 1961, I disclosed an improved single deck nesting type pallet, two units of which can be quickly and easily secured together without the use of tools, to provide a double-deck type of pallet. This constitutes a dual purpose pallet in which the separate units can be used singly, or in which the two units are secured together when more capacity or underdeck load support surface is required than can be provided by the support members of a single deck pallet. Such versatility renders the pallet adaptable to usage with various types of handling equipment as well as different weights of loads, and also permits the separate pallet components, i.e., the single deck units, to be easily and compactly stored when not in use.

In the pallet disclosed in the aforementioned patent, each of the two members which comprise the double deck pallet includes a deck, one side of which is used as a support surface and the underside of which includes a plurality of spaced projections or extending support elements of asymmetric positional arrangement. The elements are completely or partially hollow and are correspondingly arranged on each deck such that the elements on one deck member nest within the elements of the other deck member when the two units are not in use, so that they may be stored in compact form. Upon reversal of the members into back-to-back relation, in which the projecting support elements on one ember abut against the underside of the deck of the other member with side surfaces of the projecting elements of both decks in contact with one another, double-deck, high-load capacity pallet is formed.

Such a pallet performs admirably in either the single deck unit configuration or the double deck configuration. However, I have found that certain areas of the pallet may be significantly improved, and it is to that end that the present invention is directed.

SUMMARY OF THE INVENTION

Briefly, according to the present invention in one of its embodiments, the configuration of support elements projecting from planar deck members is quite similar to that disclosed in my aforementioned patent. As before, for storage purposes the two units which are to form the double deck pallet may be placed in mating relationship in which the projecting support elements of one deck member nest within the projecting support elements of the other. According to one feature of the present invention, the underside of each deck is provided with a ridge or protrusion adjacent each projecting element, having a pattern conforming to the shape of the end of a similar projecting support element on the other deck, to accept the latter support element when the two deck members or units are arranged in back-to-back relationship as a double deck pallet. Such an arrangement has several advantages over the pallet

of my aforementioned patent and other prior art nesting pallets, including facilitation of the back-to-back assembly of two units into a substantially unitized double deck pallet; provision of an interlocked, integrated unit in the double deck form; and reduction of the possibility of sliding disengagement or lateral shifting of the individual units in the assembled double deck pallet.

According to another feature of the present invention, fasteners are provided by which to secure the two deck members together in the back-to-back relation and in which a captive fastener element on one of the deck members is received within a mating fastener element on the other member.

In another embodiment of the present invention, three projecting support elements are incorporated in a support runner which is attached to a deck sheet having die cut holes that register with the support elements. This forms a single deck pallet, two units of which may be nested together for storage in compact form when not in use. Two such units may also be arranged in back-to-back assembly to form the double deck pallet. This embodiment represents an alternate method of construction in which a combination of materials may be utilized instead of an integral molded unit incorporating both deck and nesting support elements of identical material. Three support runners incorporating the support elements are attached in spaced apart relation to the underside of a deck sheet having die cut holes registered with the support elements. Each support runner may be provided with a vertical edge protector at the two ends to prevent damage to the edge of the pallet deck when contacted by truck forks and the heel of such forks. Such a support runner is readily fabricated as an integral molded unit which, together with the projecting support elements, is provided with ridges or protrusions for interlocking with and securing the ends of mating support elements when two runner units or a runner unit and a single deck unit are arranged in back-to-back assembly to form a double deck pallet configuration.

In still another embodiment of the present invention, a plurality of such support runners may be attached to the bottom of a load contained in pallet size shipping boxes or crates to provide a platform structure having sufficient underclearance to permit handling by fork lift and pallet lift trucks. Such support runners may readily be fastened to the bottom of each box or crate by any conventional means such as strapping, or bailing bands, or wires. Alternatively, the individual support runners may be secured to the boxes or crates themselves by placement between the closure flaps on the box, with the bottom exterior flaps of the box having die cut holes to permit the support elements to project therethrough. In still another alternative form, matching die cut holes may be provided in all of the bottom flaps and the support runners physically placed within the box at the bottom portion thereof such that the support elements project through the die cut holes in the flaps. The combination of the contents of the box and the strapping or other bailing means effecting closure of the box serves to secure the support runners in a stable position within the box, with support elements projecting therethrough, for unitary load handling.

In another runner support configuration within the principles of the present invention, the projecting support elements include runners in the form of spaced rails, each runner being provided at either end and at its center with a U-shaped element whose support legs connect the two rails. The positions of the U-shaped elements correspond to the positions of the holes in the same deck, such that in the stored condition of the deck members or units of this embodiment the U-shaped elements can extend into the holes of the other deck member and nest within the U-shaped elements on the runners for that member. In the back-to-back double deck arrangement, locking ties are provided for longitudinal insertion into the aligned U-shaped support openings of parallel spaced runners to assist in tying or securing the two members together and to prevent lateral shifting relative to one another. Alternatively, in a molded construction the support elements may simply be U-shaped elements without the interconnecting runners or rails.

In still another embodiment of the present invention, a single deck member having elements projecting from the underside of the deck is provided for use with a mating deck member which is essentially a sheet or plane provided with die cut holes positionally arranged to match the positions of the projecting elements in the first member. The die cut deck has incorporated therein ridges or protrusions constructed and arranged to secure and interlock the respective ends of the support elements of the other deck pallet member to form a double deck pallet assembly. In this embodiment, only the projecting support elements of the deck member having such elements can provide the vertical support, thereby rendering it suitable for lighter loads than that to which the double deck pallet configuration consisting of two identical single deck units with projecting support elements is adaptable. In the present embodiment, the support elements of the single deck unit abut against the underside of the die cut sheet deck within the ridged area, i.e., the pocket or valley, adjacent the die cut holes. The two members are then secured together in proper registration by the use of fastener elements having mating components located in the ridge region of the die cut sheet and in the bottom wall of the projecting support elements in the other deck member. When not in use, the deck sheet having die cut holes may be placed between the single deck members having the projecting support elements without interfering with the nesting relation of those support elements.

BRIEF DESCRIPTION OF THE DRAWINGS:

In describing the present invention reference will be made to the accompanying figures of drawing in which:

FIG. 1 is a perspective view of two single deck pallet units having half-round projecting support elements and arranged back-to-back to form a double deck pallet;

FIG. 2 is a perspective view of the two single deck members of FIG. 1 in the nested position for storage purposes;

FIG. 3 is a fragmentary detailed section view taken along the lines 3—3 of FIG. 1 showing the relative positions of the half-round support elements when the two members are assembled in back-to-back double deck pallet configuration;

FIG. 4 is a fragmentary detailed section view taken along the lines 4—4 of FIG. 2 showing the relative positions of the half-round support elements when the two units are assembled in nesting compact configuration when not in use;

FIG. 5 is a detailed fragmentary exploded view, partly in section, of a snap-type frictional fastener employed to secure two deck members together to form a double deck pallet;

FIG. 6 is a fragmentary detailed exploded perspective view, partly in section, of a lock-type fastener used for the same purposes as the fastener shown in FIG. 5;

FIG. 7 is a perspective fragmentary exploded view of a double deck pallet having a single deck unit with projecting support elements which mate with and are secured within the ridges of a deck sheet having die cut holes, according to another embodiment of the invention;

FIG. 8 is a fragmentary exploded perspective view of another embodiment of the invention in which the single deck pallet units utilize support runners with U-shaped projecting support elements;

FIG. 9 is a fragmentary detailed perspective view of another embodiment of the invention utilizing runners with support elements which may be placed in back-to-back relationship for loading or which may be nested together for storage;

FIG. 10 is a fragmentary detailed perspective view, partly in section, of an embodiment of the invention in which the support runners are placed within a box or shipping crate with the support elements projecting through holes in the bottom of the box;

FIG. 11 is a detailed perspective view in section showing an exemplary assemblage of a support element within a deck; and

FIG. 12 is a detailed exploded section view of an alternative form of construction for a snap-type frictional fastener similar to that shown in FIG. 5.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS:

Referring to FIGS. 1 - 4 the two pallet members respectively include decks 1 and 2 each having a plurality of half-round hollow support elements 3 and 4 projecting respectively from the the underside of each deck, the support elements being constructed and arranged to nest within one another when the two pallet members are not in use and assembled for storage. The support elements of each member are arranged to mate with corresponding projecting support elements on the other member when the two pallet members, one of which is reversed laterally, are assembled back-to-back in a double deck pallet configuration, as shown in FIG. 1. The positioning of the projecting support elements on each deck member is shown more clearly in FIG. 2. In the embodiment of FIGS. 1 – 4, nine projecting elements are employed, but this is not critical, the preferred arrangement being three rows of support elements which will permit entry of the fork members of a fork lift truck on all four perimeters, regardless of the specific number of projecting elements employed. The elements of each member are dimensioned and positioned to mate with one another in the double deck configuration, with the free end of each element abutting against the underside of the deck of the other member, while having a sloped, relatively flat side 6 in

contact with the corresponding side 7 of the mating element. This ensures support perpendicularly of the decks, and tends to prevent shifting of the two members laterally.

The positioning of the support elements with different relative orientations of side flat wall 6, 7, in each row is such that when one of two identical pallet members is reversed laterally, i.e., rotated 180°, to the other, the two members may be assembled in back-to-back relation with the load surface or side of the deck of each pallet member exposed and the decks relative free of any lateral shift in any direction. The projecting elements extend toward and abut against the underside of the opposite deck member in the double deck assembly (FIG. 1), to form a dual support. This would ordinarily cause two half-round support elements of purely cylindrical form to take the shape of a completely circular support member divided in the center by two diametrical walls. Preferably, the projecting support elements have tapered or sloping side surfaces both with respect to the curved surface 9, 10, respectively, and the flat surface 6, 7, thereof, such that the overall shape of each projecting element suggests the heel of a boot. With the sloping side surfaces, the mating of the support elements when the two pallet or deck members are placed in back-to-back relationship causes the wider base portion of each element at the juncture with the underside of the respective deck to be directly adjacent the narrower top portion of the mating support element projecting from the underside of the opposite deck, as shown most clearly in FIGS. 1 and 3.

The slant or taper of the sides of the support elements permits them to nest within one another when the two deck members are fit together in compact configuration for storage (FIGS. 2 and 4) when not in use. Each of the projecting elements has a substantially closed bottom wall 12, 13, although this is not absolutely essential and the bottom of each element may be open, if desired. In this respect, it is to be observed that the vertical capacity support function is offered by the side walls of these projecting elements. The relative positions of the projecting support elements in the double deck pallet configuration, that is to say, the relative orientations of the contacting diametrical walls of the pairs of support elements, is, as previously observed, such that the likelihood of lateral shifting of the deck members is relatively small. Nevertheless, if loads are not properly handled during movement and stacking or the load arrangement is substantially unbalanced on the load surface of the double deck pallet, then the possibility of such lateral shifting of the two deck members relative to one another is of some concern.

In order to further limited the likelihood that such shifting will occur during transit and handling regardless of the nature or weight (within the limits of capacity) of the specific load on the pallet, I provide a pattern of ridges or protrusions 15, 16 at the underside of each deck adjacent a projecting element, the ridge pattern conforming generally to the shape or outline of the top (i.e., the free end, or abutting end) of the mating projecting element for the support element with which the ridge pattern is associated. This ridge pattern is most clearly shown in FIG. 2, and the positioning of the elements with respect to the ridges is most clearly shown in the section view of FIG. 3. The presence of these patterns of ridges, in addition to affording freedom from lateral shifting of the members and providing a substantially complete interlocking of the members, facilitates the assembly of the individual deck members into the back-to-back double deck relationship. The ridge may conveniently be formed during molding of the pallet members and results in a depression or valley, e.g., 17, FIG. 1, on the load side of the deck.

When the pallet of FIGS. 1 and 3 is not in use and is to be converted to the form for storage, from the form for loading, one of the pallet members is reversed and turned through 180° in the plane of the deck, and its projecting elements inserted into the then-registered projecting elements of the other deck member. These elements may then assume a completely nesting relationship as shown in FIGS. 2 and 4. It will be noted from FIG. 4 that the pattern of ridges or protrusions on one member naturally corresponds to the depressions or valleys in the other so that these ridges also conform to and register with one another to assume the desired nesting relationship for storage of the pallet members. It will also be observed that any number of pallet members of the same configuration as in FIGS. 1 – 4 may be stacked and stored together in a relatively compact assembly.

The mere assembly of two such deck members into an interlocked double deck pallet configuration in which the separate or individual members are in back-to-back relationship, may in some instances complete the final pallet loading configuration. However, in many situations, it is essential to provide further fastening of the two pallet members to prevent their separation when forces are applied in a direction normal to and outwardly of the plane of either deck, as would occur, for example, when a fork lift were employed to raise the pallet and the load present thereon. To that end, I provide fasteners preferably taking the form shown in either of FIGS. 5, 6 or 12. Referring to FIG. 5, a snap type of fastener 20 is employed in which one of the deck members is provided with a captive male component, e.g., a hollow or other type prong 21, while the other member is provided with a female component 22, e.g., an integral socket or round hole which registers with the prong to permit insertion thereof and retention of the opposed parts. In the particular arrangement shown in FIG. 5, the captive prong component 21 of the snap fastener 20 is incorporated in or attached to the underside of the deck and the socket 22 into which it is to be inserted is positioned in the bottom wall of the opposing projecting support element of the opposite deck unit. Alternatively, as shown in FIG. 12, the snap-type fastener need not require any inserts or additional items, but instead may be formed integral with the overall unit. Here, a substantially cylindrical or conical hollow projecting element 100 is formed within deck 101 inside the ridged area during molding or other fabrication of the deck unit, and a mating hole 102 is provided in the bottom wall of each projecting support element 103. When two such deck units are pressed together in the double deck pallet configuration, a tight frictional fit is established between the male fastener element 100 and the female element 102 to ensure securement of the two deck units together. Of course, the two units may be separated when desired,

by application of outward forces simultaneously on the two decks.

Another type of fastener is shown in FIG. 6. Here, the fastener 24 is of the lock type, in which the captive male component 25 is in the form of a shaft 26 having a wind head 27 at one end and having a rod 28 extending perpendicularly therethrough at the other end. The female component 30 of the fastener integral with the other pallet member is slotted to permit the rod and the shaft of component 25 to pass therethrough. At that point, the length of the shaft between the rod and the underside of the wing head is such that a simple twist of the wing head through 90 degrees will lock the two pallet members together in the region of the fastener. As in the exemplary fastener arrangement shown in FIG. 5, the fastener of FIG. 6 is provided at a plurality of locations throughout each member.

Preferably, a slot 28' is provided in the bottom wall of the hollow projecting element, along with a central hole, to permit rod 28 and shaft 26 to pass therethrough, and to be withdrawn when a single deck pallet is to be used. Obviously, the end of the shaft containing rod 28 should be positioned to encounter the underside of the opposing deck, with the wind head 27 on the opposite side of the wall, the entire male component preferably being held captive, to prevent loss thereof, by a flexible strip 29 through one end of which shaft 26 extends and the other end of which is riveted or otherwise fastened to the bottom wall of the support element.

Alternatively, slots may be provided in the nesting support elements, for insertion of strapping (not shown) to secure the two units in the double deck assembly. If desired, such strapping may be used to provide securement of two pallets in proper double deck assembly and also securement of the load on the double deck pallet.

Referring now to FIG. 7, a double deck pallet may be provided by use of only one pallet member 1 having projecting elements 3, according to another embodiment of my invention. In this embodiment, the second pallet member is simply a deck 35 having die cut holes 36 and adjacent ridges 37 therein. The ridges or protrusions 37 are positioned and shaped to correspond to the positions of and to accept the projecting support elements 3 of the deck unit 1, so that the free end of each projecting support element 3 is interlocked with a respective ridge region. The two members may then be secured together by the use of fastener elements of the type shown in FIG. 5, 6, or 12, for example. A snap-type fastener based on the arrangement of FIG. 5 is shown by way of example in FIG. 7. Here the male snap component 21 is positioned within and attached to the plane sheet deck 35 within the ridge area 37. The bottom wall of the projecting support element 3 of unit 1 is provided with a female fastener component which mates with the fastener component 21 thereby locking the two members together.

Each hole 36 is of sufficient dimensions to permit the similarly oriented support element 3 to project completely therethrough when deck member 35 is reversed for compact storage of the deck or pallet members when not in use. When in the double deck pallet configuration, the projecting support elements 3 "bottom" in the respective ridge valley or pocket so that support is provided between the two decks of the double deck pallet for any load placed thereon, and lateral shifting of the decks is prevented.

In still another embodiment of my invention, shown in FIG. 8, each pallet member is identical or substantially identical, and is provided with a deck 38 having a plurality of spaced apart holes 39 cut in predetermined pattern thereon. As in the previous embodiments each deck has a load side and an underside. Fastened to or incorporated in the underside of each deck are a plurality of parallel spaced apart support runners 40 each consisting of a pair of rails 42, 43 which are joined at equally spaced intervals by the legs of respective U-shaped elements 45. The U-shaped elements constitute, in this embodiment, the projecting support elements between decks, similar to the function of hollow elements of the first described embodiment. Associated and registered with each U-shaped element 45 is a respective hole 39 in deck 38. Preferably, three runners 40 are provided at the underside of each deck spaced to permit entry of the tongues of the fork lift truck. The combination of the runners and the U-shaped elements connected thereto form a complete support runner, and thus, two different components, namely, the runner supports and the die cut deck sheet, constitute a single deck or pallet unit instead of an integrated molded unit such as that shown in the earlier Figures. Each support runner may be provided with vertical protectors (not shown) at its two ends to protect the edges of the deck during contact with the fork lift or pallet lift truck units. Ridges or protrusions (e.g., as at 46, in phantom) similar to those shown in the earlier embodiments, except that rails 42, 43 form a part of the ridge pattern, may be used at the underside of the support runners to encompass or surround the mating support element on the opposite support runner, thereby preventing lateral movement or other shifting when the two members are assembled to form the double deck pallet.

Attachment of the support runner to the deck 38 may be accomplished by any conventional means including the use of adhesives, by stapling, or by use of a friction lock which serves to fasten the support elements or support runner to the deck without the use of additional fasteners.

Since the pallet members of FIG. 8 are identical, the reversal and 180° turning of one pallet member permits the projecting U-shaped elements of that member to enter the holes associated with the U-shaped elements of the other pallet member, and the elements to nest within one another for storage when the units are not in use. Lateral shifting of the pallet members, when in the double deck back-to-back configuration for loading purposes, is additionally prevented by insertion of rods, bars or similar locking tie devices 48 through the aligned U-shaped elements. The primary purpose of such tie devices is to prevent separation of two deck units and to provide additional rigidity and strength and greater overall pallet load capacity.

It is not essential that full deck units be utilized for loading purposes. For example, as shown in FIG. 9, the loading of palletized units is accomplished by use of three or more double support runners, each consisting in this embodiment of a runner wall 65 having a load side and an underside, and having equally spaced cup-

shaped hollow support elements **67** projecting from the underside thereof. It will readily be observed that, except for the lack of a complete deck surface underneath and supporting the load, the make-up of the support runners and the projecting elements is basically the same as that shown in some of the earlier embodiments, e.g., FIGS. **1–4**. Moreover, as in the case of the double deck loading pallets, the double unit support runners may be separated from the back-to-back configuration and nested together for storage when not in use. For loading purposes, the double deck support runners are placed in spaced-apart position for placing a palletized unit or load thereon, and one or more bands or straps **69** is wrapped about the runner or inserted through slots in the runners and around the load to secure the runners to the load. In this manner, the support runners are maintained in position beneath the load and provide support therefore while rendering the entire unit accessible to the fork lift or pallet lift trucks. In essence, this arrangement constitutes a combination of container and pallet in an integral unit, by virtue of use of straps or other connecting elements.

An even more integrated container-pallet configuration is shown in FIG. **10**. Here a plurality of single support runners **75** having projecting U-shaped support elements **77** are placed in spaced-apart relation along a flap or flaps, e.g., **82**, forming a part of the bottom wall of the container, such as a box or large carton **80**, with the support elements **77** extending through appropriately placed holes **81** in the bottom flaps of the box. Other bottom flaps **83** bear against rails **75** and thereby serve to prevent the support runners from being pushed upwardly into the box. The projection of the support elements **77** through the bottom flaps, and the load within the box exerting downwardly directed pressure on the runners, serve to maintain the support provided by strapping of the load. The support runners are further retained in position for exercising their support function and for permitting entry of the fork lift members beneath the bottom wall of the box by locking tie members (such as **48** of FIG. **8**) inserted through the U-shaped support elements **77**.

A frictional locking arrangement suitable for securing support elements to a deck or other planar member such as a rail, strip, box flap, container wall, and so forth, is shown in FIG. **11**. For the sake of example, a cup-shaped support element **50** is shown, although it is to be understood that similar principles of frictional locking may be applied to other forms of support elements. Support element **50** has a flange **51** projecting substantially perpendicularly of its side wall just beneath the lip **53** of the cup. As a result, the cup **50** may be pushed into a hole having a correspondingly shaped wall within the deck or other planar member. Thereafter, the cup is maintained securely in position with the flange **51** resting against the underside of the deck by a spring member or rim **57** which is pushed into the cup and which bottoms against the side of the deck on which the load is to be placed. The interior of cup **50** may be scored as at **58** to accept ridges **59** in the exterior of rim or collar **57**, for further frictional securement of the support element in the deck. It will be understood from the above that one may dispense entirely with a deck and simply fasten the support element directly to the bottom wall or flaps, for example, of container by means of this frictional locking arrangement or by use of other fastening methods.

The pallet member and any portion or portions thereof in each of the above-described embodiments may be fabricated from any suitable materials, including those mentioned in my aforementioned patent. Preferably, however, each pallet member may be an all-plastic unit, an all-molded wood fiber unit, an all-metal unit, or a combination of plywood or other composition deck having metal, plastic, or molded fiber projecting support elements. It is to be understood that references to "die-cut holes" in the foregoing description of preferred embodiments of the present invention, have been made simply by way of example where preformed uninterrupted sheets, whether of plywood, pressboard, metal, or other composition, are used. Obviously, where a molded plastic pallet member is to be used, the holes may be formed in the deck during the molding operation.

Suitable plastic materials for use in fabricating pallet members or any portion thereof, include organic, synthetic, or processed materials, of either the thermosetting or thermoplastic type, which are capable of being extruded cast, thermoformed, molded, or otherwise appropriately shaped. Considerations of pallet strength and load capacity, and of acceptable weight of the pallet, of course, will play a significant role in the selection of appropriate construction materials for a particular pallet application.

It is understood that the deck material used may have any pattern of corrugations (not shown) for the purpose of increasing its strength and rigidity. It is also obvious that nesting stops (not shown) located in the bottom part of the support elements may be used to facilitate detachment from other nested units.

What is claimed is:

1. In a double-deck pallet construction including separable upper and lower decks adapted for nesting to permit compact storage, the improvement comprising:

a plurality of hollow elements oppositely projecting from said decks in lateral abutment, each with sides tapering towards the free end of the element, said element free end of sufficient length to contact the opposite deck;

means for receiving said element free end provided on said deck;

said receiving means being constructed of a shape conforming to the contacting element free end to retain said free end and to maintain said abutting elements in laterally interlocked position.

2. The pallet according to claim **1** wherein said means comprises a plurality of ridges adjacent each projecting element of that member, the pattern of each ridge providing the conformation with the abutting end of the respective projecting element on the other member to receive and retain the latter projecting element.

3. The pallet according to claim **1** wherein is further included a plurality of fasteners for securing said members together in the double-deck loading configuration, each of said fasteners consisting of a captive male component on the underside of a deck of one of said members and a female component, constructed and arranged to mate with the respective male component, integral with the abutting end of the projecting element.

4. The pallet according to claim 1 wherein is further included a plurality of fasteners for securing said members together in the double-deck loading configuration, each of said fasteners consisting of a female component integral with the underside of a deck of one of said members and a captive male component, constructed and arranged to mate with the respective female component, at the abutting end of the projecting element.

5. The pallet according to claim 1 wherein each of said members has said plurality of support elements of substantially identical configuration and position thereon, said elements being tapered and forming receptacles accessible from said load side of the respective deck for nesting of said elements of one member in said elements of the other during storage of said members.

6. The pallet according to claim 2 wherein each of said members has said plurality of ridges on the underside of its deck, each of said ridges constituting a deformation of the material of the respective deck to provide a corresponding channel on the load side of that deck, the ridges on one of said members being constructed and arranged to register with and to nest within the channels of the other member.

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