A one-piece panel retainer is provided for attaching side panels to a portable tiering pallet rack having a base frame and a plurality of vertical corner posts. Each retainer is formed with a body which nests against the inner peripheral surfaces of a post, mounting clips which hold it against the post, tangs which preclude sliding along the surfaces of the post, and cleats which position and engage the side panels approximately tangent to the outer peripheral surfaces of the post. In a typical installation, at least two such retainers may be mounted on each post. One retainer per post may be used for low panels or for racks with panel securing devices built into the pallet base frame.
The present invention relates in general to pallet storage systems and, more specifically, to hardware for attaching side panels to the upright posts of a portable tiering pallet rack.

Portable tiering pallet racks are widely used in materials handling and storage operations. They are noted for their ease of assembly and disassembly and their ability to be stacked or tiered in numerous configurations to accommodate changing needs of the user. One such need which often arises is the necessity of equipping at least some units of the system with side wall panels to hold objects which tend to roll or slide off of their supporting pallet.

In light of the foregoing, it is an object of the present invention to provide a simple, inexpensive retainer for attaching side panels to the vertical corner posts of a portable tiering pallet rack.

Another object of the invention is to provide a retainer of the character just set forth and which may be quickly installed or removed without the need for special tools or additional fastening devices such as screws or nails.

Other objects and advantages of the invention will become apparent from the following detailed description, taken together with the accompanying drawings, in which:

FIG. 1 is a perspective view of an illustrative portable tiering pallet rack having side panels attached to its upright corner posts by a novel panel retainer exemplifying the present invention.

FIG. 2 is an enlarged fragmentary perspective view showing in greater detail one of the panel retainers of FIG. 1 in engagement with a vertical corner post of the rack and a portion of a side panel.

FIG. 3 is a further enlarged plane view of the exemplary panel retainer.

FIG. 4 is an elevational view of the panel retainer shown in FIG. 3.

FIG. 5 is an enlarged fragmentary perspective view similar to FIG. 2 but showing a modified form of the panel retainer also exemplifying the invention.

FIG. 6 is a perspective view of another modified form of the panel retainer exemplifying the invention.

FIG. 7 is an enlarged fragmentary perspective view similar to FIG. 2 but showing the retainer in engagement with side panels of a different type.

FIG. 8 is a perspective view showing yet another modified form of the panel retainer for use with generally cylindrical posts, and

FIG. 9 is a plan view of a panel retainer shown in FIG. 8.

While the invention is susceptible of various modifications and alternative constructions, certain illustrative embodiments have been shown in the drawings and will be described below in considerable detail. It should be understood, however, that there is no intention to limit the invention to the specific forms disclosed but, on the contrary, the intention is to cover all modifications, alternative constructions, and equivalents falling within the spirit and scope of the invention.

Referring more specifically to FIG. 1, the invention is there exemplified in a plurality of novel panel retainers holding opposed pairs of side panels 11 on a portable tiering pallet rack 12. The pallet rack 12 happens in this instance to be of a well-known type. It comprises a base frame 14, a floor panel 15, and depending sockets 16 with feet 18 of hollow pyramidal form at their lower ends, such parts together defining a pallet. Telescopically mounted in the sockets 16 are a plurality of vertical corner posts 19 having pyramidal fittings 20 at their upper ends. The posts 19 comprise a tiering frame adapted to support one or more pallet base frame units 14 in stacked or tiered relation above it, the post fittings 20 engaging the feet 18 of the supported unit. Stacking or tiering of the pallet frame units 14 may be accomplished in a well-known manner as by means of a forklift truck.

Provision is made for enabling the panel retainers 10 to be quickly installed or removed without the need for special tools or additional fastening devices such as screws or nails. In furtherance of this objective, and as shown more clearly in FIGS. 2 through 4, each panel retainer 10 is formed as an integral unit of stamped sheet metal or the like. The retainer has a body 21 divided vertically into two main angular portions and adapted to nest against the inner peripheral surfaces of its associated post, or in other words, those surfaces which face inwardly of the pallet. The retainer 10 is fastened snugly against the post by means of mounting clips 22. The latter are adapted to extend over the diagonal or maximum cross sectional dimension of the post, locking the retainer 10 thereon.

In those instances where the retainer is made of sheet metal having resilient properties, the retainer may be installed by springing apart the two angular portions of the body 21 sufficiently to force the clips 22 around the diagonally opposed corners of the post. Where the material of the retainer is not resilient, the clips may be simply bent over against the post surface at the time of mounting.

For the purpose of precluding sliding of the retainer 10 along the surfaces of the post, the retainer body is formed with a plurality of opposed tangs 24. The latter are struck out of the plane of the body adjacent its upper and lower ends so that the free end of each tang tends to bite into the post surface when a longitudinal force is applied toward its projecting end. In the present instance, as shown in FIGS. 2, 3 and 4, the retainer 10 has a total of four of the tangs 24 but the number and location could be varied to meet different applications.

The retainers 10 are constructed and arranged to engage the ends of the side panels 11 with a slip fit and to position the panels 11 on the pallet base frame 14 so as to leave a maximum of storage space within the resulting enclosure. This is accomplished by forming the retainer 10 with a plurality of cleats 25, 26 arranged in one or more cooperating sets. The cleats of each set are spaced apart slightly in excess of the thickness of a side panel 11 and are situated adjacent the lateral extremities of the retainer body 21 to position the outer surface of the panel 11 tangent to the outer peripheral surface of the associated post. In the present instance, the clip 10 is provided with two sets of the cleats 25, 26 disposed substantially perpendicular to each other. The cleats 25 of each set are vertically spaced, coplanar, and abuttingly engage the outer face of the side panel 11. They are opposed by a cleat 26 generally parallel to the cleats 25 but spaced therefrom so as to abuttingly engage the inner face of the side panel 11.
To assemble the side panels 11 on the pallet base frame 14, two of the retainers 10 are mounted in vertically spaced relation on each corner post 19 (FIG. 1). It should be noted, however, that only one of the retainers 10 per post need be used where the side panels 11 are low, or where the pallet base frame already has panel securing devices thereon. In instances where the side panels 11 are somewhat shorter in length that the distance between the overhanging edges of the pyramid fittings 20 of adjacent posts, the side panels may be slipped into place from above and positioned between the aligned sets of cleats 25, 26 of the retainers 10. In situations where the side panels are too long to permit this, the posts 19 may be disassembled from their sockets 16, each fitted with a pair of retainers 10, and then telescoped down over the end portions of adjacent side panels and repositioned in their sockets.

For those instances where quick disassembly is not a factor, provision is made for securing the side panels 11 more permanently to the retainers 10. This may be readily accomplished by forming each of the tabs 25 with a central aperture 28 to receive a bolt or other fastener.

Turning now to FIG. 5, there is shown a modified form of panel retainer 10a also exemplifying the present invention. In order to simplify the description, parts identical with those already discussed will be identified herein by the same reference numerals; different parts will be identified by different reference numerals. The retainer 10a is similar to the retainer 10 described above except for the fact that the retainer 10a is adapted for use where it is desired to mount an opposed pair of panels 11 at the ends of the pallet base frame 14. The body 21a of the retainer 10a is accordingly formed at one end with only one set of the cleats 25, 26, and mounting clips 22. The end opposite the cleats is formed with a mounting clip 30 which extends the length of the retainer body 21a. Tangs 24 struck from the body 21a preclude vertical sliding movement on the post.

FIG. 6 discloses a further modified form of retainer 10b also exemplifying the present invention. In this instance, the retainer 10b is adapted to nest against the outer peripheral surfaces of a post 19, being retained thereon by means of mounting clips 31 which engage the inner peripheral surfaces of the post. For precluding vertical sliding movement on the post, the body 21b of the retainer is formed with tangs 24 like those already described, and additional tangs 32 in the mounting clips 31. The retainer 10b has only single cleats 34 at each end thereof and which abuttingly engage the outer faces of adjacent side panels 11. Each cleat 34 has a central aperture 35 for receiving a screw or bolt to hold the side panel in place.

FIG. 7 discloses another modified form of retainer 10c similar to the retainer 10 but adapted for use with side panels 36, 38 of wire mesh construction. In the present instance, the retainer 10c is provided with mounting clips 22 and tangs 24 like those previously described. At one end, the retainer 10c has cleats 25, 26 adapted to receive the side panel 36 with a slip fit in the manner previously described for the side panel 11. At its opposite end, the retainer 10c is formed with a single cleat 39 having a central aperture 40. The latter is adapted to receive slidable plunger 41 of latch 42 mounted on the side panel 38. The latch is held in position on the side panel by means of a pair of fixed guides 42. With this arrangement, a side panel 38 equipped with four such latches may be quickly mounted upon or dismounted from the pallet rack. By disengaging the top two latches, the panel may be tilted downwardly to serve as a drop gate affording access to the interior of the pallet enclosure.

Referring next to FIGS. 8 and 9, there is shown still another modified form of panel retainer 10d also exemplifying the invention. The retainer 10d has a body 21d of arcuate cross section and is adapted for mounting on a pallet rack having corner posts 44 of circular cross section. The retainer 10d is formed with clips 45 on opposite sides of the body which wrap around the post 44 and hold the retainer snugly in place thereon. Small wedge shaped tangs 46 struck out of the body 21d anchor the retainer 10d against movement vertically of the post. Two sets of coacting cleats 48, 49, similar to the cleats 25, 26 are fashioned in the body of the retainer 10d for receiving and engaging the ends of adjacent side panels 11. Each set of the cleats 48, 49 is generally perpendicular to the other and is situated on the retainer body so that the outer surface of the side panel engaged thereby will be approximately tangent to the outer peripheral surface of the post.

What is claimed is:

1. A one-piece panel retainer for attaching side panels to a portable tiering pallet rack having a base frame and a plurality of vertical corner posts, said retainer comprising, in combination:
   a. a body shaped to nest against the peripheral surfaces of a post on one side of the maximum cross sectional dimension of said post,
   b. mounting clips on said body adapted to extend over the maximum cross sectional dimension of the post and into engagement with the peripheral surfaces on the opposite side thereof,
   c. a plurality of tangs struck out of said body adjacent the upper and lower ends thereof and adapted to engage the surfaces of the post to resist movement longitudinally thereof,
   d. said tangs adjacent the upper end extending and acting in the opposite direction from said tangs at the lower end,
   e. at least one set of cleats formed on said body and spaced apart to accommodate the thickness of a side panel and define a slip fit therewith,
   f. said set of cleats comprising a pair which are spaced apart and coplanar and a single cleat spaced from said pair by the approximate thickness of a side panel,
   g. said cleats being situated on said body in position to hold the side panel with its outer surface approximately tangent to the outer peripheral surface of the post.

2. A panel retainer as set forth in claim 1 wherein said coplanar pair of cleats are in a plane approximately tangent to the outer peripheral surface of the post.

3. A panel retainer as set forth in claim 1 wherein additional tangs are struck out of said mounting clips adjacent the upper and lower ends of said body and adapted to engage the surfaces of the post to resist movement longitudinally thereof, said additional tangs adjacent the upper end of said body extending and acting in the opposite direction from said additional tangs at the lower end.
4. A panel retainer as set forth in claim 2 wherein said body is divided into two main angular portions adapted to nest against a corner post of rectangular cross section.

5. A panel retainer as set forth in claim 2 wherein said body is formed of arcuate cross section and adapted to nest against a corner post of circular cross section.

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