

- [54] **PALLET**
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- [73] Assignee: **Schott Industries, Inc.**, Cincinnati, Ohio
- [22] Filed: **June 1, 1973**
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Related U.S. Application Data

- [63] Continuation-in-part of Ser. No. 176,581, Aug. 31, 1971, abandoned.
- [52] **U.S. Cl.** 108/55; 108/53; 206/303
- [51] **Int. Cl.** **B65d 19/44**
- [58] **Field of Search** 108/51-58; 211/41, 49 R, 55; 214/10.5, 621; 294/63; 206/386, 303, 304

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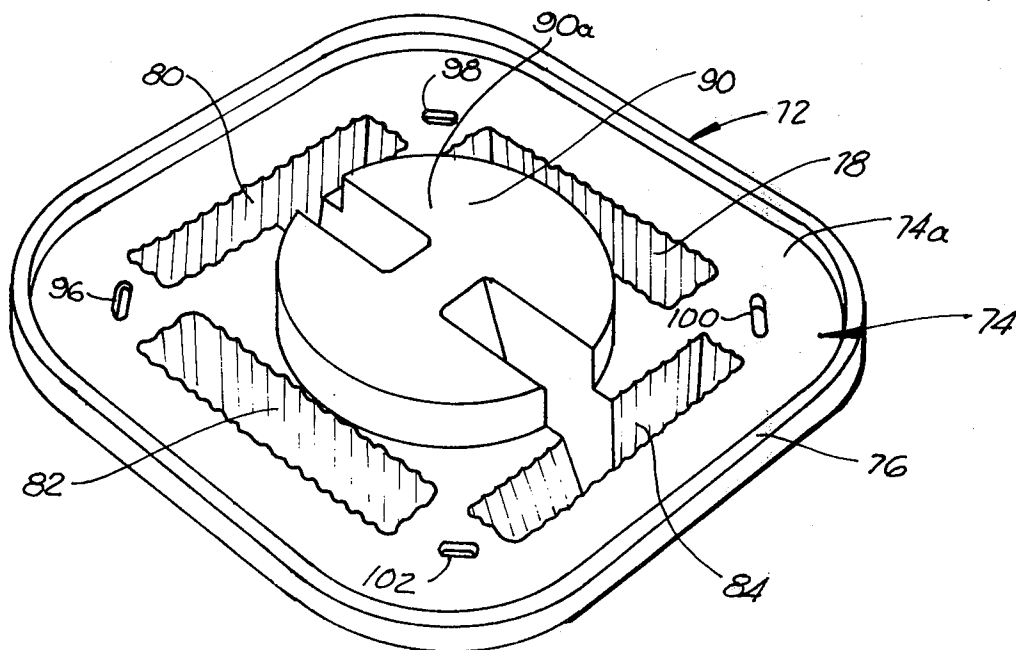
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[57] **ABSTRACT**

A molded, nestable pallet having a load receiving deck and leg members for supporting the deck above the floor. The top surface of the deck has upwardly extending, perpendicularly arranged means for centering coiled material. The underside of the deck has areas arranged to be contacted by conventional lifting equipment. The underside of the deck is also arranged to accommodate strapping or tie-down material in such a way as to prevent contact thereof by conventional lifting equipment.

4 Claims, 9 Drawing Figures



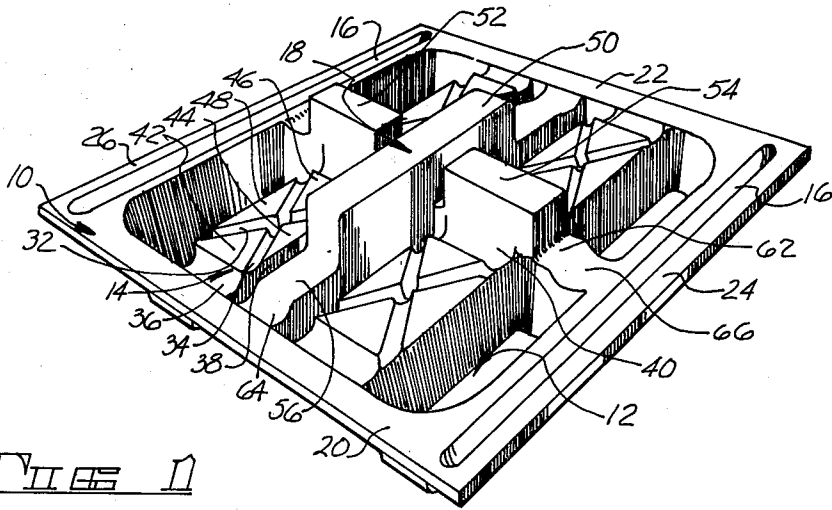


FIG 1

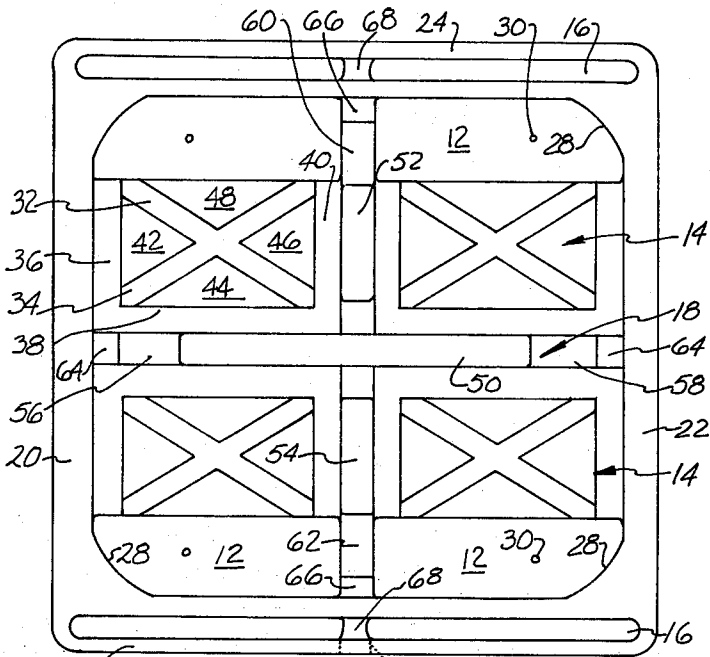


FIG 2

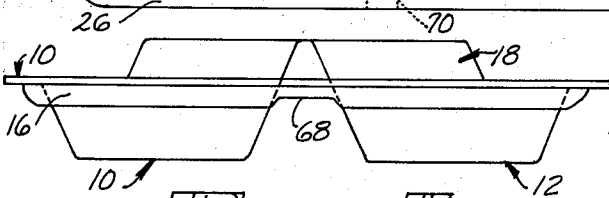


FIG 3

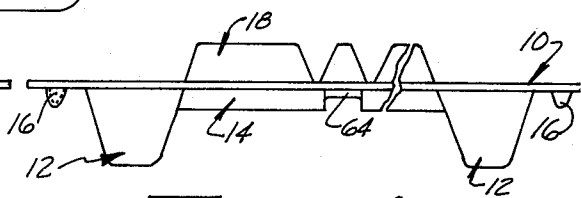
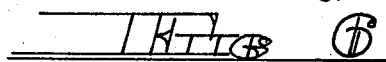
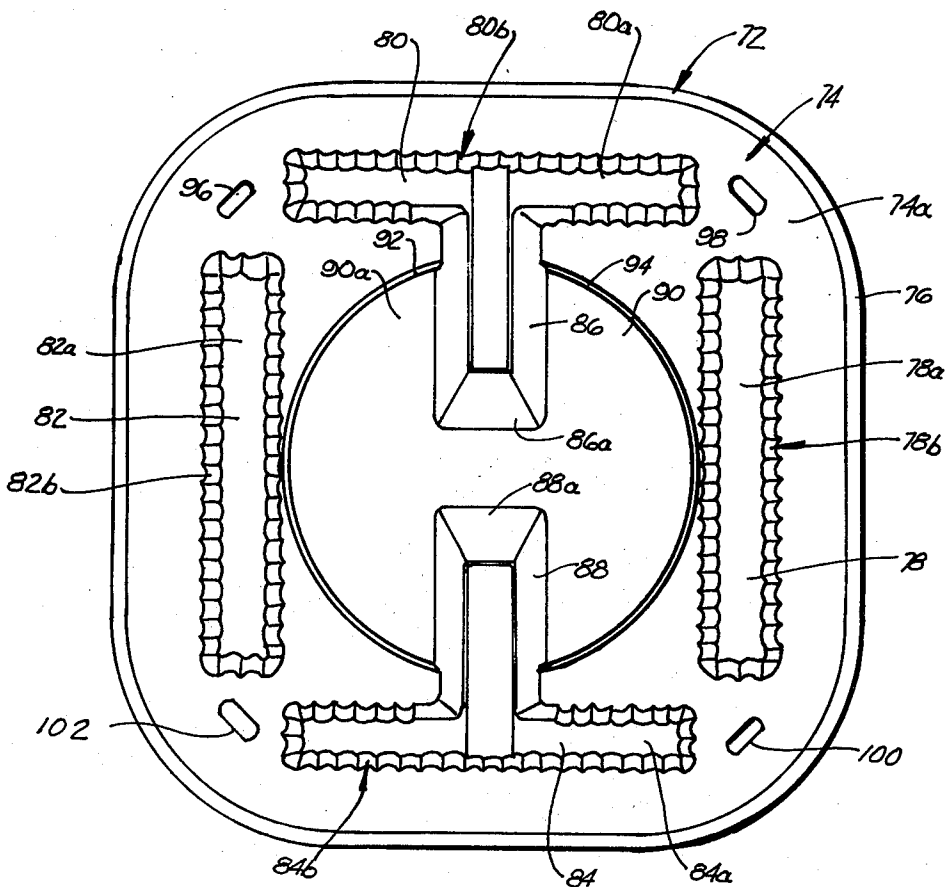
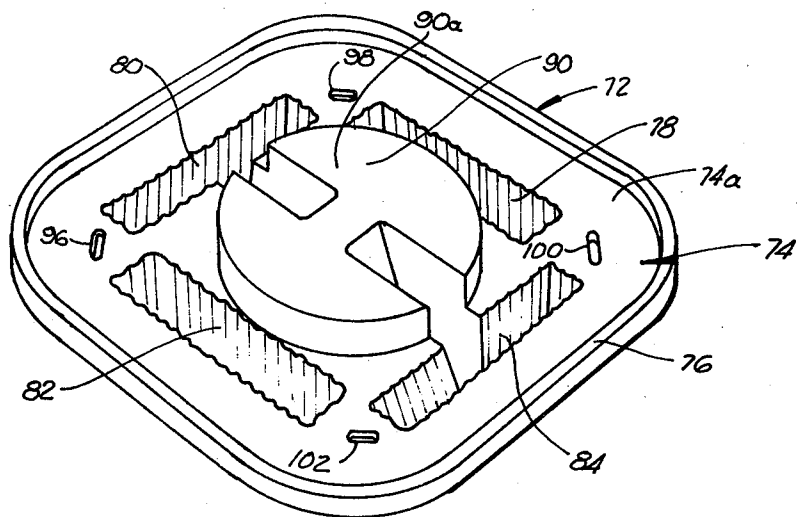


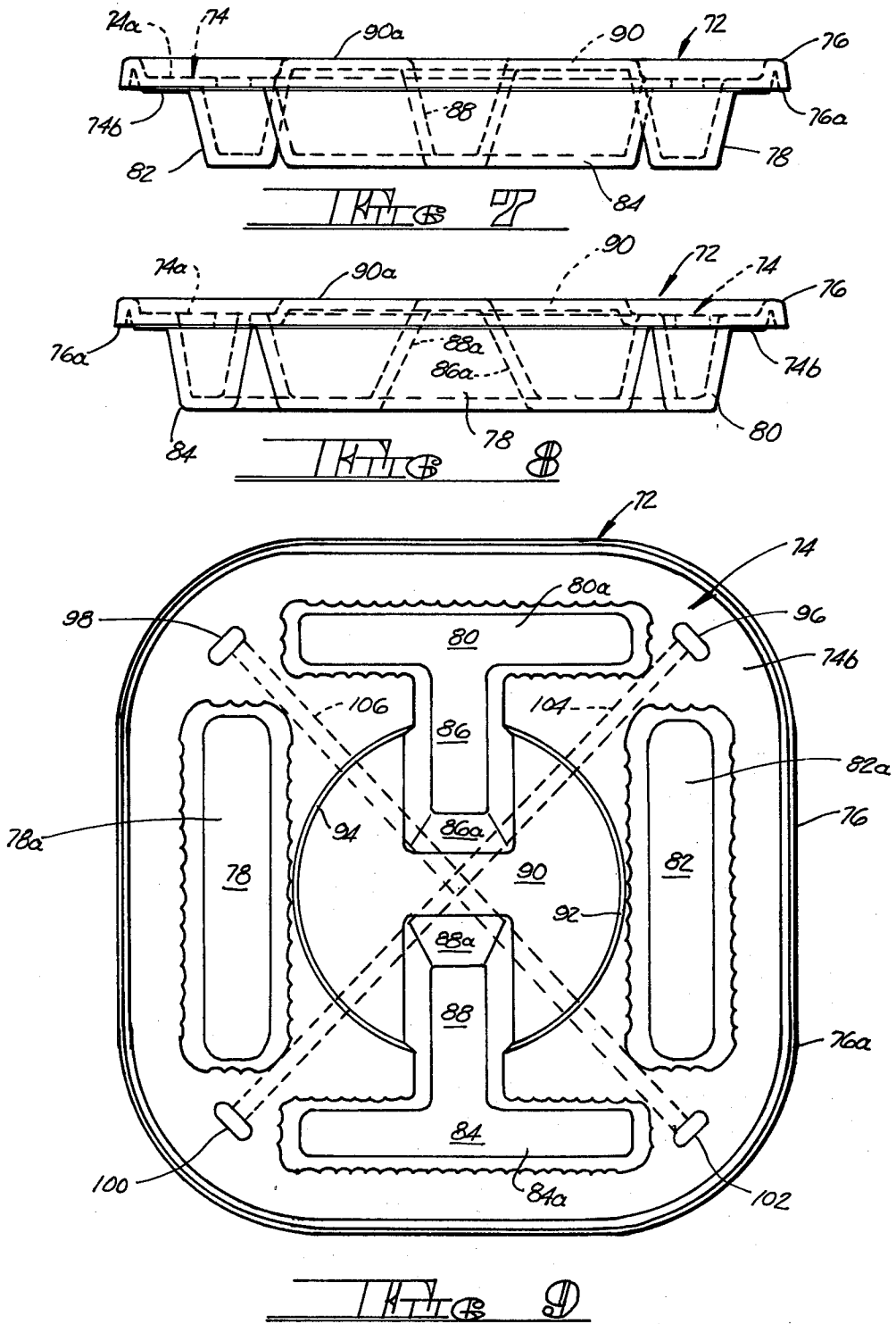
FIG 4

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CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation-in-part of the co-pending application of the same inventor, Ser. No. 176,581, filed Aug. 31, 1971, now abandoned, and entitled PALLET.

BACKGROUND OF THE DISCLOSURE

This invention relates to molded, nestable pallets for receiving and supporting coiled material so as to prevent damage during handling and shipping.

Generally considered, all pallets include a deck or supporting surface with leg members on the underside spacing the deck or supporting surface from the floor. Obviously, this design greatly facilitates handling and movement of articles stacked on the pallet. Early pallets were constructed entirely of wood, and for most purposes they were adequate. Recently, the art has developed a variety of new materials and techniques, and a number of molded plastic pallets have been developed.

Exemplary molded plastic pallets are taught in U.S. Pat. Nos. 3,228,538 in the name of Sepe et al., 3,467,032 in the name of Rowlands et al., 3,526,195 in the name of Maryonovich, 3,561,375 in the name of Hammond, 3,140,672 in the name of De Luca, 3,563,184 in the name of Angelbeck, 3,611,952 in the name of Hoffman and 3,276,808 in the name of Scaramuzzi.

Plastic pallets have several inherent advantages over the earlier wooden structures. In the first place, they can be readily mass produced by new molding and forming processes. Furthermore, if made of appropriate materials, damaged pallets can be recycled.

More importantly, the molded or formed plastic pallets can be designed so that they will nest one within another for storage purposes, or for reshipment to the point of origin in the empty condition. Various of the patents referred to above teach the concept of a pallet design so as to permit nesting and/or in some cases stacking.

As indicated earlier, the instant invention is directed particularly to molded pallets for handling coiled material. While not intended to be so limited, the pallets of the present invention are particularly adapted to support large coils of metal, paper, wire and the like. It is a primary object of this invention to provide a pallet to which coiled material can be secured, and which will, by its design, prevent damage to the coil during handling and shipping.

It is another object of this invention to provide a pallet designed to position the coiled material with respect to the pallet, and to prevent shifting of the coiled material and pallet relative to one another.

It is still a further object of the invention to provide a pallet design of the type described which will permit nesting of a plurality of the pallets, one within another, taking up far less room than an equal number of stacked conventional pallets.

Still another object of the invention is to provide a pallet design which will adequately support coiled material.

Still a further object of the invention is to provide a pallet design readily adapted to be handled with conventional lifting and loading equipment, providing two-way or four-way entry for the lifting equipment.

A further very important object of the invention is to provide a pallet design which will permit the strapping of the coiled material to the pallet in such a way that the strapping does not harm the outer convolutions of the coil, and in such a way that the strapping material cannot be damaged by handling equipment.

Numerous other objects and advantages of this invention will become apparent to the skilled worker in the art as this specification proceeds.

SUMMARY OF THE INVENTION

This invention, broadly considered, contemplates a molded, nestable pallet for supporting coiled material. It includes a load receiving deck or surface having large leg members for supporting the deck above the floor, so that the underside of the deck can be engaged by conventional lifting equipment. In one embodiment the lifting equipment can engage the pallet from either of two opposite sides thereof. In a second embodiment the pallet may be approached by conventional lifting equipment from any one of its four sides.

The top surface of the deck is provided with perpendicularly arranged means adapted to center coiled material on the deck. In one embodiment a number of perpendicularly arranged members are provided for this purpose. In a second embodiment one such member is employed.

The underside of the deck may be characterized by a plurality of stiffened areas so arranged as to be contacted by conventional lifting equipment. The arrangement of the underside of the pallet is such that strapping used to hold the coiled material on the pallet will be protected from damage by the lifting equipment.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view showing a pallet according to this invention.

FIG. 2 is a top plan view of the pallet shown in FIG. 1.

FIG. 3 is a side elevational view of the pallet shown in FIG. 1.

FIG. 4 is an end elevational view of the pallet shown in FIG. 1.

FIG. 5 is a perspective view of a second embodiment of the pallet of the present invention.

FIG. 6 is a top plan view of the pallet of FIG. 5.

FIG. 7 is a side elevational view of the pallet as viewed from the bottom side of FIG. 6.

FIG. 8 is a side elevational view of the pallet as viewed from the right side of FIG. 6.

FIG. 9 is a bottom view of the pallet of FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENT

FIGS. 1 through 4 illustrate an embodiment of the invention which may be molded or heat formed from a suitable sheet of material. While it is presently contemplated that the pallet be made of a plastic material, it will of course be apparent that other materials such as metal, fiber glass or the like could readily be employed.

The general arrangement and function of the component parts of the pallet can thus be understood by referring first to FIGS. 3 and 4 which show, respectively, an end elevation and a side elevation of the pallet of this invention.

As seen in these Figures, the pallet includes a deck or load supporting surface indicated generally at 10.

Extending downwardly from the underside of the deck 10 are the leg members indicated generally at 12. These of course serve to support the deck 10 above the floor so as to provide access to the underside of the deck 10 for strapping or lifting purposes as will be described in more detail hereinafter.

Also extending downwardly from the underside of the deck 10 are the stiffened areas indicated generally at 14 and the stiffening ribs 16. The stiffened areas 14 are arranged to be contacted by conventional lifting and handling equipment. That is, the forks of a lift truck may be inserted under the pallet from the end, between the legs 12, and will come into contact with the stiffened areas 14 in lifting the pallet. Similarly, chains, lifting bridles, and the like will be passed under the pallet so as to contact these stiffened areas.

Extending upwardly above the deck 10 are the perpendicularly arranged centering or core members indicated generally at 18. It should be apparent that when coiled material is placed on the pallet, its lower edge will rest on the deck 10, and the core members 18 will extend into the open center of the coil, serving to center the coil with respect to the pallet, and to prevent relative movement between the coil and pallet.

Turning now to FIG. 2, the pallet of this invention is shown in top plan view. The deck or supporting surface previously indicated generally at 10 includes the relatively narrow border portions 20 and 22 appearing at the left and right edges respectively, and the relatively wider border portions 24 and 26 appearing at the top and bottom of this Figure, respectively. It will be seen that the reinforcing ribs 16 are formed in the border portions 24 and 26, and as previously indicated, extend below the deck surface 10.

The leg members 12 are formed just inside the border at the corners of the pallet, and as previously indicated, are formed to extend below the deck 10 and support it above the floor. It will be observed that the outermost corner of each of the legs 12 is rounded inwardly as indicated at 28. These portions 28 may desirably be arcs of a circle having its center at the center of the pallet, and having a radius smaller than the radius of the coil normally carried by the pallet. Thus, at least the outer convolutions of the coil will be supported rather than spanning the corner of the depressed leg 12. It will also be observed that each of the leg members 12 may be provided with a drain opening 30 to prevent accumulation of water in the event empty pallets are stored outdoors.

The stiffened areas previously indicated generally at 14 are found adjacent the longer inside edge of each of the leg members 12. Taking for example the stiffened area 14 appearing at the upper left in FIG. 2, it includes the cross-shaped members 32 and 34 and the edge portions 36, 38, and 40, all of which are formed to extend the same distance below the deck 10. It is these components which are actually contacted by the forks of a lift truck or other conventional lifting and handling equipment. The triangular areas 42, 44, 46, and 48 are at the same level as the border portions 20, 22, 24, and 26, and hence define additional portions of the deck previously indicated generally at 10.

The core or centering members previously indicated generally at 18 include three elements. With reference to FIG. 2, these include the horizontally disposed member 50 and the two vertically oriented members 52 and 54. It will be seen that the members 52 and 54 are

aligned, and arranged at right angles with respect to the member 50. It should be apparent that the outermost ends of the members 50, 52, and 54 all lie on a circle having a diameter equal to or slightly smaller than the standard inside diameter of the coiled material to be carried on the pallet.

The portions 56 and 58 are the ends of the core member 50, and the portions 60 and 62 at the upper and lower ends respectively of the core members 52 and 54 all lie in the same plane as and in effect define a portion of the deck 10. At the outermost edge of each of the portions 56 and 58 is a small depression 64. As seen best in FIG. 4, the depression 64 does not extend below the surface of the deck 10 as far as the adjacent stiffened areas 14. Similarly, the small depressions 66 will be found adjacent the outermost ends of the portions 60 and 62. It will also be observed that the central portions 68 of the reinforcing or stiffening ribs 16 do not extend quite as far below the surface of the deck 10 as the remainder of the ribs 16. This arrangement, as clearly shown in FIGS. 3 and 4, provides two shallow channels extending across the underside of the pallet and meeting at its center. As will be explained shortly, these channels receive steel strapping or the like and prevent it from being damaged by lifting mechanism going under the pallet and into contact with the stiffened areas 14.

It is believed that utilization of the pallet of this invention should be clear. The coiled material will be placed on the pallet and centered thereon by virtue of the core members indicated generally at 18. Wood blocking can be arranged in a cross on the top of the coil, with the arms of the cross being of a length slightly greater than the diameter of the coil. These cross blocks will of course be aligned with the cross channels extending through the underside of the pallet. Steel strapping may then pass over the blocks at the top, down the sides of the coil, and under the pallet in order to securely hold the coil in place.

If desired, a series of short slots such as indicated at the bottom of FIG. 2 at 70, may be cut into the edge portion of the deck 10 to align with the crossed channels. Thus, if the outside diameter of the coiled material is slightly less than the width of the pallet itself, these slots will permit the edge of the pallet to be bent upwardly against the lower outside edges of the coil, thereby further protecting these edges from damage.

FIGS. 5 through 9 illustrate a second embodiment of the pallet of the present invention. In these Figures, like parts have been given like index numerals. Again, the pallet is an integral, one-piece structure which may be produced in any suitable manner including molding, heat forming, stamping or the like. It may be made of any of the materials set forth with respect to the embodiment of FIGS. 1 through 4, but preferably is made of a moldable plastic material. The pallet is nestable with other identical pallets.

In the Figures the pallet is generally indicated at 72. The pallet has a substantially planar horizontal deck generally indicated at 74 and having an upper surface 74a and a lower surface 74b. The deck 74 is surrounded by a protective rim 76. As will be evident from FIGS. 3 and 4, the rim 76 has a generally inverted U-shaped cross section, the outermost edge 76a of the rim lying in a plane slightly above the bottom surface 74b of deck 74. The corners of the deck 74 and the corresponding corners of rim 76 are rounded as shown.

The pallet deck 74 has formed therein four substantially rectangular, elongated depressions 78, 80, 82 and 84. Each of these depressions is spaced inwardly of and extends substantially parallel to the adjacent side edge of the pallet. These depressions constitute legs, and as is most clearly seen in FIGS. 7 and 8, these legs serve to support the deck 74 above the surface upon which the pallet is resting so as to provide access to the underside of the deck for strapping or lifting purposes.

Legs 78 and 82 are substantially identical and it will be noted that they terminate in substantially planar bottom surfaces 78a and 82a respectively. The side and end walls of these legs taper slightly downwardly and inwardly and may be ribbed or corrugated on their inside surfaces for additional strength. The ribs or corrugations are generally indicated at 78b and 82b, respectively (see FIG. 6).

Legs 80 and 84 are substantially identical and again have planar bottoms 80a and 84a, respectively, with their side and end walls slightly tapered downwardly and inwardly and provided with ribs or corrugations on their inner surfaces as at 80b and 84b, respectively (see FIG. 6).

The depressions or legs 80 and 84 have laterally extending, opposed depressed portions 86 and 88, respectively. The depressions 86 and 88 extend toward the center of the pallet terminating in spaced end walls 86a and 88a, respectively. The side and end walls of the depressions 86 and 88 taper downwardly and inwardly as shown. The depressions 86 and 88 constitute additional leg portions of legs 80 and 84, rendering the legs 80 and 84 T-shaped (as viewed in FIGS. 5, 6 and 9) and afford support for the center of the pallet.

As is most clearly shown in FIGS. 5 and 6, the pallet has a central raised portion 90. Leg portions 86 and 88 extend into raised portion 90. The raised portion 90 has a circular top surface 90a and arcuate side walls 92 and 94 which slope slightly downwardly and outwardly to the deck 74. It will be noted from FIGS. 7 and 8 that the top surface 90a is substantially coplanar with the uppermost portion of the protective rim 76.

The central raised portion 90 comprises a centering or core member serving the same purpose as core members 50, 52 and 54 of the embodiment of FIGS. 1 through 4, i.e. to center a coil mounted on the pallet with respect to the pallet itself and to prevent relative movement between the coil and the pallet. This is accomplished by virtue of the fact that the central raised portion 90 is so sized as to extend into the open center of the coiled material supported by the pallet. The portions 86 and 88 of legs 80 and 84 strengthen both the center of the pallet and the central raised portion 90.

The use of the pallet is similar to that of the embodiment of FIGS. 1 through 4. The coiled material to be supported is placed upon the pallet and centered thereon by the raised portion 90. The coiled material rests upon the upper surface 74a of the deck 74 and the legs 78, 80, 82 and 84 underlie the coiled material.

As in the embodiment of FIGS. 1 through 4, the embodiment of FIGS. 5 through 9 is well adapted for the use of steel strapping or the like to tie the coiled material to the pallet. To this end, slots or perforations 96, 98, 100 and 102 may be provided in the four corners of the pallet, as is clearly shown in FIGS. 5, 6 and 9.

Again, wood blocking can be arranged in a cross or X-shape on the top of the coil, with the arms of the cross being of a length slightly greater than the diame-

ter of the coil. These cross blocks will be aligned with slots 96, 98, 100 and 102 (i.e. will extend diagonally of the pallet). The steel strapping will pass over the blocks at the top of the coil, down the sides of the coil, through slots 96, 98, 100 and 102 and diagonally across the undersurface 74b of the pallet. As will be readily discerned from FIG. 9, the legs of the pallet are so arranged as to form unobstructed diagonal pathways for the straps, the straps being shown in dotted lines at 104 and 106. It will be understood that those corners of leg portions 86 and 88 shown overlapped by the straps are above the level of the underside 74b of the deck.

Again referring to FIG. 9, it will be noted that legs 78 and 82 are spaced from each other by substantially the same distance as legs 80 and 84. Unlike the embodiment of FIGS. 1 through 4 wherein the lifting arms of a fork lift truck or the like are intended to pass between the pallet legs, the pallet of FIGS. 5 through 9 has its opposed legs so spaced from each other that they will lie between the lifting arms of a fork lift truck or the like. Thus, the lifting arms will engage the undersides 74b of the pallet deck adjacent two opposite legs and between those legs and the adjacent edges of the pallet. As a consequence of this arrangement, the pallet of FIGS. 5 through 9 may be approached and engaged from any of its four sides whereas the embodiment of FIGS. 1 through 4 may be approached from only two of its sides. It will further be evident from FIG. 9 that legs 78, 80, 82 and 84 will prevent contact of straps 104 and 106 by the lifting arms of a fork lift truck or the like, irrespective of the side of the pallet approached by the fork lift truck.

Modifications may be made in the invention without departing from the spirit of it. It will be understood, for example, that the pallets of the present invention may be made in any appropriate size, depending upon the size and nature of the coiled material with which they are to be used.

Embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A molded nestable pallet for receiving and supporting a coil of material, said pallet comprising a generally square four-sided deck, four leg members formed in said deck and extending therebelow to maintain said pallet deck in parallel spaced relationship with the surface upon which said leg members rest, areas beneath said deck for approach of said pallet from any one of said four sides thereof by lifting means and for engagement of said pallet by said lifting means, each of said areas being located between one of said leg members and the adjacent side of said deck, a single substantially circular centering member extending above said deck and being integral and one piece therewith, said centering member being so sized as to enter the hollow center of a coil to be supported on said pallet deck and being so located as to position said coil centrally of said deck and to prevent relative movement of said coil and said pallet, two opposite ones of said leg members each having a lateral extension, said lateral extensions being diametrically opposed, each of said lateral extensions being formed in said deck and partially in said circular centering member whereby to strengthen and additionally support said deck and said circular centering member.

2. The structure claimed in claim 1 wherein a protective upstanding rim extends about the four sides of said deck.

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 3. The structure claimed in claim 1 including a pair of unobstructed pathways extending between said leg members on the underside of said deck, said pathways being oriented at right angles to each other and intersecting at the center of said pallet, said pathways extending diagonally of said deck, said pathways being configured to receive strap-like means for securing a

coil of material to said pallet and to protect said strap-like means from contact by a lifting means.

4. The structure claimed in claim 3 wherein each of said pathways terminates at each of its ends in a hole through said deck and through which said strap-like means may extend.

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