

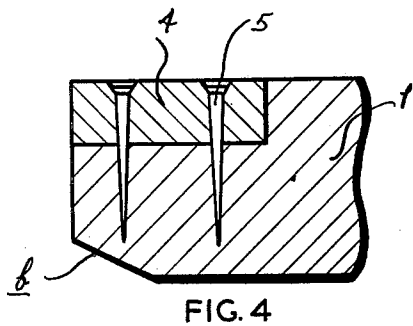
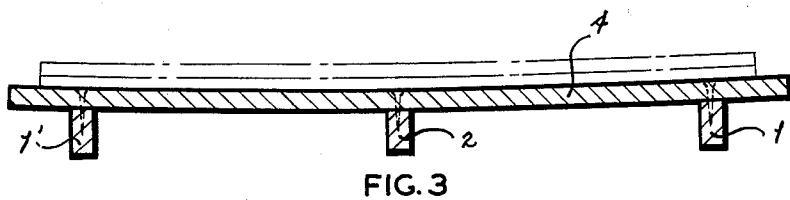
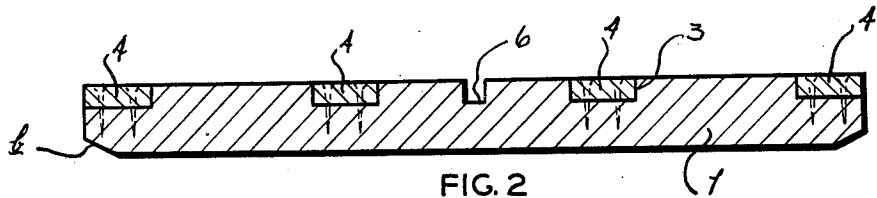
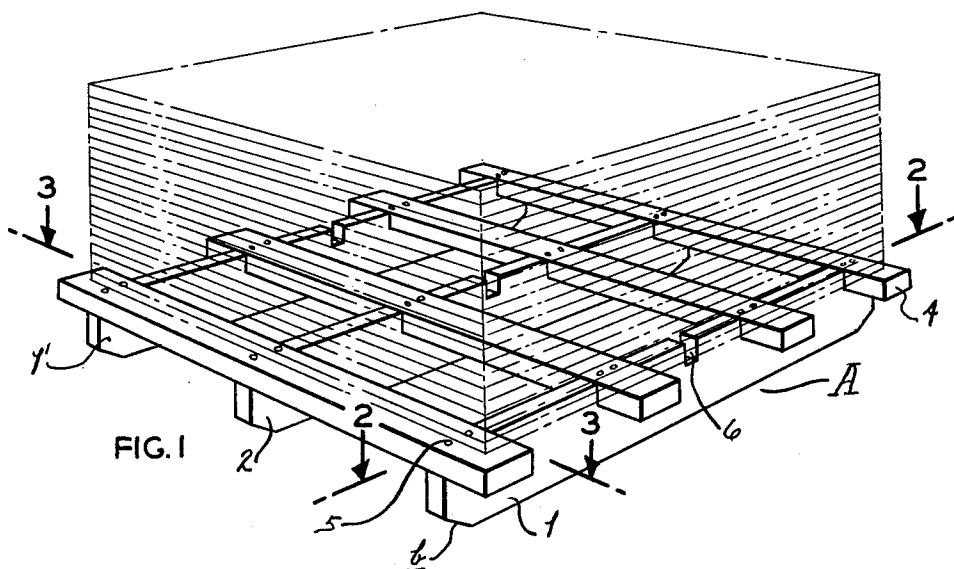
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PALLET CONSTRUCTION

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3,131,655

PALLET CONSTRUCTION

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This invention relates in general to certain new and useful improvements in pallet construction.

Heretofore, customary loading pallets, as fabricated of wood or other like material, and having deckboards secured in spaced-apart relationship upon the upper end faces of matching or uniform stringers, have not proved adequate in many instances for preventing undesired shifting of the supported load. This fact has become glaringly apparent, particularly, when the supported load is comprised of stacked sheet metal, such as, tin sheets utilized in the production of cans and other articles. The weight of a full sheet load tends to subject the deckboards to a bending force wherein the outer portions thereof tend downwardly causing the deckboards to assume a relatively upwardly convex curvature. With this resulting curvature the load will tend to float or shift and thereby move from a fully balanced condition upon the pallet with possible escape of the load and resulting damaging impact with adjacent bodies. As can be readily understood, this undesirable shiftability becomes increased with the stacking of pallets bearing such load, so that the load upon the uppermost pallet in any one stack would be presented in an attitude perilous to individuals working in the vicinity.

In analyses for the causes for the inadequacy of such conventional pallets under the aforesaid loading conditions, it has been discovered that a downward bending of the deckboards in their center portions would be desirable so that the load would tend toward the center rather than toward any outer margin, and that furthermore, loads of the character stated have been only supported upon the pallets at but a number of specific points, with incomplete distribution of the load throughout the entire pallet. Such load bearing points have been determined as being located in the region of the deckboards immediately overlying or directly supported upon the stringers.

Therefore, it is an object of the present invention to provide a pallet adapted to support a load in a stable, shift-resistant manner so that by stacking of loaded pallets the uppermost load will be as stable as the load on the bottommost pallet.

It is an object of the present invention to provide a pallet adapted to support a load in a stable-non-shiftable manner.

It is another object of the present invention to provide a pallet adapted for distributing a load throughout the entire pallet thereby obviating load support at only selected, limited points on the pallet.

It is a further object of the present invention to provide a pallet which is so constructed to present a tightly integrated unit, resistant to breakage, and being capable of supporting greater loads than currently available pallets fabricated from like components.

It is an additional object of the present invention to provide a pallet which when empty or under light load may be moved about in the manner of a skid, having a two-member contact with the support surface, and which when under full load is adapted for three-member contact with the support surface.

It is a further object of the present invention to provide a pallet which may be most economically constructed; which is durable and reliable in usage; and which is so designed as to be suitable for supporting metal sheets in a balanced, shift-resistant manner.

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Other objects and details of the invention will be apparent from the following description, when read in connection with the accompanying drawing, wherein:

FIGURE 1 is a perspective view of a pallet constructed in accordance with and embodying the present invention.

FIGURE 2 is a vertical transverse section taken on the line 2—2 of FIGURE 1.

FIGURE 3 is a vertical transverse section taken on the line 3—3 of FIGURE 1.

FIGURE 4 is an enlarged fragmentary view of a portion of the section shown in FIGURE 2.

Referring now by reference characters to the drawing, A designates a pallet comprising spaced apart, parallel side stringers 1, 1' and a center stringer 2 parallel to, and disposed intermediately of, said side stringers 1, 1'; the upper end faces of said stringers 1, 1' and 2 being planarwise aligned. Said center stringer 2 is of relatively reduced height so that the lower face thereof will be located normally upwardly of the lower faces of side stringers 1, 1'. Said side stringers 1, 1' and center stringer 2 are beveled at their opposite lower ends, as at b, for purposes presently appearing.

Said side stringers 1, 1', and center stringer 2 are provided in their upper portions with upwardly opening, horizontally aligned recesses 3 for reception therein of deckboards 4 extending transversely across said stringers 1, 1', 2. Deckboards 4 are in mutually parallel relationship, being axially normal to stringers 1, 1', 2. The height of recesses 3 and deckboards 4 is substantially identical so that the upper surfaces of deckboards 4 are flush or planarwise aligned with the upper end faces of stringers 1, 1', 2.

It will be seen that the fit between deckboards 4 and recesses 3 is one of close tolerance, so that the deckboards are snugly accepted within the recesses, in the manner of a mortise and tenon relationship. However, the immediate flush relationship of the upper surfaces of the deckboards 4 and upper end faces of the stringers 1, 1', 2 is of great importance, with the deckboards not extending either above or below the upper end faces of stringers 1, 1', 2.

Conventional means may be utilized for maintaining deckboards 4 and stringers 1, 1', 2 in assembled relationship, such as, by means of nails 5, as, for instances, those of ring shank character, wherein the heads of nails 5 are located downwardly, such as in the manner of a countersink, of the upper surface of deckboards 4 so that no undesired abrading contact will be made with any load component.

With this interengagement between deckboards 4 and stringers 1, 1', 2, a tightly and compactly constructed pallet will result, capable of supporting loads of greater extent than pallets of conventional designs and constructed of deckboards and stringers of the same dimensions as those utilized in the present invention. Since the specific construction shown assures that any load upon pallet A will be transmitted throughout the entire pallet, with even distribution so that no particular point or points will bear an undue proportion of such load with obvious wastage of other load-supporting components, and resulting load imbalance.

Stringers 1, 1', 2 may be provided with aligned notch-like openings 6 for permitting extension therethrough of strapping members (not shown) for disposition about loads received upon pallet A. It is recognized that sheet material is conventionally strapped and thus openings 6 permit convenience in location of the strap about the lower portion of the load.

The relative shortness or reduced height of center stringer 2 will cause deckboards 4 to assume a downwardly convex attitude when pallet A is in fully loaded condition as the center portion of said deckboards will

tend downwardly under the applied load. The limit of such downward bending movement of deckboards 4 will be determined by the engagement of the lower face of center stringer 2 with the support surface, as a floor. FIGURE 3 illustrates this state, but in a highly exaggerated manner for purposes of illustration. Thus, by this unique feature, pallet A is endowed with the capability of developing an accepted and desirable "buckling" in its center portion to thereby stabilize the load with the center of gravity of the latter being substantially rigidly positioned. Thus, the shortness of center stringer 2 provides the necessary "give" so that the load will be directed toward the center of the pallet as opposed to margins thereof.

Deckboards 4 being in flush arrangement with the stringers 1, 1', 2 resist any tendency to bend downwardly at their ends under the supported load, below their center portions, and thus assure proper support for the load.

Thus, pallet A comprises novel features, particularly in the shortness of center stringer 2 and the flush arrangement of deckboards 4 with the stringers to assure even distribution of load; resistance of deckboards to upwardly convex bending; and capability of deckboards to buckle into downwardly convex position.

Pallet A is specially suited for loads comprised of stacks of sheet material, such as tin sheets utilized in can manufacture. By the unusual properties of pallet A substantial loads of sheet material may be accommodated, with the development of untoward floating or shifting of the loads but with maintenance of the same in a balanced state, thereby preventing the costly damaging contact with the surroundings, as would eventuate from any gravity-impelled shifting or sliding, as normally encountered when such loads are applied upon conventional pallets.

Due to the shortness of center stringer 2, pallet A, when empty or when supporting a relatively light load, will engage the support surface by only the two side stringers, whereupon said pallet assumes the character of a skid and being thus adapted for ready mobility, as by sliding across the support surface into any selected position. The beveled end faces of said stringers 1, 1', as at B, assist in such movement.

In actual practice, differential height between center stringer 2 and side stringers 1, 1' is relatively small, as in the order of $\frac{1}{8}$ to $\frac{1}{4}$ inch. Such a limited height differential assures that center stringer 2 will be removed from contact with the support surface when the pallet is empty or in lightly loaded condition for skid-like movement and that the same will be in contact with such

support surfaces under full load without diminution in the load-bearing character of the center portion of the pallet. Thus, it will be seen that the stringers of pallet A are so designed as to endow said pallet with the characteristics of a skid as well as a pallet, without any loss of the benefits of either.

It should be understood that changes and modifications in the formation, construction, arrangement, and combination of the several parts of the pallet construction may be made and substituted for those herein shown and described without departing from the nature and principle of our invention.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

A pallet comprising a pair of parallel side skids, said side skids being of equal height and disposed for sliding engagement with a support surface, a plurality of deckboards extending transversely between said side skids and being secured thereto for defining a load-carrying deck normally substantially planarwise parallel to the support surface, said deckboards being fabricated of material having an inherent resiliency, a central stringer parallel to said side skids and intermediate same being secured to said deckboards for suspension therefrom, said stringer being of less height than said side skids so that when said pallet is disposed upon a support surface, the central stringer will be normally in spaced relationship thereto with the side skids supporting the pallet, whereby upon downward urging of said deckboards through the imposition of applied loads thereon, said central stringer will be forced into lowered, load-supporting position upon said support surface, and will be restored to elevated position upon return of said deckboards to substantially planarwise parallel relation to the support surface upon reduction of the load thereon.

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