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TIERING SUPERSTRUCTURE FOR PALLETS

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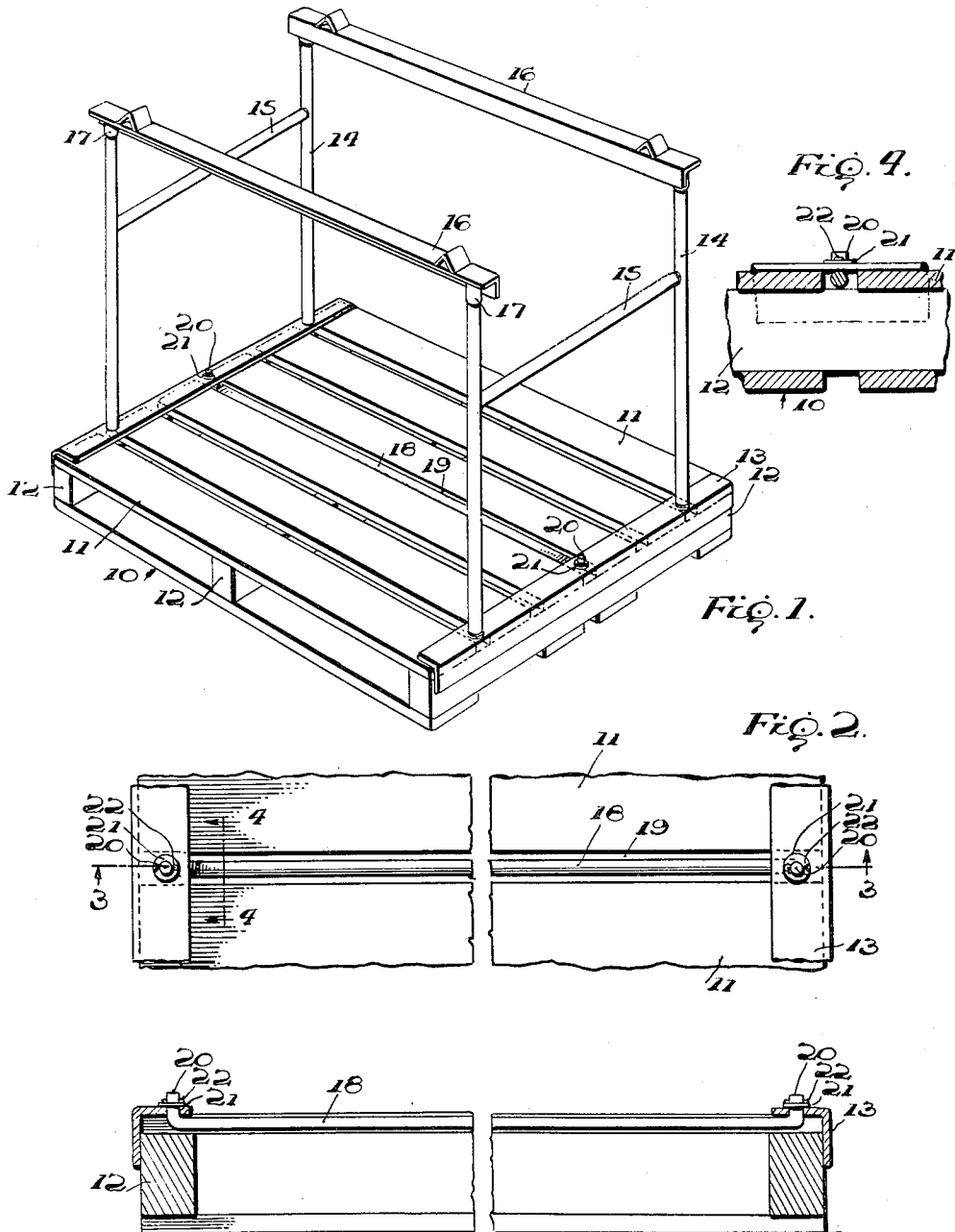


FIG. 3.

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TIERING SUPERSTRUCTURE FOR PALLETS

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6 Claims. (Cl. 211-148)

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The invention described herein, if patented, may be manufactured and used by or for the Government for governmental purposes, without the payment to me of any royalty thereon.

The present invention relates to materials handling pallets and more particularly to tiering superstructure for use on such pallets.

In the use of a superstructure to permit stacking or tiering of loaded pallets, it is essential that the superstructure be applicable to any pallet of a particular size and type without the necessity of modifying the construction of the pallet and/or superstructure. It is also essential that the superstructure be sufficiently stable when installed on the pallet to support a tier of loaded pallets with complete safety. An important object of the present invention is to provide a superstructure having these characteristics.

Another object of the invention is the provision of a superstructure of this type which is easily installed or removed, which is inexpensive to manufacture, and which is strong and durable in use.

Other objects and advantages of the invention will be apparent during the following description.

In the accompanying drawings which form a part of this specification and wherein like numerals denote like parts throughout,

Figure 1 is a perspective view of a pallet on which is mounted a superstructure embodying the present invention;

Figure 2 is a fragmentary plan view illustrating the tie-rod portion of the superstructure and pallet, parts being broken away,

Figure 3 is a transverse sectional view on the line 3-3 of Figure 2, parts being broken away, and,

Figure 4 is a fragmentary sectional view taken on the line 4-4 of Figure 2, parts being broken away.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of the invention, the numeral 10 designates the usual two-way wooden pallet having spaced deck boards 11 mounted on the usual stringers 12. The superstructure comprises a pair of end frames, each of which has a base runner in the form of an angle iron 13 adapted to have its horizontal flange rest upon the ends of the deck boards 11 with its vertical flange extending down the end face of the pallet below the deck boards. A pair of spaced uprights 14 are rigidly mounted on the base runner 13 and are connected adjacent their upper ends by a suitable cross bar 15. Top rails 16 may also be in the form of angle irons and connect the upper ends of the corresponding uprights 14 of opposite end frames by means of depending sleeves 17 which telescopically, removably and rotatably receive the upper ends of the uprights. The construction of the superstructure thus far described is usual, and may vary considerably. The present invention is concerned with securing this superstructure to the pallet.

A central tie-rod 18 has been provided to connect the central portions of the base runners 13 of the end frames.

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The tie-rod may be of any suitable cross section but is shown as circular in section and of a diameter less than the distance or space 19 separating adjacent deck boards of the pallet. The extreme ends of the tie-rod 18 are bent upwardly to form vertically upstanding end lugs 20 adapted to extend upwardly through holes punched or drilled in the center of the horizontal web of each base runner 13, as best seen in Figure 3. A suitable washer 21 fits over the upper end of each lug 20 and a cotter pin or the like 22 extends through suitable small holes in the lugs 20 above the washers 21. In place of the washers 21 and cotter pins 22, any other suitable means of securing the end lugs 20 in the openings in the runners 13 may be employed, such, for example, as peening the upper ends of the lugs, or threading the ends of the lugs 20 to receive a suitable nut. Preferably, however, the connection between the lugs 20 and the base runners 13 is sufficiently free to permit pivot action between the tie-rod and runners, and a removable connection is desirable.

The tie-rod 18, in its operative position, is arranged within the slot 19 between the deck boards 11 immediately below the horizontal webs of base runners 13 and above the tops of the pallet stringers 12. At the ends of the pallet, the tie-rod passes between the horizontal webs of the base runners 13 and the tops of the end stringers 12 as clearly shown in Figure 3. When installing the superstructure upon the pallet, the end frames can be adjusted along the ends of the deck boards to align the tie-rod with the desired slot. The superstructure can be installed in its erected position, or it can be erected on the pallet from a knock-down condition. By removing the top rails 16 and the tie-rod 18, by extracting the cotter pins 22, the superstructure can be knocked down to its component parts, namely, the two end frames, the two top rails, and the tie-rod with its washers and cotter pins. In place of dismantling the superstructure, it can be collapsed to a folded position by removing it from the pallet and then swinging the two end frames into a position almost parallel by rotation of the uprights within the top rail sleeves 17. The central location of the tie-bar 18 and the free turning of the end lugs 20 within the openings in the base runners 13 permit such folding or collapsing of the superstructure for transportation or storage. Although the folded superstructure takes up more space than its component parts if separated, the folded position is often preferred because parts are much less likely to become separated or lost.

The centrally located tie-rod 18 will hold the end frames in position on the pallet by preventing spreading of the end frames under load applied to the top rails 16, while the vertical flanges of the base runners 13 prevent shifting of the end frames inwardly towards the center of the pallet. The location of the tie-rod within the deck slot 19 keeps it out of the way of material supported by the deck boards and at the same time prevents shifting of the superstructure laterally of the deck boards. The end lugs 20 of the tie-rod are arranged out of the way of the material supported on the pallet. The superstructure is easily erected on or removed from the pallet and will be stable under very heavy loads.

While the preferred embodiment of the invention has been shown and described, it is to be understood that various changes in the size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. The combination with a pallet having a base and spaced deck boards supported in spaced relation above the pallet base, of a tiering superstructure comprising a pair of end frames each of which includes a base runner adapted to rest upon the ends of the deck boards and spaced uprights carried by the base runners, top rails con-

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necting uprights of opposite end frames, and a tie-rod connecting the central portions of the base runners on opposite ends of the pallet, the major portion of the length of the tie-rod being disposed below the top of the base runners and adapted to be received within a space between two adjacent deck boards and below the top surfaces of the deck boards.

2. The superstructure of claim 1 in which the top rails are pivotally connected to the end frame uprights and the tie-rod is pivotally connected to the base runners of the end frames whereby the superstructure may be collapsed to a folded position when removed from the pallet for transportation or storage.

3. The combination with a pallet having a base and spaced deck boards supported in spaced relation above the pallet base, of a tiering superstructure comprising a pair of end frames each of which includes a base runner adapted to rest upon the ends of the deck boards and horizontally spaced uprights carried by the base runner, said base runner having a pallet end engaging member depending from the outer portion of the base runner; top rails connecting uprights of opposite end frames, and a tie-rod connecting the central portions of the base runners between the uprights on opposite ends of the pallet, the major portion of the tie-rod being disposed below the tops of the base runners and adapted to be received within a space between two adjacent deck boards and below the top surfaces of the deck boards, the ends of the tie-rod having upwardly extending end lugs engaging the base runners to hold such runners against relative spreading motion under load applied to the top rails.

4. The superstructure of claim 3 in which the top rails are pivotally connected to the end frame uprights and the tie-rod end lugs are pivotally connected to the base runners of the end frames whereby the superstructure

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may be collapsed to a folded position when removed from the pallet for transportation or storage.

5. The combination with a pallet having end stringers and spaced deck boards secured to the upper surfaces of the end stringers, of a tiering superstructure comprising a pair of end frames each of which includes a base runner having a horizontal web adapted to rest upon the ends of the deck boards and provided with a central opening, and a vertical web adapted to extend down the outer surface of one of the end stringers, spaced uprights carried by the base runner, top rails connecting uprights of opposite end frames, a tie-rod having its major portion disposed below the horizontal webs of the base runners and adapted to be received within a space between two adjacent deck boards and below the top surfaces of the deck boards, the ends of the tie-rod being adapted to extend between the tops of the end stringers and the horizontal webs of the base runners, said tie-rod ends having upwardly directed end lugs extending through the central openings of the horizontal webs of the base runners to hold such runners against relative spreading motion under load applied to the top rails, and means to lock the end lugs in the openings of the horizontal webs of the base runners.

6. The superstructure of claim 5 in which the top rails are pivotally connected to the end frame uprights and the tie-rod end lugs are free to turn within the central openings of the base runners of the end frames whereby the superstructure may be collapsed to a folded position when removed from the pallet for transportation or storage.

References Cited in the file of this patent

UNITED STATES PATENTS

2,828,933 De Pew Apr. 1, 1958