

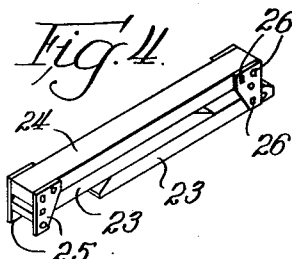
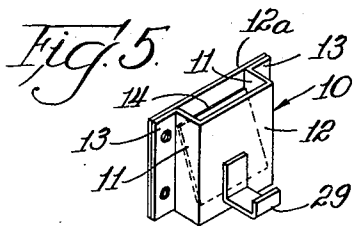
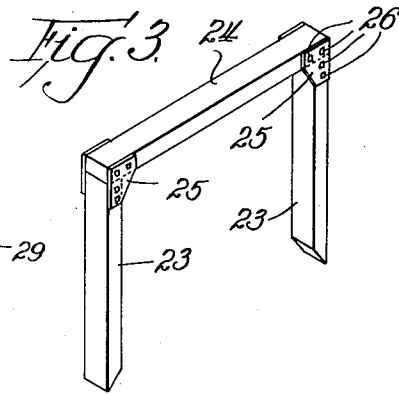
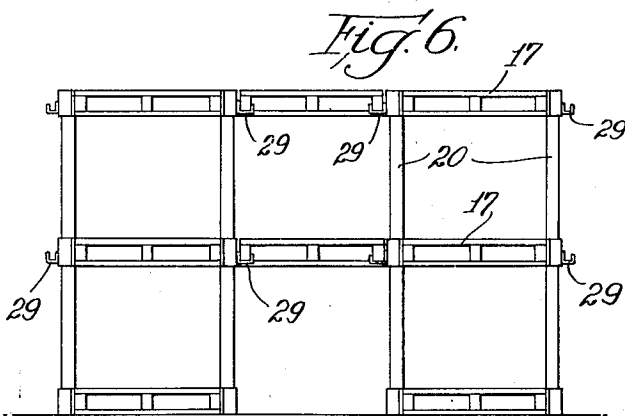
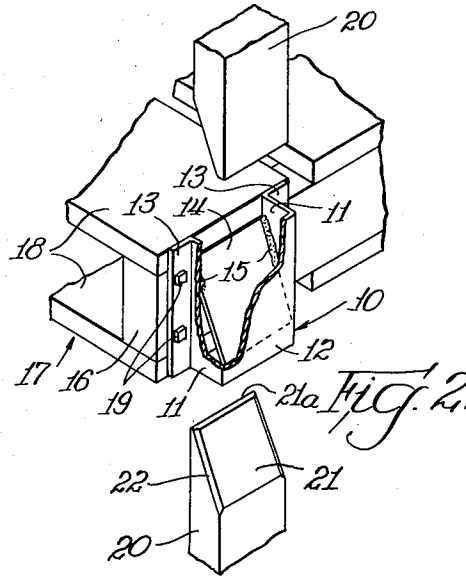
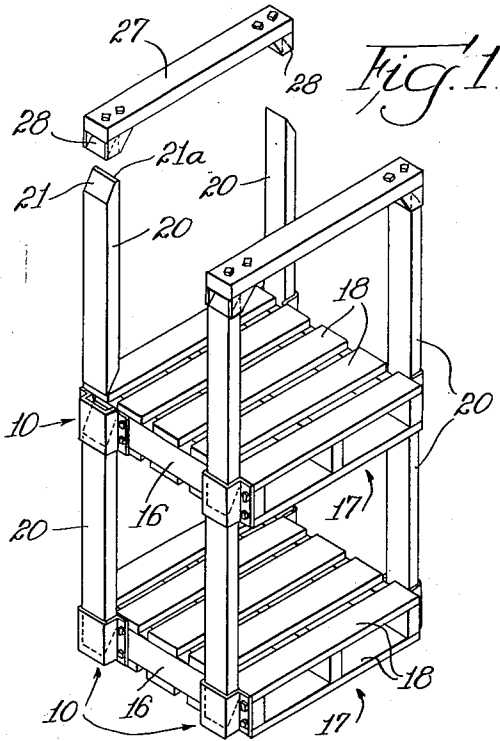
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SPACING AND SUPPORTING FACILITIES FOR PALLETS AND THE LIKE

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SPACING AND SUPPORTING FACILITIES FOR PALLETES AND THE LIKE

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2 Claims. (Cl. 248—120)

My invention relates to spacing and supporting means for storage platforms and the like and has reference more particularly to socket members which may be attached to conventional type pallets and to beveled spacing posts adapted to engage said socket members.

In the storing of crushable and irregularly shaped objects, it is desirable to employ storage platforms or pallets which may be supported at a predetermined height by means of spacing posts on which successive pallets may also be superposed at selected levels. In this connection, it is particularly important that the platforms be readily installable on and removable from their supports so that a fork lift truck, for example, can lift the top pallet of a multiple-level stack therefrom without disturbing the remainder of the stack.

Such facilities are disclosed in co-pending application Serial No. 27,006, now Patent No. 2,621,879, of Eugene T. Lundeen for Quick Assembly Multiple Shelf or Platform Structure and Parts Thereof, and also in my copending application Serial No. 196,386 for Pallet Spacing and Supporting Means, and while such facilities have been found to have highly flexible application to storage problems, the facilities of the present invention are more readily incorporable in existing conventional type pallets, and also permit use of wood posts or supports instead of steel.

The principal objects of my invention are to enable simple and convenient conversion of conventional type pallets and the like to stackable platforms which may be spaced apart at successive levels; to accomplish this by designing a simple type of socket which may be attached quite readily to any ordinary pallet; to provide such sockets which will utilize as spacers standard size lumber, such as two-by-fours, which may be sawed readily to the desired lengths and which will be engaged securely when seated in such sockets; to design sockets of this type which leave the entire surface of the pallet unobstructed so as not to interfere with usable storage space; to provide such facilities wherein, owing to wedge-like insertion of the supports in the sockets, the supports tend to be both self-tightening and self-aligning therein; and to provide such sockets which do not project either above or below the respective surfaces of the pallet so that a pallet so equipped may rest flat on a floor, these and other objects being accomplished as hereinafter described, reference being had to the accompanying drawing in which

Fig. 1 is a perspective view of two pallets in stacked, superposed relation having spacing and supporting means embodying my invention;

Fig. 2 is an enlarged detail view of a socket and co-operating spacing posts embodying my invention, with portions broken away;

Fig. 3 is a view of a spacing post assembly showing a modified form of my invention;

Fig. 4 shows the spacing post assembly of Fig. 3 in folded position;

Fig. 5 shows a modified form of socket embodying my invention; and

Fig. 6 is a vertical end view of stacked pallets utilizing the modified form of socket shown in Fig. 5.

Referring now to the drawing, the socket member of my invention is designated generally by the reference numeral 10 and comprises a metallic shell composed of oppositely disposed side walls 11 and a connecting outer wall 12, each of said side walls 11 being provided with an outturned mounting flange 13. An oblique plate 14

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is interposed between the respective side walls 11 and secured thereto, such as by welding 15 along its respective edges to the side walls 11. In a preferred form the plate 14 meets the outer wall 12 at an angle of 30 degrees. The exact angle is not critical so far as my invention is concerned but it is important, in practice, that a uniform angle be adapted and adhered to for the sake of standardization. I have found that a satisfactory socket for general use may be made of 1/8 inch steel plate.

The socket 10 may be provided with an inner wall 12a corresponding to the outer wall 12 so as to fully enclose the oblique plate 14 on four sides. This is shown in the modified form of socket 10 in Fig. 5, but it is not considered necessary as the socket 10 would normally be applied against a flat surface, such as the marginal stringer 16 of a pallet, which would serve as an inner wall of the socket 10.

A plurality of sockets 10 may be attached to conventional type pallets 17 along opposite sides and adjacent the corners thereof. For the purpose of showing the manner in which sockets embodying my invention are used, I have shown a conventional 3-stringer type of wooden pallet 17 with lengthwise stringers 16 and transverse slats 18 secured thereto both above and below to form top and bottom platform surfaces.

A socket 10 is attached near each end of both marginal stringers 16 so that there is a socket 10 adjacent each corner of the pallet 17. The sockets 10 may be secured to the stringers 16 by means of bolts 19 extending therethrough and engaged by nuts (not shown) or they may be held in place by means of screws. In the case of a metallic pallet, for example, the sockets 10 could be bolted or otherwise secured thereto in any known manner such as by welding.

In a preferred form, the overall height of the socket 10 is approximately 5 1/4 inches; the inside thickness is 1 11/16 inches, which is 1/16 of an inch greater than the standard thickness of a 2 x 4 board; and the inside width is 3 11/16 inches or 1/16 of an inch greater than the standard width of a 2 x 4. In this form, the sockets 10 are adapted to be used with lengths of 2 x 4 which serve as the upright spacing supports 20. The slightly larger dimensions of the sockets 10 permit convenient insertion and removal of the supports 20 yet retain said supports in relatively firm upstanding position. Where other standard lumber is to be used as supports 20, the sockets 10 would be of substantially the same shape and the dimensions thereof would be about 1/16 of an inch larger than the corresponding width and thickness of the supports 20.

The sockets 10 are installed an equal distance apart on the sides of the pallets 17 and in the same position so far as the oblique plate 14 is concerned so that, as shown in the drawing, for example, the lower edge of the plate 14 is toward the outer wall 12 of the socket 10.

The upright spacing supports 20 may be cut from standard 2 x 4 lumber as explained and the respective ends are beveled or chamfered to correspond to the angle at which the oblique plate 14 is mounted in the socket 10. Thus, in the preferred form, each beveled or chamfered face 21 would form an angle of 30 degrees with the adjacent side at the tip. The beveled face 21 at one end of a support 20 would be parallel to the face 21 at the other end, as shown in the drawing. Thus when a support 20 is inserted in a socket 10 with its lower beveled face 21 facing inwardly toward the pallet 17, the upper beveled face 21 would face outwardly and be adapted to receive a corresponding socket 10 of the pallet 17 thereabove. Preferably the beveled face 21 does not form a knife edge with the adjoining side but terminates in a trim or ledge 21a. This design serves the double purpose of strengthening the ends of the spacing supports 20 and of permitting such supports 20, when bearing weight, to wedge to the maximum depth in the sockets 10. The wedging effect tends both to align the supports 20 vertically with respect to the sockets 10 in which they are installed and also to tighten the supports 20 therein so as to give greater security and rigidity to multi-level stacks of pallets. With this arrangement, it has been found that the bottom posts or supports 20 in a multi-level stack of pallets will bear a total load from five to six thousand

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pounds. The lateral edges 22 of the beveled faces 20 may be beveled as shown in Fig. 2 to clear the welding 15 along the edges of the oblique plate 14 in order to insure flat face 21 to plate 14 engagement, although this is optional.

When corresponding supports 20 of uniform length have been inserted upright in the upper portions of the four respective corner sockets 10 as shown in Fig. 1, a second pallet 17 with similar sockets 10 may be mounted thereabove by lowering the upper pallet 17 so that the beveled upper faces 21 of the supports 20 enter the lower sides of the respective sockets 10 and become engaged thereby. Thus it will be understood that each support 20 rests on the top side of the oblique plate 14 in the socket 10 of the lower pallet 17 and is engaged upwardly against the under side of the oblique plate 14 in the socket 10 of the upper pallet 17. Thus the sockets 10 enable convenient telescopic engagement of the upper and lower supports 20 in a manner which permits both dependable, secure support and quick, convenient assembly and disassembly.

A modified form of supporting unit is shown in Figs. 3 and 4 wherein two supports 23 are beveled at their lower ends in the same way as the supports 20 for telescopic engagement in the upper openings of sockets 10. The upper ends of the supports 23 are connected to a transverse member 24, which may also be made of 2 x 4 lumber stock, by means of a hinge arrangement comprising a pair of gussets 25. A gusset 25 is attached to each side of the transverse member 24 by means of a pair of bolts 26 which project through the respective gussets 25 and intervening transverse member 24 and are secured thereto by means of nuts on the threaded ends of said bolts 26. The supports 23 may be attached to the respective gussets 25 in substantially the same manner. When two such supporting units as shown in Fig. 3 are mounted in oppositely disposed sockets 10 on a pallet 17 so equipped, any similar flat pallet can be supported thereon and lifted therefrom without installation of sockets 10 or other special equipment.

For storage purposes, the supporting units of Fig. 3 may be folded conveniently as shown in Fig. 4 by removing the bolt 26 nearest the transverse member 24 in one support 23 and furthest therefrom in the other, and the remaining bolt 26 in each pair of gussets 25 serves as a hinge on which the support 23 may be pivoted to permit folding the respective supports 23 against the transverse member 24 as shown in Fig. 4. The supports 23 may, of course, be hinged to the transverse member 24 in any other way such as by means of conventional hinges.

Similarly, a cross bar 27 may be employed as shown in Fig. 1. Such cross bar 27 may be made of a suitable length of 2 x 4 lumber and provided at each of its respective ends, and on the same side thereof, with a metal cap 28 having rectangular, downwardly disposed opening adapted to engage the upper end of a vertical support 20. Such metal caps 20 are preferably provided with inverted V-plates therein as indicated by dotted lines in Fig. 1, corresponding to the beveled ends 21 of the supports 20 and engageable therewith. A cross bar 27 may be placed on

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a pair of oppositely disposed supports 20 as shown in Fig. 1 to form a bridge member, two such bridge members being adapted to support a pallet 17 or other flat platform or article thereon.

As shown in Fig. 5, the sockets 10 may be provided with U-shaped hooks or projections 29 on the outer face of the outer wall 12 and when two adjoining pallet stacks are assembled as shown in Fig. 6 and spaced pallet-width apart, additional conventional type pallets, not equipped with sockets 10, may be supported thereby.

While I have shown and described my invention in preferred and modified forms, I am aware that many other variations of my invention may be designed and employed without departing from the spirit of my invention, the scope of which is to be determined by the appended claims.

What is claimed is:

1. A supporting structure for stackable pallets comprising, in combination, a double-ended socket having a side wall and a pair of opposed end walls with means for attaching the latter perpendicularly to a flat vertical surface on a pallet, an abutment plate interposed between said end walls, said abutment plate being disposed in substantially perpendicular relation to said end walls and in oblique relation to said side wall, upper and lower supporting posts, facing ends of said supporting posts being complementally chamfered at an angle corresponding to the angle of said abutment relative to said side wall, said chamfered ends of said supporting post being adapted for wedging engagement in opposite ends of said socket and against opposite sides of said obliquely disposed abutment plate.

2. A socket for securing upright posts to storage pallets and the like, said socket comprising, in combination, a pair of substantially parallel opposed walls, a depending intervening wall joining a corresponding edge of each said opposed wall, and an oblique plate interposed between said opposed walls, said oblique plate being disposed at an oblique angle relative to said intervening wall so as to define an N-shaped cross section in said socket when the same is secured with said opposed walls against a relatively flat surface, said socket being thereby adapted to receive in either end thereof the ends of supporting posts chamfered at an angle corresponding substantially to the angle between said oblique plate and said intervening wall which post ends bear respectively against opposite sides of said plate.

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