Oct. 20, 1959 C. C. AVERILL 2,909,348

MATERIALS HANDLING PALLET

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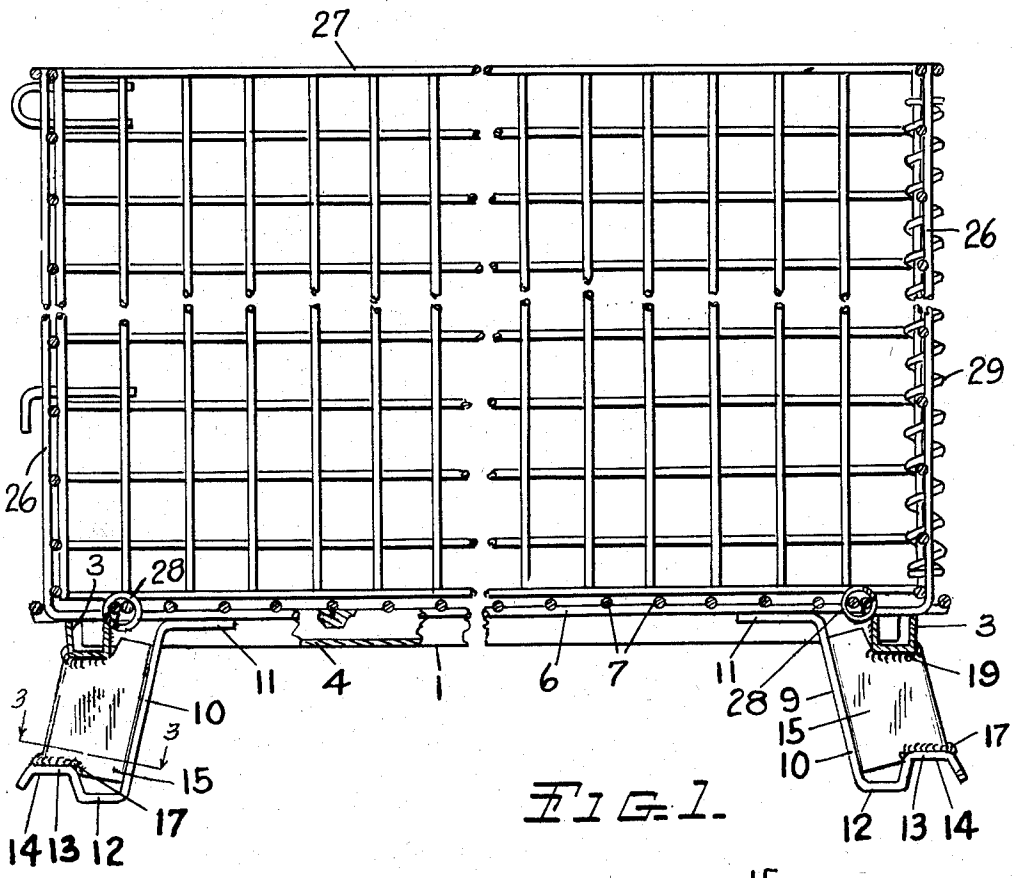


FIG. 1.

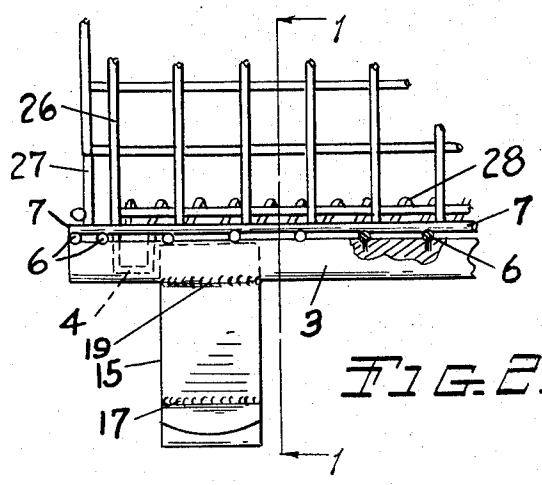


FIG. 2.

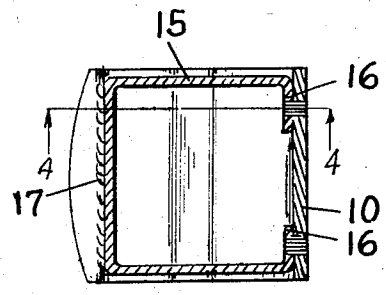


FIG. 3.

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MATERIALS HANDLING PALLET

Filed Oct. 7, 1954 3 Sheets-Sheet 2

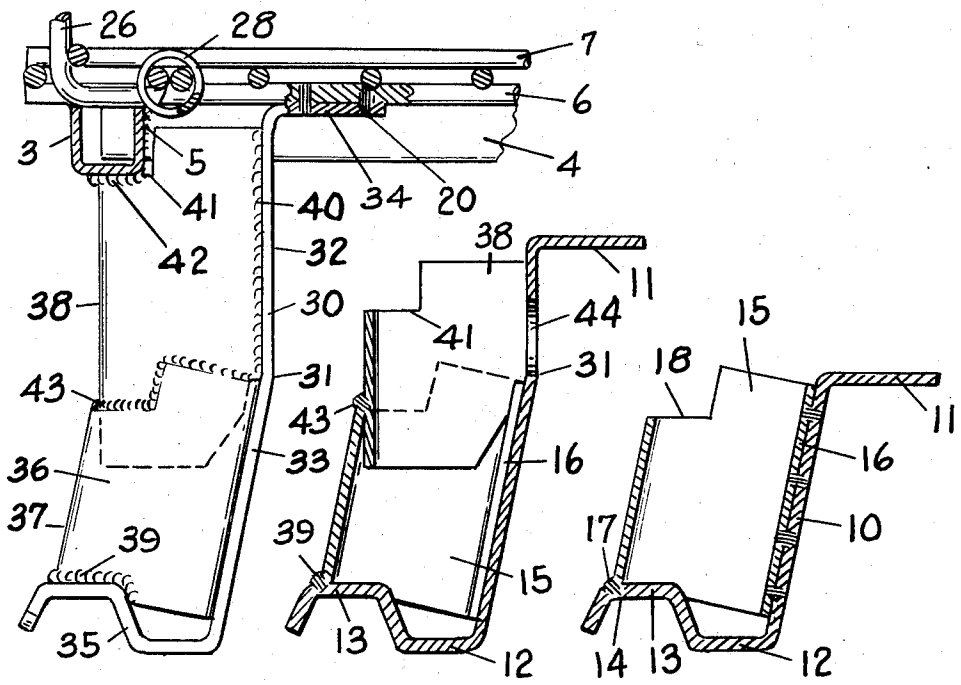


FIG. 11. FIG. 13. FIG. 4.

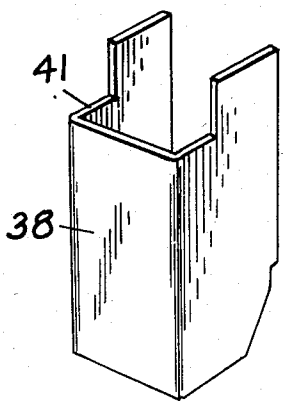


FIG. 12.

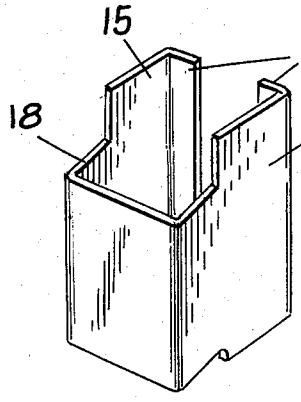


FIG. 6.

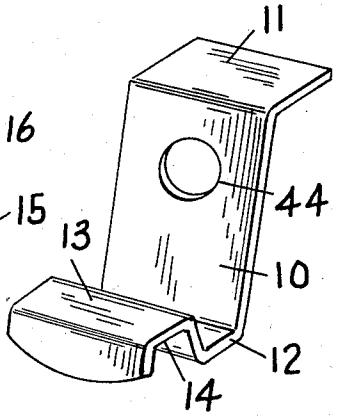


FIG. 5.

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MATERIALS HANDLING PALLET

Filed Oct. 7, 1954 3 Sheets-Sheet 3

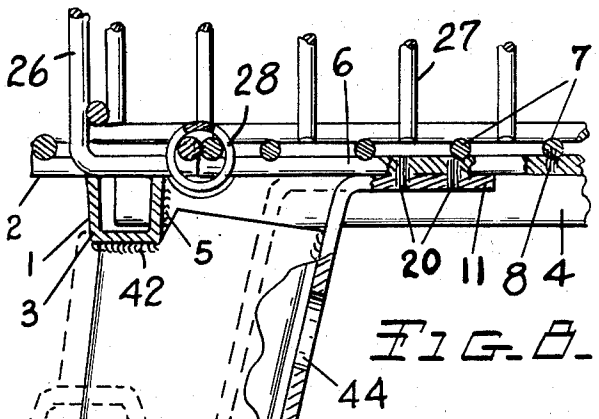


FIG. 8.

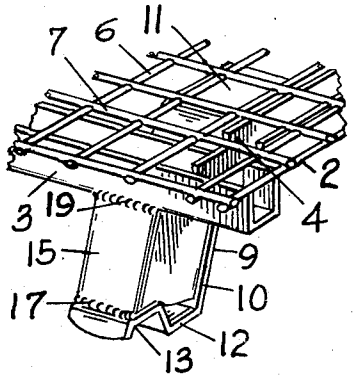
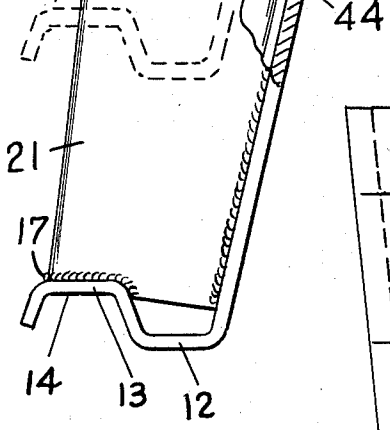


FIG. 7.



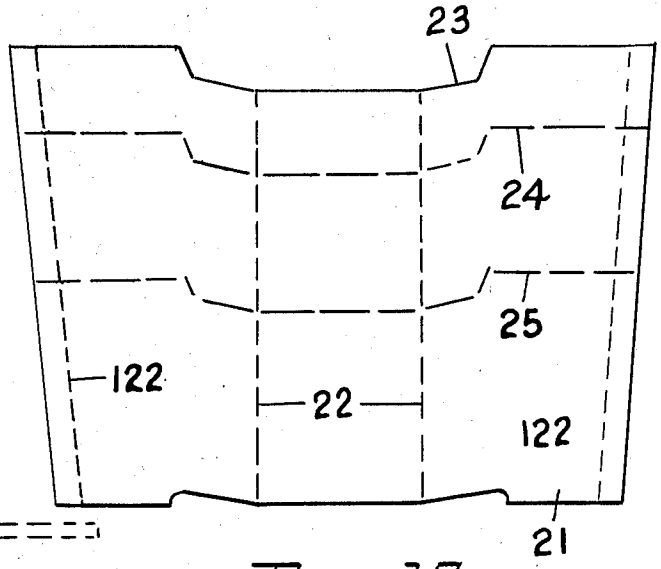


FIG. 10.

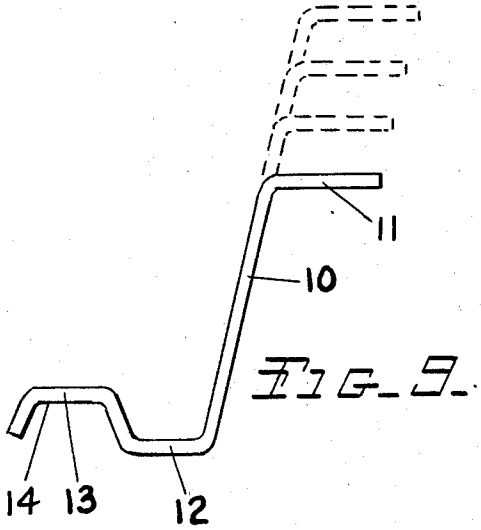


FIG. 9.

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2,909,348

MATERIALS HANDLING PALLET

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Application October 7, 1954, Serial No. 460,876

13 Claims. (Cl. 248—120)

This invention relates to a materials handling pallet, particularly material handling pallets of the walled stacking type.

The main objects of this invention are:

First, to provide a materials handling pallet of the wall stacking type in which the legs while of a height substantially exceeding the height of legs commonly used in such structures are very strong and rigid and capable of withstanding heavy loads and severe shocks.

Second, to provide a materials handling pallet having a deck of the open mesh rod or slat type in which the deck is supported to minimize strains thereon resulting from loads and the attachment of the legs thereto.

Third, to provide in a materials handling pallet a leg structure which may be readily fabricated in different heights and at the same time is strong and rigid.

Objects relating to details and economics 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 a fragmentary vertical transverse section of a materials handling pallet embodying my invention taken on a line corresponding to 1—1 of Fig. 2.

Fig. 2 is a fragmentary elevational view looking from the right of Fig. 1.

Fig. 3 is an enlarged horizontal section through one of the legs on a line corresponding to 3—3 of Fig. 1.

Fig. 4 is a vertical section of the embodiment of my invention in the leg shown in Figs. 1 to 3 inclusive.

Fig. 5 is a front perspective view of one of the leg members or elements of the leg structure.

Fig. 6 is a front perspective view of the second element or member of my leg structure in the embodiment of Figs. 1 to 4 inclusive.

Fig. 7 is a fragmentary perspective view with the walls omitted showing the leg and its relation to the deck and deck bed.

Fig. 8 is a fragmentary sectional view corresponding to that of Fig. 1 illustrating the adaptability of the leg structure to legs of varying height.

Fig. 9 is a side elevation of one of the leg members illustrating its ready adaptability to provide legs of varying heights.

Fig. 10 is a plan view of a blank illustrating the structure and adaptability of the second leg member to provide legs of varying heights.

Fig. 11 is a fragmentary view of another form or embodiment of my invention in which the second leg member is formed of two sections.

Fig. 12 is a front perspective view of the second leg section of Fig. 11.

Fig. 13 is a vertical section of a leg showing the adaptability of the embodiment of my invention as shown in Fig. 11 to provide legs of different heights.

The embodiment of my invention illustrated comprises a deck bed designated generally by the numeral 1

formed as a separate unit and a deck unit designated generally by the numeral 2 preferably of grid like structure.

The deck bed comprises the side sills or members 3 desirably of upwardly facing channel section and the cross members or joist 4 which are fixedly secured at their ends to the members 3 as by welding, indicated at 5.

The cross members are also desirably of upwardly facing channel section. This results in rigidity with relatively light weight. The deck 2 comprises a lower series of laterally spaced rod like slats 6 and an upper series of rod like slats 7. These rods are disposed in crossed relation and welded together at their crossing points, as indicated at 8. The upper slats 7 are disposed upon and fixedly secured to the side flanges of the cross members 4 with the flanges disposed parallel to and between the lower slats 6 as shown in Fig. 7.

The legs designated generally by the numerals 9 comprise the leg members 10 formed of flat bendable stock and include upright portions having inwardly projecting arms 11 at their upper ends and outwardly projecting foot portions 12 at their lower ends. The foot portions having upward offsets 13 therein provide downwardly facing wall engaging or stacking recesses 14. The leg strut members 15 are of inwardly facing channel section and have inturned flanges 16 on their edges disposed against and welded to the upright portions of the leg members 10 with their lower edge in supporting engagement with the upwardly offset portions 13 of the foot portions 12 and are welded thereto at 17.

The upper ends of the leg strut members 15 are provided with seats 18 for the bed members 3 and are welded thereto at 19. The inwardly projecting arms 11 of the leg members 10 are disposed on the undersides of adjacent pairs of deck bars or slats 6 and are welded thereto as shown at 20.

There are many conditions or uses which render it desirable that the legs of the pallet shall be of substantial height and although this leg structure is desirable when the legs are of any height it is particularly desirable where the legs are desired of considerable height. The legs are very strong and rigid although fabricated of comparatively light material. The leg members 10 may be formed of flat strip stock and the leg member 15 of bendable flat sheet stock. The leg members 10 can be formed with upright portions in any desired height while the strut members 15 can easily be formed of any desired height from flat sheet stock.

In Fig. 9 I illustrate by full and dotted lines the adaptability of these leg members in making of legs of varying height. In Fig. 10 I illustrate the blank 21 from which the leg members 15 may be formed. The blank being folded on the line 22 into channel section and on lines 122 to form the flanges 16. The full lines 23 and dotted lines 24 and 25 indicate the ease with which the height of the leg members 15 may be varied to correspond to the height of the leg members 10.

In Figs. 5 and 6 the leg members 10 and 15 are shown as prepared for assembling by welding the inturned flanges 16 to the upright portion of the leg member 10. This is further illustrated in Fig. 4. In Fig. 8 a relatively high leg member is illustrated in full lines and a shorter leg member indicated by dotted lines.

The pallet illustrated is provided with grid like side walls 26 and end walls 27. The side walls are collapsibly secured to the deck at 28 while the end walls are hingedly and collapsibly secured one to each side wall at diagonally opposite corners of the walls as indicated at 29. The details of the wall structure form no part of this invention but walls are shown to illustrate the legs are well adapted for walled stacking pallets.

It will be observed that the stacking recesses are vertically aligned with the erected side walls. The leg struc-

ture enables this alignment to be readily secured with legs of varying heights as indicated by the full and dotted lines in Fig. 8.

In Figs. 11, 12 and 13 I illustrate a modified form or embodiment of my invention which is particularly well adapted for legs of considerable length and for the production of legs of varying lengths.

In this embodiment the upright portion of the leg member **30** is angled at **31**, the upper section **32** being practically vertical and the lower section **33** being outwardly inclined. The upper section has an inwardly projecting arm **34** corresponding to the arm **11** and an outwardly projecting foot portion **35** corresponding to the foot portion **12** of the previously described embodiment.

In this embodiment the leg members **36** corresponding to the leg member **15** is formed of a lower section **37** and an upper section **38**. The lower section may desirably be the same as has been described and has inturned flanges welded to the section **33** and is also welded at **39** to the foot portion. The upper section **38** is welded at **40** to the vertical portion **32** of the leg member **30** and has a seat **41** for the deck bed member **3** and is welded thereto as indicated at **42**. The adjacent ends of the leg members **37** and **38** are telescoped and weldingly connected at **43**.

The legs embodying my invention are very strong and capable of sustaining heavy loads and withstanding heavy shocks, such as results from ramming with the fork of a lift truck, the dragging of the pallet across a floor or platform. To facilitate dragging the uprights of the leg members **10** are provided with holes **44** in which a hook may be engaged or the hooks of a hoisting cable may be engaged in the holes **44** when it is desired to lift and translate the loaded pallets as, for example, in loading and unloading ships.

I have illustrated and described my invention in a highly practical embodiment. 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 my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a walled materials-handling pallet, the combination of a deck bed comprising side members, a grid-like deck disposed on said deck bed and comprising an upper series and a lower series of spaced slats fixedly connected at their crossing points, the lower series of slats being disposed upon and welded to the side bed members with the side edges of the deck spaced outwardly relative to said side bed members, side walls mounted on said deck, leg members formed of flat stock and comprising downwardly and outwardly inclined upright portions, arms projecting inwardly from the upper ends thereof disposed upon and fixedly secured to the undersides of certain of said lower deck members in inwardly spaced relation from the adjacent side member, said leg members including outwardly projecting foot portions having upward offsets therein providing downwardly facing recesses adapted to engage the walls of another similar pallet when stacked thereon, and strut members of inwardly facing channel section having inturned flanges on their side edges lapped upon and welded to the outer sides of said upright portions of said leg members with their lower ends disposed upon and welded to said upward off-sets of said foot portions thereof and with their upper ends in supporting engagement with and welded to said side members.

2. In a walled materials-handling pallet, the combination of a deck bed comprising side members, a deck disposed on said deck bed, side walls mounted on said deck, leg members formed of flat stock and comprising downwardly and outwardly inclined upright portions, arms projecting inwardly from the upper ends thereof disposed upon and fixedly secured to the underside of the deck in inwardly spaced relation from the adjacent side member, said leg members including outwardly projecting foot portions having upward offsets therein providing downwardly facing recesses adapted to engage the walls of another similar pallet when stacked thereon, and strut members of inwardly facing channel section having inturned flanges on their side edges lapped upon and welded to the outer sides of said upright portions of said leg members with their lower ends disposed upon and welded to said upward off-sets of said foot portions thereof and with their upper ends in supporting engagement with and welded to said side members.

3. In a materials handling pallet, the combination of a deck bed comprising side members, a grid-like deck disposed on said deck bed and comprising an upper series and a lower series of spaced slats fixedly connected at their crossing points, the lower series of slats being disposed upon and welded to the side bed members, leg members formed of flat stock and comprising upright portions, arms projecting inwardly from the upper ends thereof disposed upon and fixedly secured to the undersides of certain of said lower deck members in inwardly spaced relation from the adjacent side member, said leg members including outwardly projecting foot portions, and strut members of inwardly facing channel section having their side edges welded to the upright portions of said leg members and their lower ends disposed upon and welded to said foot portions thereof, their upper ends being in supporting engagement with and welded to said side members.

4. A leg for a materials handling pallet comprising a leg member formed of a strip of flat bendable stock and including an elongated angled upright portion having an inwardly projecting attaching arm at its upper end, the upper portion of said upright being substantially vertical and the lower portion thereof being outwardly inclined and terminating in an outwardly projecting foot portion, a strut member comprising a lower section of inwardly facing channel iron section disposed on and fixedly secured to the outwardly inclined lower portion of said upright with its lower end disposed upon and fixedly secured to said foot portion, and an upper strut section of inwardly facing channel iron section disposed on the outer side of said vertical portion of said upright and fixedly secured thereto with its lower end in telescoping engagement with said lower strut section, said strut sections being welded together, the upper section of said strut member constituting a deck supporting seat.

5. A leg for a materials handling pallet comprising a leg member formed of a strip of flat bendable stock and including an elongated angled upright portion having an inwardly projecting attaching arm at its upper end, the upper portion of said upright being substantially vertical and the lower portion thereof being outwardly inclined and terminating in an outwardly projecting foot portion, a strut member comprising a lower section of inwardly facing channel iron section disposed on and fixedly secured to the outwardly inclined lower portion of said upright with its lower end disposed upon and fixedly secured to said foot portion, and an upper strut section of inwardly facing channel iron section disposed on the outer side of said vertical portion of said upright and fixedly secured thereto and fixedly secured to said lower section, the upper section of said strut member constituting a deck supporting seat.

6. In a materials handling pallet, the combination of a deck including side bed members constituting a fixed part thereof, leg members comprising downwardly and outwardly inclined upright portions having inwardly projecting arms at their upper ends disposed on the under side of the deck and fixedly secured thereto in inwardly spaced relation from the adjacent side bed member and having outwardly projecting foot portions at their lower ends provided with downwardly facing recesses adapted

to receive the walls of a similar pallet on which the pallet is stacked, and strut members of inwardly facing channel iron section disposed with their arms lapped upon and fixedly secured to the upright portions of said leg members notched to receive and fixedly secured upon said upward offsets of said foot portions, the upper ends of the strut members being in supporting engagement with and fixedly secured to said bed deck members, said strut members having upwardly and outwardly facing recesses in which said side bed members are disposed, said strut members have lower parts and upper parts telescopingly engaged with the lower parts and welded thereto, said lower parts having an outwardly and upwardly opening notch formed in their upper and outside edges parallel to the recesses in the upper ends of the strut members.

7. In a materials handling pallet, the combination of a deck including side bed members constituting a fixed part thereof, leg members comprising relatively thin strips having upright portions with inwardly projecting arms at their upper ends disposed on the underside of the deck and fixedly secured thereto and having outwardly projecting foot portions at their lower ends, and strut members of folded sheet metal having inwardly facing channel iron section disposed with their arms lapped upon and fixedly secured to the upright portion of said leg members, the lower ends of the strut members being disposed upon and fixedly secured upon said foot portions, the upper ends of the strut members being in supporting engagement with and fixedly secured to said side bed members.

8. In a materials handling pallet, the combination of a deck including side bed members constituting a fixed part thereof, leg members comprising relatively thin strips having upright portions with inwardly projecting arms at their upper ends disposed on the under side of the deck and fixedly secured thereto and having outwardly projecting foot portions at their lower ends, and strut members of folded sheet metal having inwardly facing channel iron section having inturned flanges on their arms lapped upon and fixedly secured to the upright portions of said leg members, the lower ends of the strut members being disposed upon and fixedly secured to said upward offset of said foot portions, the upper ends of the strut members being in supporting engagement with and fixedly secured to said side bed members.

9. In a materials handling pallet, the combination of a deck including side bed members constituting a fixed part thereof, leg members comprising relatively thin strips having upright portions with inwardly projecting arms at their upper ends disposed on the underside of the deck and fixedly secured thereto and having outwardly projecting foot portions at their lower ends provided with upward off-sets forming downwardly facing recesses adapted to receive the walls of a similar pallet on which the pallet is stacked, and strut members of folded sheet metal fixedly secured to the upright portions of said leg members, the lower ends of the strut members being notched to receive and to be fixedly secured upon said upward offsets of said foot portions, said strut members having upwardly and outwardly facing recesses in which said side bed members are disposed and fixedly secured to said strut members.

10. In a material handling pallet, the combination of a deck including side bed members as the fixed part thereof, leg members comprising relatively thin strips having downwardly and outwardly inclined upright portions having inwardly projecting arms at their upper ends disposed upon and fixedly secured to the underside of the deck and having outwardly projecting foot portions at their lower ends, and strut members of inwardly facing channel iron section having flanges on their side edges lapped upon and fixedly secured to the upright portions of said leg members with the lower ends of the strut members disposed upon and fixedly secured to said foot portions thereof, the upper ends of the strut members being in supported engagement with and fixedly secured to said deck side bed members.

11. A leg for a material handling pallet comprising a downwardly and outwardly inclined upright portion terminating at its upper end in an inwardly projecting deck attaching arm and at its lower end in an outwardly projecting foot portion, said foot portion having an upward offset therein providing a downwardly facing recess, and a strut member of inwardly facing channel iron section having inturned flanges lapped upon and welded to the outer side of said upright portion, the lower end of said strut member being notched to receive and disposed upon and welded to said offset in said foot portion, said strut member having an upwardly and outwardly facing recess in its upper end adapted to receive a deck bed member, said strut member having a lower part and upper part telescopingly engaged with the lower part and welded thereto, said lower part having an outwardly and upwardly opening notch formed in its upper and outer side edge parallel to the recess in the upper end of the strut member.

12. A leg for a material handling pallet comprising a downwardly and outwardly inclined upright portion terminating at its upper end in an inwardly projecting deck attaching arm and at its lower end in an outwardly projecting foot portion, said foot portion having an upward offset therein providing a downwardly facing recess, and a strut member of inwardly facing channel iron section having inturned flanges lapped upon and welded to the outer side of said upright portion, the lower end of said strut member being notched to receive and disposed upon and welded to said offset in said foot portion, the upper end of said strut member constituting a deck bed member attaching element and support.

13. A leg for a material handling pallet comprising a downwardly and outwardly inclined upright portion terminating at its upper end in an inwardly projecting deck attaching arm and at its lower end in an outwardly projecting foot portion, said foot portion having an upward offset therein providing a downwardly facing recess, and a strut member of inwardly facing channel iron section having its arms lapped upon and welded to the outer side of said upright portion, the lower end of said strut member being disposed upon said foot portion, the upper end of said strut member constituting a deck bed member attaching element and support.

References Cited in the file of this patent

UNITED STATES PATENTS

1,331,704	Gerberich	Feb. 24, 1920
1,542,783	Bilger	June 16, 1925
2,543,254	Osborn	Feb. 27, 1951
2,648,455	Bitney	Aug. 11, 1953
2,667,319	Coit	Jan. 26, 1954
2,680,587	Averill	June 8, 1954
2,781,184	Averill	Feb. 12, 1957