Jan. 8, 1957 C. C. AVERHILL 2,776,775

MATERIAL HANDLING CONTAINER

Filed Jan. 13, 1954 2 Sheets-Sheet 1

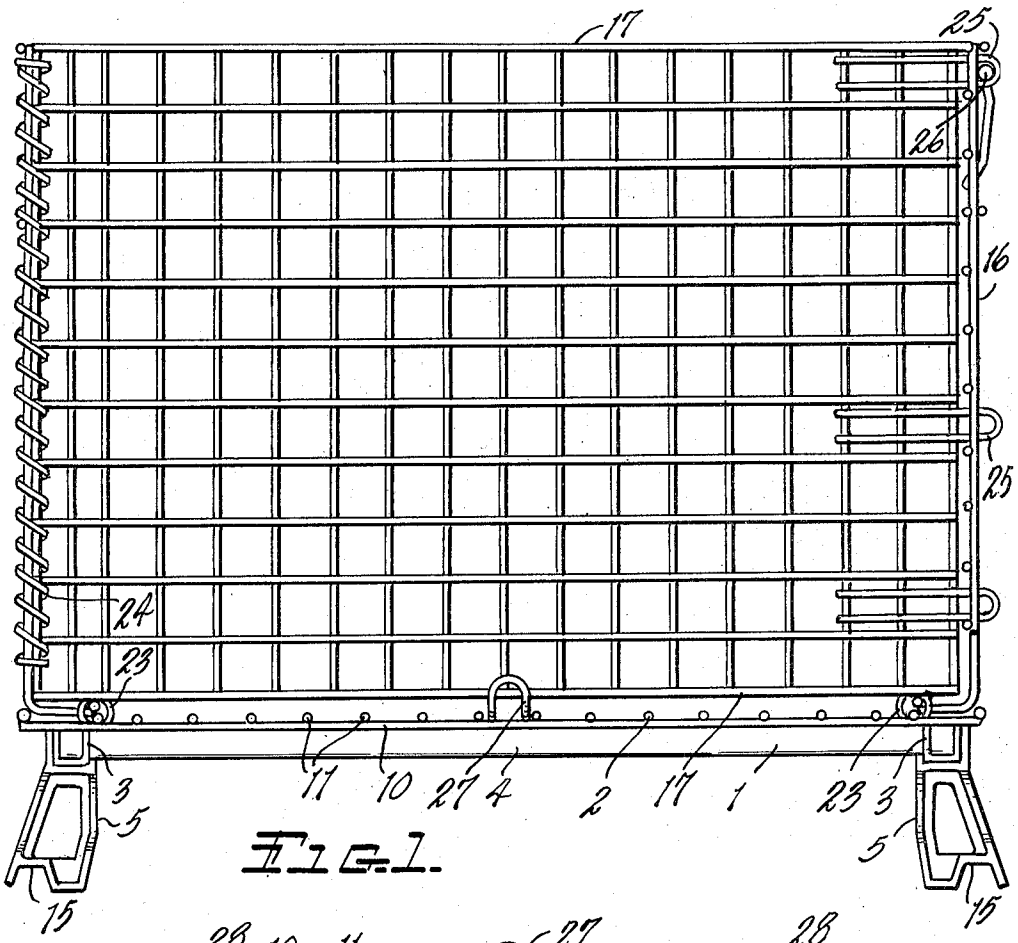

FIG. 1.

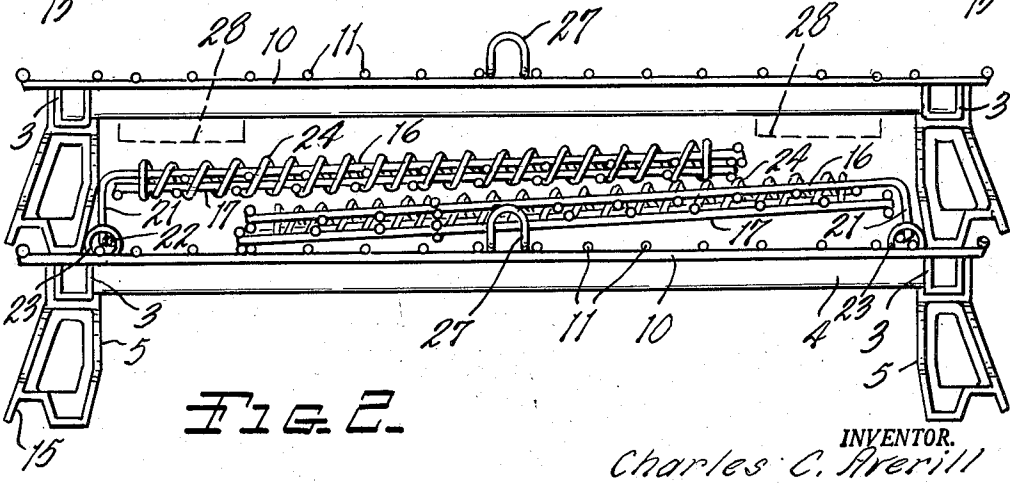

FIG. 2.

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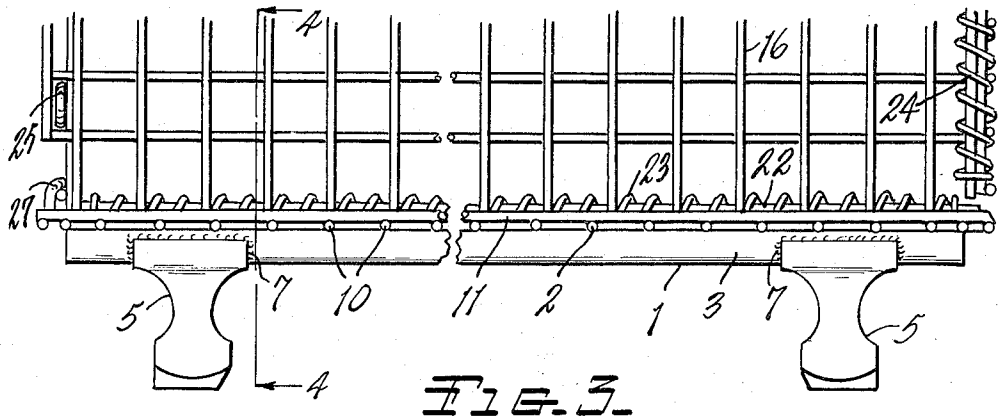

FIG. 3

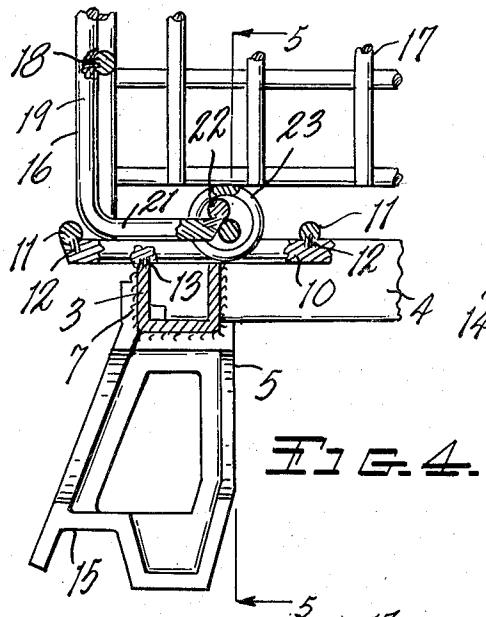

FIG. 4

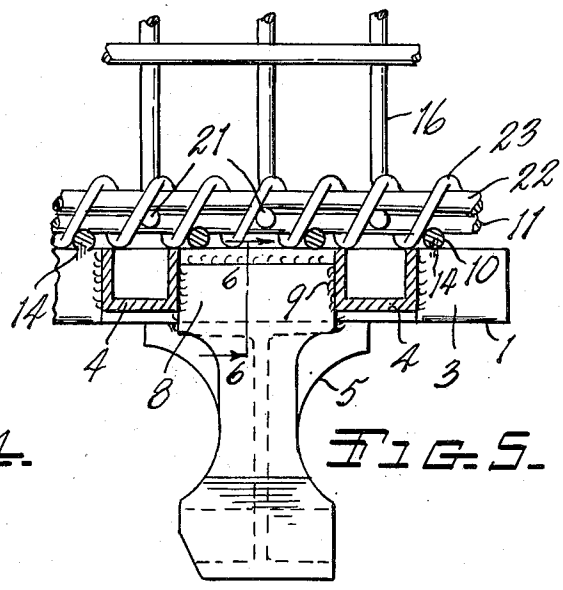

FIG. 5

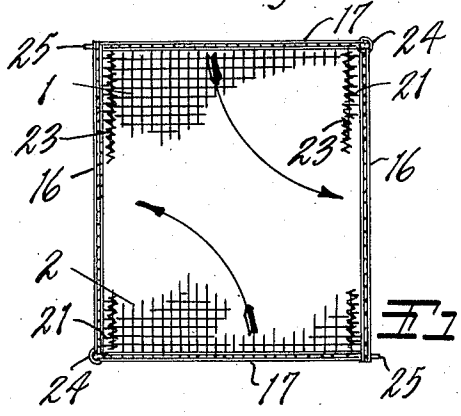

FIG. 7

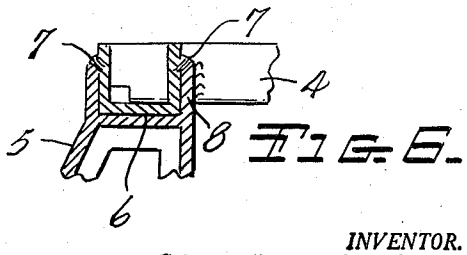

FIG. 6

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2,776,775

MATERIAL HANDLING CONTAINER

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Application January 13, 1954, Serial No. 403,781

14 Claims. (Cl. 220—6)

This invention relates to material handling container. The invention relates particularly to collapsible walled pallets.

The main objects of this invention are:

First, to provide a collapsible walled pallet which permits the stacking of pallets with the walls collapsed without the loads of the superimposed pallets being sustained by the collapsed walls of lower pallets.

Second, to provide a pallet having these advantages in which the superimposed pallets are so supported by their legs relative to a lower pallet so as to permit the engagement of the superimposed pallet with the lifting forks of a lift truck.

Third, to provide a pallet having these advantages which is very strong and rigid and is provided with legs which are attached to the deck in a manner that avoids the necessity of tie members for the lower ends of the legs.

Fourth, to provide a pallet having these advantages which may be formed of relatively light stock and at the same time is very strong and rigid.

Objects relating to details and economies of the invention will appear from the description to follow. The invention is defined and pointed out in the claims.

A preferred embodiment of the invention is illustrated in the accompanying drawing, in which:

Fig. 1 is an end elevational view of a pallet embodying my invention with the walls in erected position.

Fig. 2 is a fragmentary end elevational view of a pair of pallets embodying my invention with the walls collapsed, a portion only of the superimposed pallet being shown.

Fig. 3 is a fragmentary side elevational view of a pallet embodying my invention with the walls erected.

Fig. 4 is an enlarged fragmentary view partially in vertical section on a line corresponding to line 4—4 of Fig. 3.

Fig. 5 is an enlarged fragmentary view partially in section on a line corresponding to 5—5 of Fig. 4.

Fig. 6 is a fragmentary sectional view on a line corresponding to 6—6 of Fig. 5.

Fig. 7 is a plan view with the walls in erected position and illustrating the general relation thereof to the deck.

The embodiment of my invention illustrated embodies certain features of my application for Letters Patent filed May 21, 1953, Serial No. 356,480.

This embodiment comprises a deck bed designated generally by the numeral 1 formed as a separate unit to which the deck flooring unit designated generally by the numeral 2, also formed as a separate unit, is attached.

The bed comprises the side sill members 3 desirably of rectangular section and cross sill members 4 also desirably of rectangular section. In the embodiment illustrated these are of upwardly facing channel section. The joists or cross members 4 are fixedly secured to the sill members desirably as illustrated in detail in my said application.

The legs 5 are desirably malleable castings but for some purposes aluminum castings are preferred on account of the weight factor. These legs have upwardly facing U-shaped seats 6 in which the sills are fittingly received, the legs and sills being fixedly connected desirably by welds indicated at 7. The legs are arranged in opposed pairs.

The inner flanges 8 of the legs fit between spaced pairs of joists or cross members 4 as is shown in Fig. 5. The ends of the flanges 8 being welded to the adjacent side of the cross members as indicated at 9. This results in a very rigid and secure connection for the legs to the deck bed and the legs and the sills and the joists or cross members serve to brace each other so that the legs which are relatively long, for purposes which hereinafter will be pointed out, effectively withstand strains to which they are subjected without the necessity of connecting them by base bars.

The deck flooring designated generally by the numeral 2 comprises a spaced parallel lower series of rod-like slats or elements 10 and an upper series 11. These slats or elements are welded at their crossing points as indicated at 12 in Fig. 4.

The lower series of slats rest upon the sills and are welded thereto as indicated at 13, see Fig. 4. The upper series of slats 11 rest upon the joists and are welded thereto as indicated at 14, see Fig. 5. This provides a very strong and rigid deck structure capable of carrying very heavy loads in proportion to the weight of material used which is an important factor as these pallets are subjected to very heavy loads and rough handling. The pallets are designed to be stacked when loaded so that the bottom pallet may be subjected to the loaded weight of superimposed pallets, sometimes several. To enable the stacking the legs 5 are provided with downwardly facing recesses 15 adapted to engage the upper edges of opposed walls 16 of a lower pallet.

The side walls 16 and also the end walls 17 of the embodiment illustrated are of the grid or open mesh type comprising spaced vertical rod-like slats and spaced parallel horizontal slats disposed in crossing relation and welded together at their crossing points as indicated at 18, see Fig. 4.

The vertical slats 19 of the side walls 16 are provided with inwardly offset hinge arm portions 21 which constitute hinge members. These inwardly offset portions are connected by the bar or slat 22 which forms a pintel which engaged by the helically coiled hinge member 23 also embraces one of the upper series of slats 11 of the deck. This provides hinge connections for the walls 16 to the deck so that they may be collapsed in overlapping superimposed relation as is shown in Fig. 2. When erected the walls 16 are in substantial vertical alignment with the side edges of the deck. The end walls 17 which, as stated, are also formed of spaced parallel horizontal slats and spaced parallel vertical slats are each hingedly connected by the helically coiled hinge members 24 to one vertical edge of a side wall so as to collapse thereon as indicated in Fig. 2. The collapsed pairs being collapsed into overlapping relation as shown in Fig. 2.

The swinging ends of the end walls are provided with keepers 25 which are engaged by the bolts 26 when the walls are in erected position as shown in Fig. 1. As the details of these bolts form no part of this invention they are not further illustrated or described and only one bolt is shown in Fig. 1.

The hinge arms or members 21 are of such length that when the pairs of walls are collapsed, as shown in Fig. 2, clearance is provided for the legs 5 of a superimposed pallet with the legs of the superimposed pallet in vertical alignment with the sills. Thus arranged the collapsed walls and their connections to the deck are not subjected to any load or strain. Further, a firm support is provided for the superimposed pallets.

In use the pallets are very frequently stacked when in collapsed position. This arrangement provides a very stable stack as the legs of the superimposed pallet rest directly upon the deck of the lower pallet as distinguished from being supported by collapsed walls which is the case with all other walled pallets known to applicant.

It will be understood that I use the term "slide" and "end" walls and "side sills" for convenience and description rather than indicating or suggesting dimensions as these pallets are quite commonly square.

To prevent bulging of the end walls I provide upstanding lugs or retainers 27 with which the lower edges of the end walls are engaged as when erected, see Fig. 1.

The legs are of such height that the deck of a superimposed pallet is supported in substantially spaced relation to a collapsed wall of a lower pallet so that the forks 28, indicated by dotted lines in Fig. 2 of a lifting truck may be engaged with the upper pallet to lift the same from the lower pallet. This is very convenient as these pallets both loaded and unloaded are commonly handled by lift trucks and the forks may be easily engaged with an upper pallet of a stack without damage or likelihood of distorting the walls which is likely to happen when the forks are forced between a deck and the collapsed walls of pallets in which the decks of the superimposed pallet rest directly upon the lower pallet of the stack.

I have illustrated and described my invention in a highly practical embodiment thereof. I have not attempted to illustrate or describe other embodiments or adaptations as it is believed this disclosure will enable those skilled in the art to embody or adapt my invention as may be desired.

Having thus described the invention what is claimed as new and desired to secure by Letters Patent is:

1. In a material handling pallet, the combination of a deck bed comprising side sill members of rectangular section, joist members extending between the sill members and fixedly secured thereto, a grid-like deck flooring unit comprising an upper and a lower crossed series of spaced elements fixedly connected at their crossing points, the bottom series of flooring elements being disposed on and welded to the sill members, the upper series being disposed on and welded to the joist members, opposed pairs of cast members spaced longitudinally of the sill members, the leg members having U-shaped integral saddle portions in which the sill members are supportedly seated and weldingly connected, there being a pair of joist members spaced to receive the inner flanges of the leg saddle members between them and to which the end edges of such inner flanges are welded, and collapsible walls comprising fixedly connected vertical and horizontal slats hingedly connected in pairs to permit collapsing of the walls of the pairs upon each other, the vertical slats of corresponding opposed walls of the hingedly connected pairs having arms at their lower ends turned inwardly of the deck unit and connected by horizontal bars which are in turn hingedly connected to the deck in inwardly spaced relation from the sides of the deck, permitting the collapsing of the collapsed pairs of walls in superimposed relation, said hinge arms being of such length that the hinge connection and the collapsed walls lie inwardly of vertical planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet with the legs of the superimposed pallet in vertical alignment with the sills of the lower pallet.

2. In a material handling pallet, the combination of a deck bed comprising side sill members of rectangular section, joist members extending between the sill members and fixedly secured thereto, a grid-like deck flooring unit comprising an upper and a lower crossed series of spaced elements fixedly connected at their crossing points, the bottom series of flooring elements being disposed on and welded to the sill members, the upper series being disposed on and welded to the joist members, opposed pairs of cast leg members spaced longitudinally of the sill members, the leg members having U-shaped integral saddle portions in which the sill members are supportedly seated and weldingly connected and collapsible walls comprising fixedly connected vertical and horizontal slats hingedly connected in pairs to permit collapsing of the walls of the pairs upon each other, the vertical slats of corresponding opposed walls of the hingedly connected pairs having arms at their lower ends turned inwardly of the deck unit and connected by horizontal bars which are in turn hingedly connected to the deck in inwardly spaced relation from the sides of the deck permitting the collapsing of the collapsed pairs of walls in superimposed relation, the said hinge arms being of such length that the hinge connections and the collapsed walls lie inwardly of vertical planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet with the legs of the superimposed pallet in vertical alignment with the sills of the lower pallet.

3. In a material handling pallet, the combination of a deck bed comprising side sill members of rectangular section, joist members extending between the sill members and fixedly secured thereto, a grid-like deck flooring unit comprising an upper and a lower crossed series of spaced elements fixedly connected at their crossing points, the bottom series of flooring elements being disposed on and welded to the sill members, the upper series being disposed on and welded to the joist members, opposed pairs of cast leg members spaced longitudinally of the sill members, the leg members having U-shaped integral saddle portions in which the sill members are supportedly seated and weldingly connected, and collapsible walls comprising fixedly connected vertical and horizontal slats hingedly connected in pairs to permit collapsing of the walls of the pairs upon each other, the vertical slats of corresponding opposed walls of the hingedly connected pairs having arms at their lower ends turned inwardly of the deck unit and connected by horizontal bars which are in turn hingedly connected to the deck in inwardly spaced relation from the sides of the deck permitting the collapsing of the collapsed pairs of walls in superimposed relation, the said hinge arms being of such length that the hinge connections and the collapsed walls lie inwardly of vertical planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet with the legs of the superimposed pallet in vertical alignment with the sills of the lower pallet, the legs being of a height substantially exceeding the height of the collapsed walls above the deck permitting the forks of a lift truck being inserted between the collapsed walls of a lower pallet and the joists of a superimposed pallet.

4. In a material handling pallet, the combination of a deck bed comprising side sill members, joist members extending between the sill members and fixedly secured thereto, a deck mounted on said deck bed, opposed pairs of leg members spaced longitudinally of the sill members, the leg members having integral saddle portions in which the sill members are supportedly seated and fixedly connected, there being a pair of joist members spaced to receive the inner flanges of the leg saddle members between them and to which the saddle members are fixedly connected, and collapsible walls hingedly connected in pairs to permit collapsing of the walls of the pairs upon each other, corresponding opposed walls of the hingedly connected pairs having hinge members at their lower ends offset inwardly of the deck and hingedly connected to the deck in inwardly spaced relation from the sides of the deck permitting the collapsing of the collapsed pairs of walls in superimposed relation above the deck, the said hinge members being of such length that the hinge connections and the collapsed walls lie inwardly of vertical planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet with the legs of the superimposed pallet in vertical alignment with the sills of the lower pallet.

5. In a material handling pallet, the combination of a deck bed comprising side sill members, joist members extending between the sill members and fixedly secured thereto, a deck mounted on said deck bed, opposed pairs of leg members spaced longitudinally of the sill members, the leg members having integral saddle portions in which the sill members are supportedly seated and fixedly connected, collapsible walls hingedly connected in pairs to permit collapsing of the walls of the pairs upon each other, corresponding opposed walls of the hingedly connected pairs having hinge members at their lower ends offset inwardly of the deck and hingedly connected to the deck in inwardly spaced relation from the sides of the deck permitting the collapsing of the collapsed pairs of walls in superimposed relation above the deck, the said hinge members being of such length that the hinge connections and the collapsed walls lie inwardly of vertical planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet with the legs of the superimposed pallet in vertical alignment with the sills of the lower pallet.

6. In a material handling pallet, the combination of a deck bed comprising side sill members, joist members extending between the sill members and fixedly secured thereto, a deck mounted on said deck bed, opposed pairs of leg members spaced longitudinally of the sill members, the leg members having integral saddle portions in which the sill members are supportedly seated and fixedly connected, collapsible walls hingedly connected in pairs to permit collapsing of the walls of the pairs upon each other, corresponding opposed walls of the hingedly connected pairs having hinge members at their lower ends offset inwardly of the deck and hingedly connected to the deck in inwardly spaced relation from the sides of the deck permitting the collapsing of the collapsed pairs of walls in superimposed relation above the deck, the said hinge members being of such length that the hinge connections and the collapsed walls lie inwardly of vertical planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet with the legs of the superimposed pallet in vertical alignment with the sills of the lower pallet, the legs being of a height substantially exceeding the height of the collapsed walls above the deck permitting the forks of a lift truck being inserted between the collapsed walls of a lower pallet of a superimposed pallet.

7. In a material handling pallet, the combination of a deck bed comprising sill members and a joist extending between and fixedly secured thereto, a deck mounted on said deck bed, leg members fixedly secured to said sill members and collapsible walls hingedly connected in pairs to permit collapsing of the walls of the pairs upon each other, corresponding opposed walls of the hingedly connected pairs having hinge members at their lower ends offset inwardly of the deck and hingedly connected to the deck in inwardly spaced relation from the sides of the deck permitting the collapsing of the collapsed pairs of walls in superimposed relation above the deck, the hinge members being of such length that the hinge connections and the collapsed walls lie inwardly of vertical planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet resting upon a lower pallet, the legs being of such height as to provide space above the collapsed wall of a lower pallet to permit entrance of the forks of a lift truck below the deck of the superimposed pallet.

8. In a material handling pallet, the combination of a deck bed comprising sill members and a joist extending between and fixedly secured thereto, a deck mounted on said deck bed, leg members fixedly secured to said sill members and collapsible walls hingedly connected in pairs to permit collapsing of the walls of the pairs upon each other, corresponding opposed walls of the hingedly connected pairs having hinge members at their lower ends offset inwardly of the deck and hingedly connected to the deck in inwardly spaced relation from the sides of the deck permitting the collapsing of the collapsed pairs of walls in superimposed relation above the deck, the hinge members being of such length that the hinge connections and the collapsed walls lie inwardly of vertical planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet resting upon a lower pallet.

9. In a material handling pallet, the combination of a deck bed comprising sill members and a joist extending between and fixedly secured thereto, a deck mounted on said deck bed, leg members fixedly secured to said sill members and collapsible walls hingedly connected in pairs to permit collapsing of the walls of the pairs upon each other, corresponding opposed walls of the hingedly connected pairs having hinge members at their lower ends offset inwardly of the deck and hingedly connected to the deck in inwardly spaced relation from the sides of the deck permitting the collapsing of the collapsed pairs of walls in superimposed relation above the deck, the hinge members being of such length that the hinge connections and the collapsed walls lie inwardly of vertical planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet resting upon a lower pallet, the walls when erected being in approximate vertical alignment with the edges of the deck, the legs having downwardly facing recesses engageable with the erected walls of an adjacent lower pallet.

10. In a material handling pallet, the combination of a deck provided with legs, collapsible walls hingedly connected in pairs to permit collapsing of the walls of the pairs upon each other, corresponding opposed walls of the hingedly connected pairs having hinge members at their lower ends offset inwardly of the deck and hingedly connected to the deck in inwardly spaced relation from the sides of the deck permitting the collapsing of the collapsed pairs of walls in superimposed relation above the deck, the inwardly offset hinge members being of such length that the hinge connections and the collapsed walls lie inwardly of vertical planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet resting upon a lower pallet, the legs being of such height as to provide space above the collapsed wall of a lower pallet to permit entrance of the forks of a lift truck below the deck of the superimposed pallet, the walls when erected being in approximate vertical alignment with the edges of the deck, the legs having downwardly facing recesses engageable with the erected walls of an adjacent lower pallet.

11. In a material handling pallet, the combination of a deck provided with legs, collapsible walls hingedly connected in pairs upon each other, corresponding opposed walls of the hingedly connected pairs having hinge members at their lower ends offset inwardly of the deck and hingedly connected to the deck in inwardly spaced relation from the sides of the deck permitting the collapsing of the collapsed pairs of walls in superimposed relation above the deck, the inwardly offset hinge members being of such length that the hinge connections and the collapsed walls lie inwardly of vertical planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet resting upon a lower pallet, the legs having downwardly facing recesses engageable with the erected walls of an adjacent lower pallet.

12. In a material handling pallet, the combination of a deck provided with legs, collapsible walls, corresponding opposed walls having hinge members at their lower ends offset inwardly of the deck and hingedly connected to the deck in inwardly spaced relation from the sides of the deck permitting the collapsing of the walls in superimposed relation above the deck, the inwardly offset hinge members being of such length that the hinge connections and the collapsed walls lie inwardly of vertical

planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet resting upon a lower pallet, the legs having downwardly facing recesses engageable with the erected walls of an adjacent lower pallet.

13. In a material handling pallet, the combination of a deck provided with legs, collapsible walls, corresponding opposed walls having hinge members at their lower ends offset inwardly of the deck and hingedly connected to the deck in inwardly spaced relation from the sides of the deck permitting the collapsing of the collapsed pairs of walls in superimposed relation above the deck, the inwardly offset hinge members being of such length that the hinge connections and the collapsed walls lie inwardly of vertical planes passed through the bottoms of the inner side edges of the legs to lie between the legs of a superimposed pallet resting upon a lower pallet, the legs having downwardly facing recesses engageable with the erected walls of an adjacent lower pallet.

14. In a material handling pallet, the combination of a

deck bed comprising side sill members, joist members extending between the sill members and fixedly secured thereto, a deck mounted on said deck bed, opposed pairs of cast leg members spaced longitudinally of the sill members, the leg members having integral U-shaped saddle portions in which the sill members are supportedly seated and weldingly connected, and there being a pair of joist members spaced to receive the inner flanges of the leg saddle members between them and to which the saddle members are welded.

References Cited in the file of this patent

UNITED STATES PATENTS

797,871	Smith	Aug. 22, 1905
1,331,704	Gerberich	Feb. 24, 1920
1,542,783	Bilger	June 16, 1925
1,830,998	Harbord	Nov. 10, 1931
2,648,455	Bitney	Aug. 11, 1953
2,667,319	Coit	Jan. 26, 1954