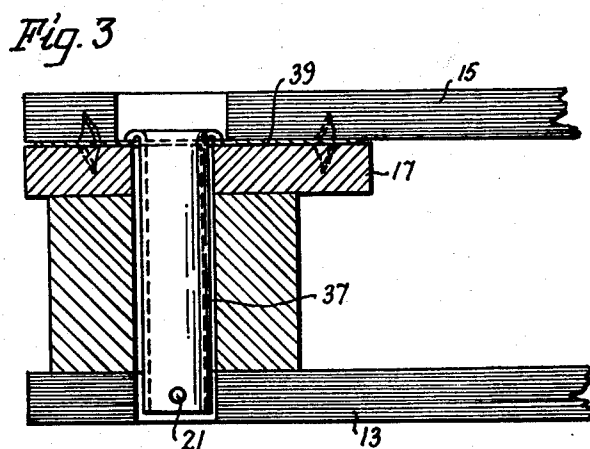
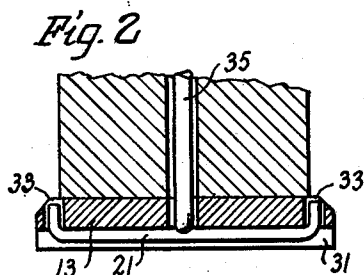
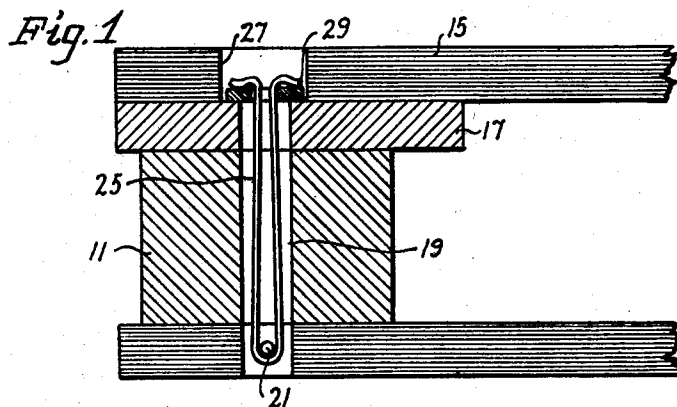


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C. ÅKE TRAPP
LOAD SUPPORTING PALLET
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1

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LOAD SUPPORTING PALLET

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7 Claims. (Cl. 248—120)

The present invention relates to a load supporting pallet consisting of an upper board layer, a lower board layer and spacer members inserted between said layers.

In assembling such pallets it is known to use nails, rivets or bolts, which often project wholly through the members laid upon each other. Said connecting members usually do not protect the boards from being split due to drying of the wood or rough handling, but on the contrary they often contribute to splitting on account of their wedge action. It has been suggested to prevent splitting by wrapping the boards with iron bands, but after a relatively slight upsetting of the wood at the edges of the boards due to careless handling, said bands become inoperative, and moreover such band clouts often cause damages to the load.

The object of the present invention is to eliminate these drawbacks and to provide a load supporting pallet, which is rigid and can stand rough treatment without the boards therein being split, which has no metallic members projecting from the wood of the pallet and capable of catching the load or the surface on which the pallet is placed, and which pallet also is easy to assemble and is simple and cheap as regards the design of the strengthening and connecting members.

According to the invention said objects are attained thereby that a stiffening member for a lower layer board, which member consists of a rod, pin, bolt or similar extending straightly and horizontally within a bore or groove in the board and having its ends adapted for engagement with the lateral parts of the board, is held together with an upper layer board or an upper layer stringer by means of a vertical connecting member, which encloses or is attached in any other way to the middle of said stiffening member and which extends upwardly through a vertical bore to an upper supporting or abutting member, preferably in the shape of a pin or a washer, to which member said connecting member is attached, e.g. by being bent over the same.

Some embodiments of a pallet having reinforcing and connecting members according to invention will be more closely described hereinbelow with reference to the accompanying drawings. Fig. 1 shows a preferred embodiment in a vertical section taken parallelly to the boards. Fig. 2 is a detail of another embodiment, shown in section taken at right angles to the boards. Fig. 3 is a vertical sectional view of still another embodiment.

The pallet shown in Figs. 1 and 2 consists of an upper board layer, upon which the moved load should be placed, a lower board layer resting on the ground, and a number of spacer members in the shape of blocks 11 interposed therebetween. The blocks serve to make room between the board layers for the forks of a fork truck, by means of which the pallet is lifted when moved. The lower board layer consists of parallel boards 13, usually three in number, which extend along the longer sides of the pallet and between them. The upper board layer consists of boards 15 extending parallelly to the lower layer boards. These boards may be five or seven in number,

2

and there is a board located exactly above each one of the lower layer boards. Stringers 17 extend below and across the upper layer boards in order to connect them in the lateral direction. Preferably, there are three stringers, one at each end of the pallet and one midway between the ends. Blocks 11 are arranged between the lower layer boards and the stringers. The blocks are preferably made of wood, may be square or round in a horizontal cross section and are approximately as long and as wide as the width of the lower layer boards 13 or of stringers 17, or often somewhat smaller. Where the lower boards cross the stringers, a vertical bore 19 goes straight through the upper board, the stringer, the block and the lower board. Located in said bore is the member for connecting the different parts of the pallet, which member will be more closely described below.

At the bore 19 the lower board 13 is stiffened by a rigid pin 21 inserted into a bore at right angles to the fibre direction of the wood and extending between the edge faces of the board and parallelly to the horizontal flat sides thereof. The pin 21, which may consist of a round iron wire of a diameter of a quarter of an inch, has an upset head at one end, which is driven into the wood, and is clinched or riveted over a washer at its other end. Said pin holds the board together in the width direction, stiffens the cross section against bending and also reinforces the board against shearing stresses. Therefore, the board is prevented from splitting when the pallet is roughly treated, or is held together with a strength merely slightly reduced when the board has already been split, viz., by a fourfold action of the iron pin, said action consisting therein that it counteracts: (1) stresses striving to pull the right-hand board half in Fig. 1 straight to the right in order to split the board, (2) stresses striving to bend the right-hand part of the board upwardly or downwardly relatively to the left-hand part in order to brake the board about its center line, (3) stresses striving to raise or lower the right-hand part of the board relatively to the left-hand part in order to shear off the board vertically, and (4) stresses striving to displace a part of the board in its longitudinal direction along a split separating said part from the rest of the board. With regard to the said bending stresses, which often are the dominating ones, the pin is preferably given a rectangular cross section, the greater dimension being in the height direction.

The vertical connecting member consists of a thick wire 25 which is bent double and from below inserted into the bore 19 with its branches extending on different sides of the pin 21, so that the latter is embraced by the bend of the wire. The stiffness of the pin 21 causes, that the forces are distributed over the whole width of the board 13 and that the wire 25 is held taut.

In addition to the above-mentioned stiffening and connecting members, nails, dented plates etc. may be used in order to strengthen the pallet further, when required. Even the stringer 17 may be held together by a pin extending between its edge faces. If said pin extends across the vertical bore 19, the wire 25 may be bent over the same.

In case the upper boards or the stringers do not have any stiffening pins, the pulling force of the wire 25 is transmitted to the upper layer by means of some other metallic supporting or abutting member, which distributes the forces over the surface of the wood material. Fig. 1 shows an example thereof. The upper board 15 has a bore 27 wider than the bore 19 through the block 11 and the stringer 17. A washer 29 is laid upon the recess thus formed. The ends of the wire 25 are inserted through the hole of said washer and bent against the upper face of the same. The washer forms an abutment member resting on the stringer 17, and the upper layer boards are attached to the stringers by nails, cramp irons

3

or similar. According to a modification, the bore 27 is made so shallow that the recess between the two different bore diameters is situated in the middle of the upper board 15.

The stiffening member 21 for holding together the boards in the transverse direction may be placed in a groove in the free flat side of the board, instead of going through a bore therein. Fig. 2 shows an example thereof. The lower board 13 has a groove 31 extending transversely in the lower face of the board, and near the ends of said groove there are two vertical bores 33. The ends of the pin 21, which may be bent in advance, project into said bores but do not reach up to the upper face of the board, the pin being completely enclosed in the wood. The vertical connecting member consists of a thick wire 35 attached to the midpoint of the pin 21 by welding and the upper end of which being riveted over a washer.

In the pallet shown in Fig. 3 the vertical connecting member consists of a tube 37. The pin 21, which reinforces the lower layer board 13, extends through two diametrically opposite bores in the wall of said tube close to its lower end. The upper end of the tube holds the upper layer thereby, that it goes through and has its edge bent over a dented plate 39, interposed in the joint between the upper layer board 15 and the stringer 17. This design makes the interior of the tube accessible from above, whereby it is possible to insert therein a pole pertaining to a fence or a framework of some kind for holding the load on the pallet. The end of the pole may rest on the pin 21, or the pole may have a recess resting on the bent edge of the tube. Thus the tube 37 also serves as a holder for a removable side support for the load.

I claim:

1. A load supporting pallet, comprising a lower layer of parallel spaced boards, an upper layer of boards parallel to said lower layer boards, wooden stringers connecting the upper layer boards together, wooden spacer blocks interposed between the stringers and the lower layer boards at their crossing points, a vertical bore through the block, the lower layer board, the stringer and the upper layer board, a horizontal bore through the lower layer board at right angles to the grain of the wood of said board and in communication with said vertical bore, a rigid pin inserted in said horizontal bore and having its ends fastened to the side portions of the board, an apertured plate located above said stringer, and a vertical connecting member in said vertical bore, the lower end of which is connected to the middle part of said pin and the upper end of which is put through and clinched over said plate.

2. A load supporting pallet as claimed in claim 1, in which said vertical connecting member is a tube.

4

3. A load supporting pallet as claimed in claim 1, in which said vertical connecting member is a doubled wire embracing the pin with its bent center part and having its ends clinched over said apertured plate.

4. A load supporting pallet comprising an upper layer of boards, a lower layer of boards, a plurality of spacer members inserted between said layer of boards, each spacer member having a central vertical bore and each lower layer board having a vertical bore forming an extension of the bore of the adjoining spacer member and a horizontal bore running approximately midway between and parallel to the broad faces of the board and crossing said vertical bore in the interior of the board, a stiffening member comprising a substantially straight pin inserted in said horizontal bore, said stiffening member having ends in engagement with the edge parts of the board, a vertical connecting member inserted in the bore of said spacer member, said vertical connecting member being made separately from said stiffening member and connected to the same at the crossing point of the vertical bore and the horizontal bore within the lower layer board, and a metallic supporting member arranged in the upper layer board and located below the upper face thereof, said vertical connecting member being fastened to said metallic member to hold the upper and lower layer boards together.

5. A load supporting pallet as claimed in claim 4, in which said connecting member comprises a tube having two diametrically opposite apertures at an end thereof, said pin being connected to said tube by being inserted through said aperture.

6. A load supporting pallet as claimed in claim 1, in which the upper layer board has a vertical bore of a greater diameter than the bore of the stringer, and the apertured plate is shaped as a washer and rests upon the recess formed by said differently sized bores.

7. A load supporting pallet as claimed in claim 1, in which said apertured plate is a dented plate clasped between the stringer and the upper layer board.

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