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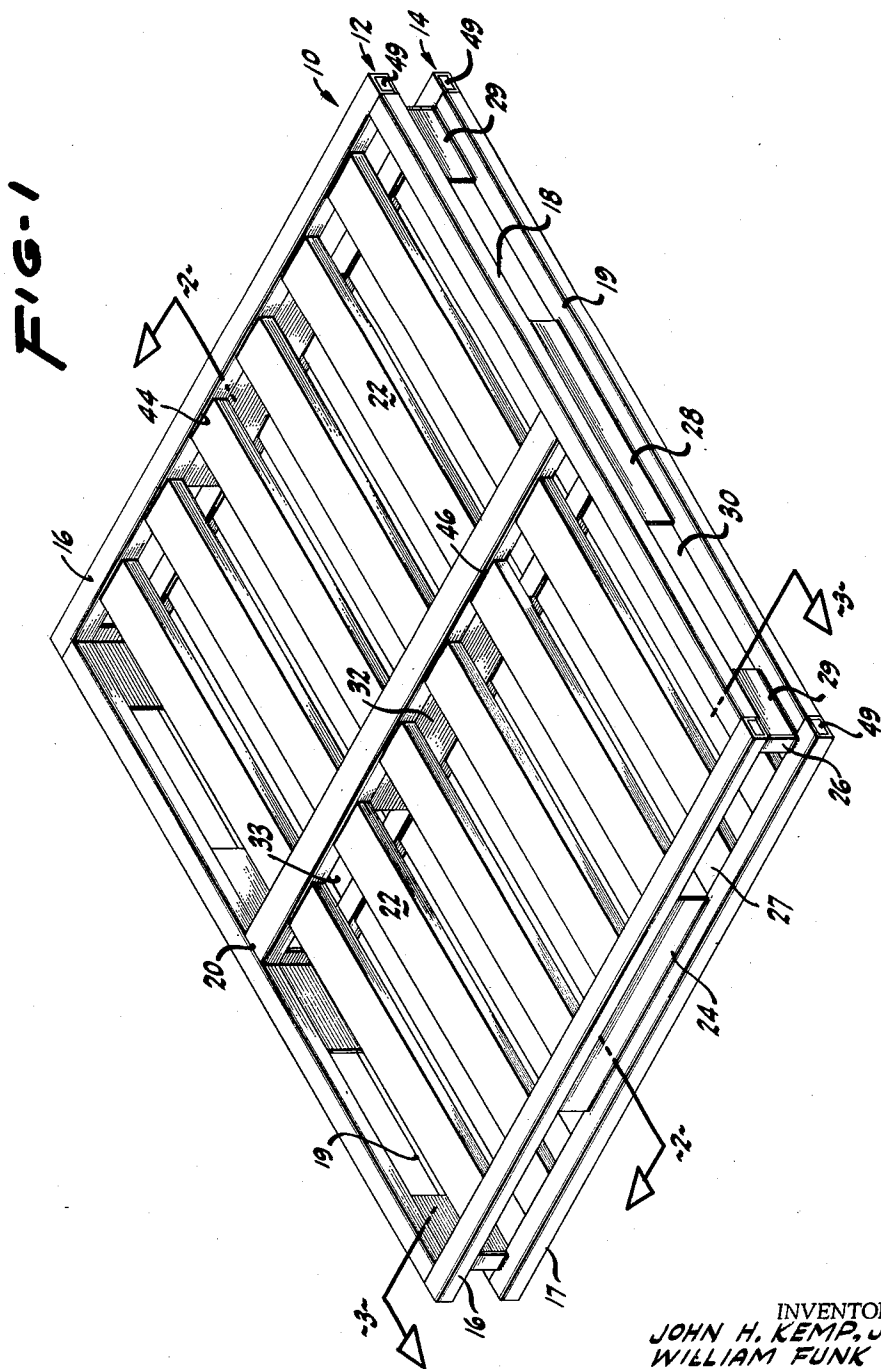
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3,149,586

PALLET

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3 Sheets-Sheet 1



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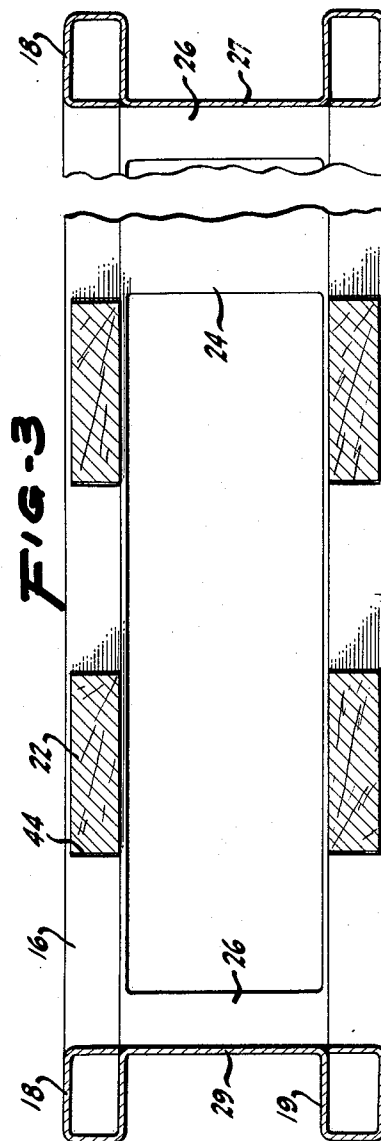
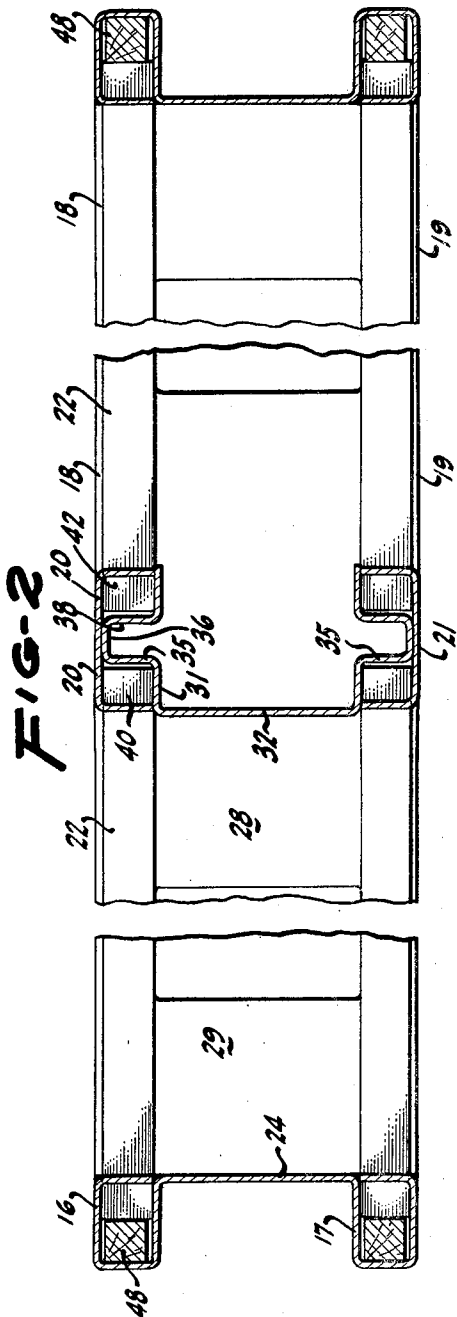
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PALLET

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3 Sheets-Sheet 2



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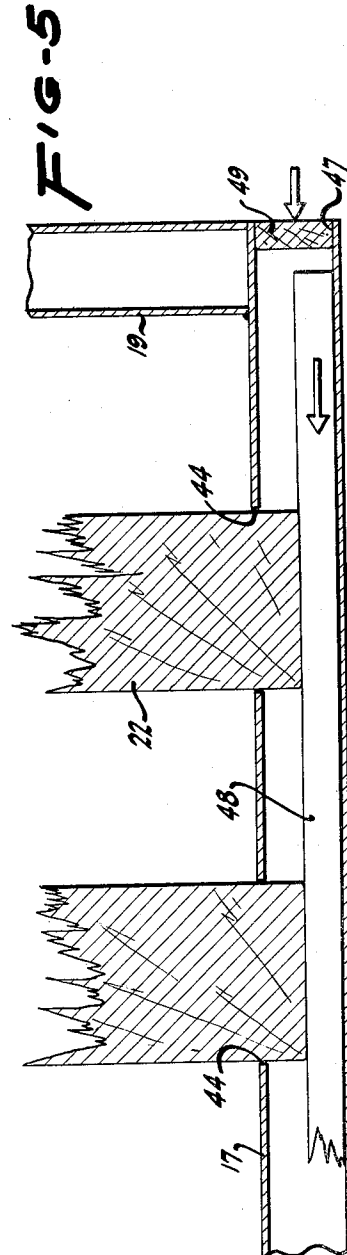
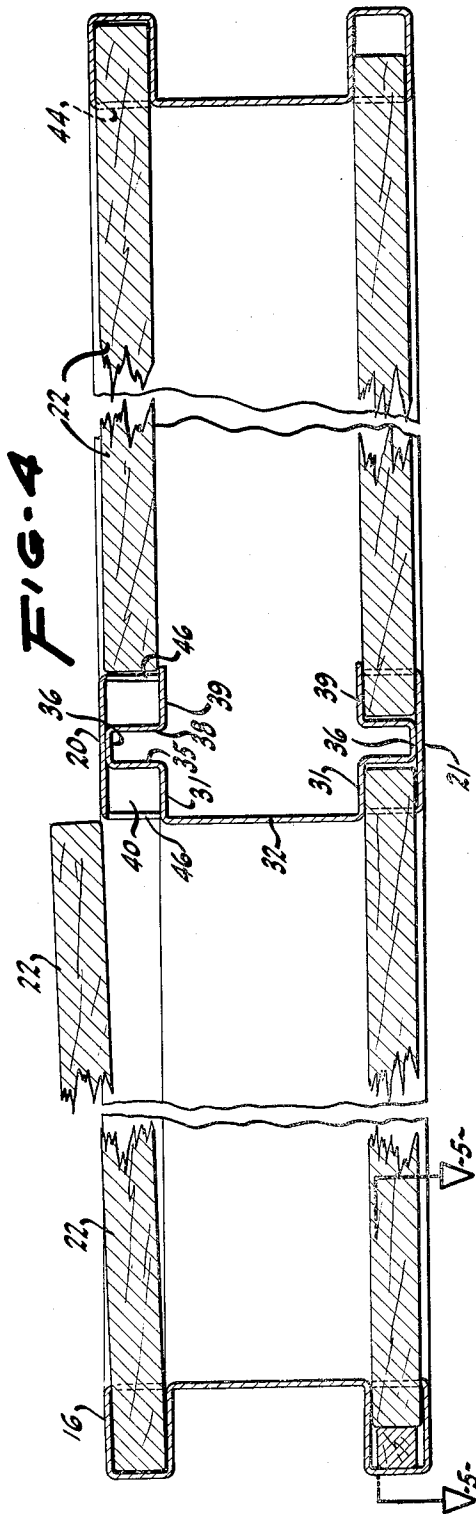
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PALLET

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3 Sheets-Sheet 3



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3,149,586
PALLET

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9 Claims. (Cl. 108—58)

This invention relates to a pallet, and more particularly, to pallets adapted to be used in supporting articles placed thereon for shipping, storage and the like.

In the transportation of palletized articles from their source to their ultimate destination, there is inevitably a repeated lifting, transferring and placement of the loaded pallets. As a result, the pallets are subjected to considerable wear and abuse in transit. Moreover, the lifting and placement of the palletized goods is increased at certain intermediate points where it may be desirable to transfer the loads from the pallets of the manufacturer or shipper to those of the recipient or forwarding agent.

It is, therefore, an object of this invention to provide a pallet that provides maximum resistance to impact and handling abuse and to wear.

It is a further object of this invention to provide a pallet that may be handled easily.

It is a further object of this invention to provide a pallet which is particularly adapted for use with apparatus for transferring loads from one pallet to another.

In carrying out this invention, there is provided a pallet having horizontal, spaced upper and lower rectangular frame members formed of tubular members in the general form of box beams or girders. Each frame member includes a pair of end girders and a central cross girder parallel to the end rails or girders. The inner wall of each end girder is provided with spaced slots which are in direct registry with similar slots in the opposite walls of the center cross beam or girder and each aligned pair of slots receives a wooden slat extending from one end rail to the center cross piece. A divider within the center girder limits the extent to which a slat may be inserted to less than that permitted by the end rails, and the slats are of such length that they may be moved against the end rail channel to the fullest extent possible and thus withdrawn from the shallower receptacle of the center rail. When the slats are placed by inserting them in the end rail to the fullest extent possible and then aligning them with and inserting them into the center rail slots, a spacer member is inserted in the end rail behind the adjacent ends of the slats so that the slats may not inadvertently move to the back wall and fall out of place.

Other objects and advantages of this invention will become apparent from the description following when read in conjunction with the accompanying drawings wherein:

FIG. 1 is a view in perspective of a pallet embodying features of this invention;

FIG. 2 is a section view taken along line 2—2 of FIG. 1;

FIG. 3 is a section view taken along line 3—3 of FIG. 1;

FIG. 4 is a vertical section view of the pallet of FIG. 1; and

FIG. 5 is a partial section view taken along line 5—5 of FIG. 4.

Referring now more particularly to the drawings, the pallet of this invention 10 is made up of upper and lower spaced rectangular frame members 12 and 14 each of which is formed by rigidly joining a plurality of tubular members of rectangular cross-section, i.e. box girders. Each pallet 10 includes top and bottom pairs of end rails 16 and 17, and top and bottom pairs of side rails 18 and 19 and center rails 20 and 21. Extending between

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each end rail 16, 17 and the center rail 20 is a series of spaced slats 22.

All of the rails are preferably formed of a rigid metal such as steel, and upper and lower end rails 16 and 17 are joined by an interconnecting center web 24 and relatively narrow corner webs 26 which provide spaces 27 between end rails to accommodate the tines of a fork lift truck inserted from the end of the pallet 10. Similarly, adjacent side rails 18 and 19 are joined by an interconnecting center web 28 and corner webs 29. Spaces 30 between the webs 28 and 29 accommodate the tines of the fork lift truck inserted from the side of the pallet 10.

As shown in FIGS. 2 and 4, the end rails 16 and 17 may be formed from a single sheet of steel by bending the top and bottom of a sheet as shown into rectangular cross section to form the upper and lower box girder sections, the openings 27 having previously been cut to leave center and corner webs 24 and 26 in place. Similarly, as shown in FIG. 3 the side members may be formed as an integral unit from a single sheet of metal by bending the top and bottom portions to form the box girders 18 and 19 with the interconnecting webs 28 and 29. The central cross member may be formed by bending both sides of a sheet of metal horizontally at 31 to form a channel with interconnecting web 32 having fork tine accommodating spaces 33. Then, the legs of the resultant channel are bent vertically at 35, horizontally at 36, vertically at 38 and horizontally at 39 to form opposing vertically disposed channel members. The downwardly disposed center channels 20 are welded or otherwise rigidly secured onto the horizontal section 36 to form a pair of back to back box girders 40 and 42 for a purpose hereinafter to be described.

As shown in FIGS. 1, 4 and 5 a series of spaced slots 44 are formed in the inner wall of each end rail 16 and 17 and a like series of slots 46 are formed in the opposite vertical walls of the central back to back box girders 40 and 42, each slot 44 and 46 being of a size to accommodate an end of a slat 22 without an undue amount of play. It will be noted particularly from FIGS. 2 and 4 that the vertical walls 35 and 38 formed from the center reinforcement web 32 form the back walls of slat-receiving receptacles of which the slots 42 are the openings, and that the outside walls of the end rail box girders 16 and 17 form the back wall of the receptacles for the opposite ends of the slats 22.

It will also be noted that the vertical stop walls 35 and 38 for the center girder restrict the width of the central girders 38 and 40 to limit the slat receptacle depth to considerably less than that of the end wall box girder 16. In conjunction with this structure the slats 22 which may be of wood as shown, are of a length that permit them to be inserted in the slots 44 in the end rails to the fullest extent permitted by the width of the end rails and pivoted until the other ends of the slats are in alignment with the slots 42 in the center rail. That is, each slat is of a length shorter than the distance between the outside wall of the end rail 16 and the front or inside wall of the central box girder 40 or 42, but longer than the space between the inside walls of the end and center members 16 and 20. With the inner end of the slats 22 in alignment with the center rail slots 46, they may be shifted endwise into full engagement in the center receptacles as shown in the lower slats of FIG. 4. Then, a spacer block 48 may be inserted through the end opening 47 of the end box girders 16 and 17 to hold the slats firmly extended into the center bar receptacles 42. The bar 46 is preferably of sufficient length that any endwise shifting thereof will not displace it from engagement with the ends of all slats 22. Finally, the opening 47 in the end box girder 16 may be closed by a suitable plug 48.

In the structure shown, all of the box beams or girders 16, 17, 18 and 19 and the adjacent end webs 26 and 29 may be rigidly welded together to form a unitary structure strengthened by welding the center channel 20 and reinforcing web 32 to the side rails 18 and 19 and the side rail reinforcing webs 28, respectively. The accommodating slots 44 and 46 are spaced so that spaces between the slats permit the penetration of vertically extendable pillars for lifting palletized loads from the pallet, as provided in a machine of the type shown in application of John H. Kemp, Jr., Serial No. 111,882, filed March 28, 1961, for "Apparatus for Transferring Loads." The slots 44 and 46 accommodate the slats snugly and in cooperation with the spacer bar 46, hold them firmly in place. However, it is apparent that the slats may be replaced readily without requiring the removal of screws, nails or other fastening means. The box girder construction affords maximum strength with minimum wear and the metallic members are disposed to absorb most of the load, shock and wear.

While there has been illustrated and described a preferred embodiment of this invention, it is to be understood that modifications and changes therein may be made by those skilled in the art without departing from the spirit and scope of this invention as defined by the claims appended hereto.

What is claimed as invention is:

1. A pallet for supporting articles thereon comprising: a pair of parallel frames, means connecting said frames in fixed spaced relationship to permit entry of the tines of a lift fork therebetween, each frame including a parallel pair of tubular members, means connecting said tubular members in fixed spaced relationship, said pair of tubular members having aligned spaced slots on facing inner sides thereof, a series of spaced slats, the ends of each of said slats being received in an aligned pair of slots in said pair of tubular members, each of said slats being longer than the distance between inner sides of said pair of tubular members but shorter than the distance between the outer side of one tubular member and the inner side of the other tubular member whereby each of said slats may be moved until an end thereof engages the outer side of said one member and the other end thereof removed from the slot in the other tubular member.
2. The pallet defined in claim 1 including a filler member inserted between the outer side of said one tubular member and the adjacent ends of said slats.
3. A pallet for supporting articles thereon comprising: a pair of parallel rectangular frames, means connecting said frames in fixed spaced relationship to permit entry of the tines of a lift fork therebetween, each frame including a first parallel pair of box girders, one box girder of said first pair being wider than the other box girder of said first pair, aligned spaced slots in the inner walls of said box girders, a series of spaced slats, the ends of each of said slats being received in an aligned pair of slots, each of said slats being longer than the distance between the inner walls of said box girders but shorter than the distance between the outer wall of said one box girder and the inner wall of said other box girder whereby the slats may be moved until an end thereof engages the outer wall of said one box girder and the other end withdrawn from its accommodating slot in said other box girder.

4. The pallet defined in claim 3 including an elongate spacer block inserted between the outer side of said one box girder and the adjacent ends of said slats.

5. The pallet defined in claim 3 wherein each of said frames includes, a second parallel pair of box girders, a box girder of said second pair being disposed back to back with a box girder of said first pair, said back to back box girders forming a central frame member intermediate and parallel to opposite sides of said rectangular frame, one box girder of said second pair being wider than the other box girder thereof, aligned spaced slots in the inner walls of said second pair of box girders, a second series of spaced slats, the ends of each of said slats being received in an aligned pair of slots in said second pair of box girders, each of said slats being longer than the distance between the inner walls of said second pair of box girders but shorter than the distance between the outer wall of said one box girder of the second pair thereof and the inner wall of said other box girder whereby the slats may be moved until an end thereof engages the outer wall of said one box girder and the other end withdrawn from its accommodating slot in the other box girder.
6. A pallet for supporting articles thereon comprising: a pair of parallel rectangular frames, means connecting said frames in fixed spaced relationship to permit entry of the tines of a lift fork therebetween, each frame including a pair of end box girders and an adjacent pair of central box girders disposed intermediate and parallel to said end box girders, one of each pair of end and central box girders being wider than the other one thereof, aligned spaced slots in the inner walls of each pair of end and central box girders, a series of spaced slats, the ends of each of said slats being received in an aligned pair of slots, each of said slats being longer than the distance between the inner walls of said box girders but shorter than the distance between the outer wall of said one box girder of each pair thereof and the inner wall of said other box girder of each pair thereof whereby a slat may be moved until an end thereof engages the outer wall of said one box girder and the other end withdrawn from its accommodating slot in the other box girder.
7. The pallet defined in claim 6 including an elongate spacer block inserted between the outer side of said one box girder of each pair thereof and the adjacent ends of said slats.
8. A pallet for supporting articles thereon comprising: a pair of parallel spaced frames, means connecting said frames in fixed spaced relationship to permit entry of the tines of a lift fork therebetween, each frame including a parallel pair of rail members, means connecting said rail members in fixed spaced relationship, each of said members having an aligned series of spaced, horizontally opening receptacles, a series of spaced slats, the ends of each of said slats being received in an aligned pair of receptacles to extend between said rail members, the receptacle receiving one end of each of said slats being deeper than the receptacle receiving the other end thereof,

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each of said slats being longer than the distance between openings of aligned receptacles but shorter than the distance between the inner end of said deeper receptacle and the opening of the shallower receptacle whereby each of said slats may be moved until one end thereof engages said inner end of the deeper receptacle and the other end is removed from the shallower receptacle.

9. The pallet defined in claim 8 including a spacer member inserted between said inner end of the deeper slot and the adjacent end of a slat.

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