United States Patent

Hirota

[15] **3,678,868**

[45] **July 25, 1972**

[54] PALLET

[72] Inventor: **Kashichi Hirota,** Tokyo, Japan

[73] Assignee: **Kyowa Denki Kagaku Kaisha,** Tokyo, Japan

[22] Filed: **March 18, 1970**

[21] Appl. No.: **20,497**

[30] **Foreign Application Priority Data**

April 3, 1969 Japan.....44/30456

[52] **U.S. Cl.**.....**108/51**

[51] **Int. Cl.**.....**B65d 19/18**

[58] **Field of Search**.....108/51–58; 52/613, 52/624; 20/92; 287/20.92 T; 311/111

[56] **References Cited**

UNITED STATES PATENTS

706,763	8/1902	Lange	287/20.92 T X
278,200	5/1883	Tait	287/20.92 T
1,210,688	1/1917	Peiree et al.	287/20.92 T UX
2,369,930	2/1945	Wagner, Sr.	287/20.92 T UX
3,090,086	5/1963	Fata	287/20.92 T UX
878,627	2/1908	Hecker	52/613
2,166,588	7/1939	Hanson	52/613 X
2,323,327	7/1943	Hill et al.	52/613 X
2,355,336	8/1944	Shafer	108/56 UX
3,058,709	10/1962	Moss, Jr. et al.	108/58
3,131,655	5/1964	Sellers et al.	108/51
3,227,107	1/1966	Caplan	108/51
3,511,191	5/1970	Barry, Jr. et al.	108/58

FOREIGN PATENTS OR APPLICATIONS

379,748	8/1964	Switzerland	287/20.92 T
569,370	11/1957	Italy	108/51

Primary Examiner—Bobby R. Gay
Assistant Examiner—Glenn O. Finch
Attorney—Ralph E. Bucknam, Jesse D. Reingold, Robert R. Strack and Henry A. Marzullo, Jr.

[57] **ABSTRACT**

A pallet composed of at least two parallel spaced transverse members and a plurality of longitudinal members extending across said transverse members on both the upper side and the lower side thereof. Each of the longitudinal members is connected to the transverse members, with each of trapezoidal cross-sectional portions thereof being fitted in each of complementary dovetail grooves formed in the upper and lower surfaces of each transverse member, and being secured therein by means of a fastener.

4 Claims, 6 Drawing Figures

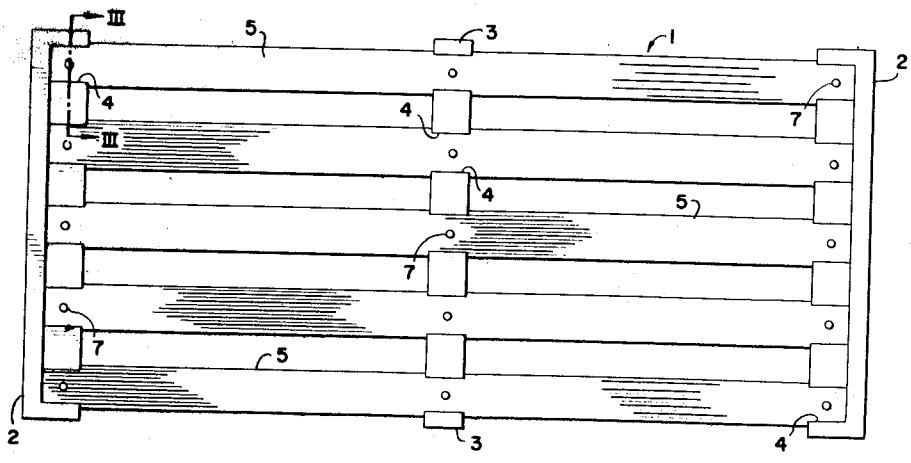




FIG. 5

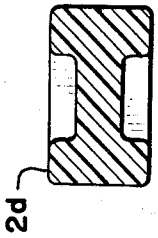


FIG. 6

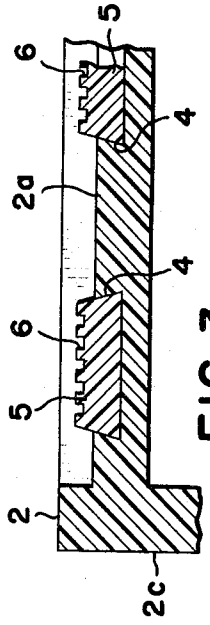


FIG. 3

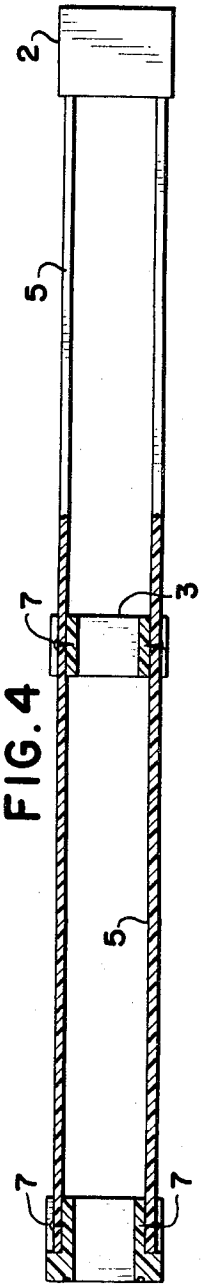


FIG. 4

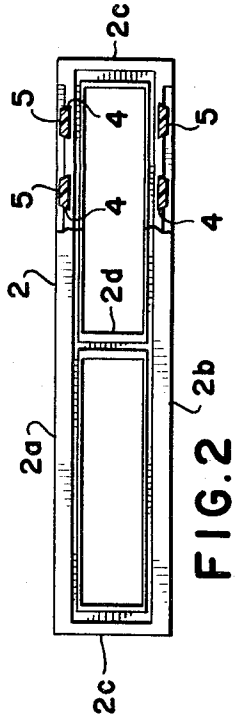


FIG. 2

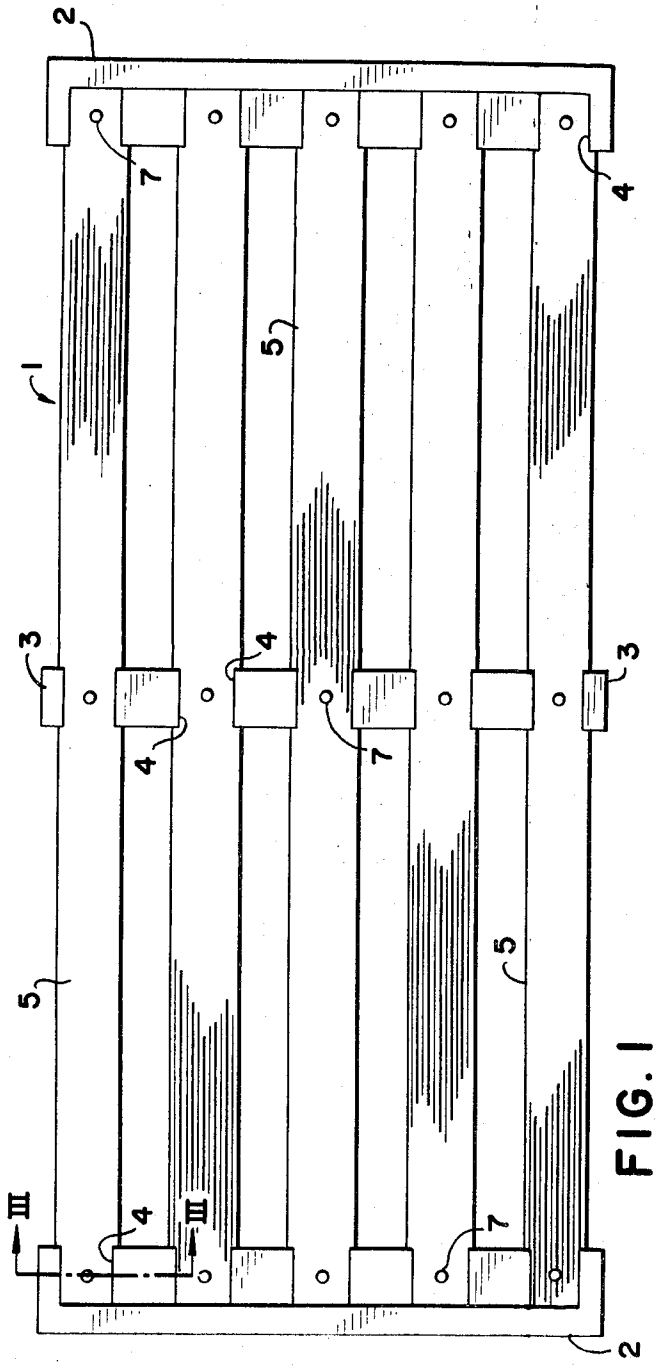


FIG. 1

PALLET

The present invention relates to a pallet.

Conventional loading pallets comprise a plurality of and normally three of spaced, relatively thick, wooden, transverse members and a plurality of spaced, wooden longitudinal members arranged on each side of the layer of said transverse members in substantially perpendicular superposed relation and secured thereto by means of nails at the intersections. Such structure of the conventional pallets has called for a skill in assembling the pallets and consequently rendered the products costly. Furthermore, since in the conventional pallets the transverse members and the longitudinal members are merely nailed together, there has been the tendency of the connection of the respective members becoming loose or being severed during use, due to vibration or shock given to the pallets.

The present invention eliminates the aforesaid shortcomings of the conventional pallets.

An object of the present invention is to provide a pallet structure in which the constituent transverse members and longitudinal members are firmly connected with each other.

Another object of the invention is to provide a pallet structure which can be produced without requiring a skill and yet at a low cost.

According to the present invention, a plurality of spaced pallet members are each provided in the upper and lower surfaces thereof with a plurality of grooves arranged longitudinally in spaced relation, each of said grooves having a substantially dovetailed shape and extending in a direction transversely of the longitudinal axis of the member, with the shorter base of the trapezoidal shape located outwardly and the longer base of the same located inwardly, and longitudinal members having a trapezoidal cross-section are fitted in said respective dovetail grooves. Further, these transverse members and longitudinal members are secured to each other at their intersections by means of a fastener, such as nail. The transverse members can be easily produced from a plastic material. Preferably the transverse members are formed in a ladder-like configuration, having a vertical post at a suitable location, for the sake of reducing the weight thereof. The longitudinal members are produced from a suitable material, such as plastic, wood or plywood.

An embodiment of the present invention will be described hereinafter with reference to the accompanying drawings. In the drawings,

FIG. 1 is a plan view of a pallet embodying the present invention;

FIG. 2 is an end view, partially broken away, of the pallet;

FIG. 3 is a cross-sectional view taken on the line III—III of FIG. 1;

FIG. 4 is a side view, partially in section, of the pallet; and

FIGS. 5 and 6 are cross-sectional views of an end portion and a vertical post at an intermediate portion of the transverse member at an end of the pallet respectively.

Referring to the drawings, the pallet 1 produced according to the present invention includes a pair of transverse members 2 and an intermediate transverse member 3 arranged intermediary between said transverse members 2 in parallel relation thereto. As shown in FIGS. 2 and 3, the transverse member 2 is a rectangular member including an upper and a lower transverse sections 2*a*, 2*b* and vertical sections 2*c* at the opposite ends of said transverse sections 2*a*, 2*b*, and a vertical post 2*d* is provided at a suitable location of the intermediate portion to connect the upper and lower transverse sections 2*a*, 2*b* with each other. The upper and lower transverse sections 2*a*, 2*b* are each provided with a plurality of dovetail grooves 4 in spaced relation. Similarly, the intermediate transverse member 3 has an upper and a lower transverse sections and vertical sections at the opposite ends of said upper and lower transverse sections and a vertical post intermediary between said vertical sections, and each of the upper and lower transverse sections is provided with a plurality of dovetail grooves in spaced relation.

Longitudinal members 5 have a trapezoidal cross-section complementary to the shape of the dovetail grooves 4 formed in the transverse members 2, 3 and are fitted in said grooves. Each of the longitudinal members 5 is preferably formed with a plurality of grooves 6 in the lengthwise direction thereof. The longitudinal members 5 thus fitted in the dovetail grooves 4 in the respective transverse members 2, 3 are secured to said transverse members by nails 7. FIGS. 5 and 6 exemplify the cross-sections of the vertical sections 2*c* at the opposite ends and the vertical post at an intermediate portion of the transverse member 2, respectively. Since the transverse members 2, 3 are produced from a plastic material as stated previously, the transverse member having such a complicate shape as shown can be formed easily and inexpensively. The transverse and longitudinal members are so firmly connected with each other that there is no fear of them being disconnected.

I claim

1. A pallet comprising a plurality of parallel spaced transverse members including at least two end transverse members and an intermediate transverse member, each of said transverse members having an upper and lower portion defining an upper and lower surface respectively, each of said transverse members including vertical sections joining said upper and lower portions, a plurality of longitudinal members extending across said transverse members, each of said transverse members being provided in their said respective upper and lower surfaces with a plurality of spaced dovetail grooves, each of said longitudinal members having trapezoidal cross-sectional portions of dimensions corresponding to said dovetail grooves, said trapezoidal cross-sectional portions each being fitted in each of said dovetail grooves in each of said transverse members, and fastener means fastening said longitudinal members to said transverse members at said dovetail grooves, the inclined surfaces of said dovetail grooves and the inclined surfaces of the trapezoidal cross-sectional portions of said longitudinal members being oriented generally parallel to the lengthwise direction of the longitudinal members and convergent to constrain said longitudinal members against movement relative to said transverse members in directions perpendicular to the intersection planes of said longitudinal and transverse members.

2. A pallet according to claim 1 wherein said two end transverse members each has a raised longitudinal ridge, the longitudinal ends of said longitudinal members abutting against the side surface of said ridge.

3. A pallet as defined in claim 1, wherein each of said longitudinal members is formed in the outer surface thereof with a plurality of longitudinally extending non-slip grooves.

4. A pallet as defined in claim 1, wherein each of said transverse members is formed of a plastic material.

* * * * *