March 8, 1949. C. W. HOLET 2,463,622

PALLET FOR SUPPORTING AND TRANSPORTING ARTICLES

Filed Nov. 26, 1946 8 Sheets-Sheet 1

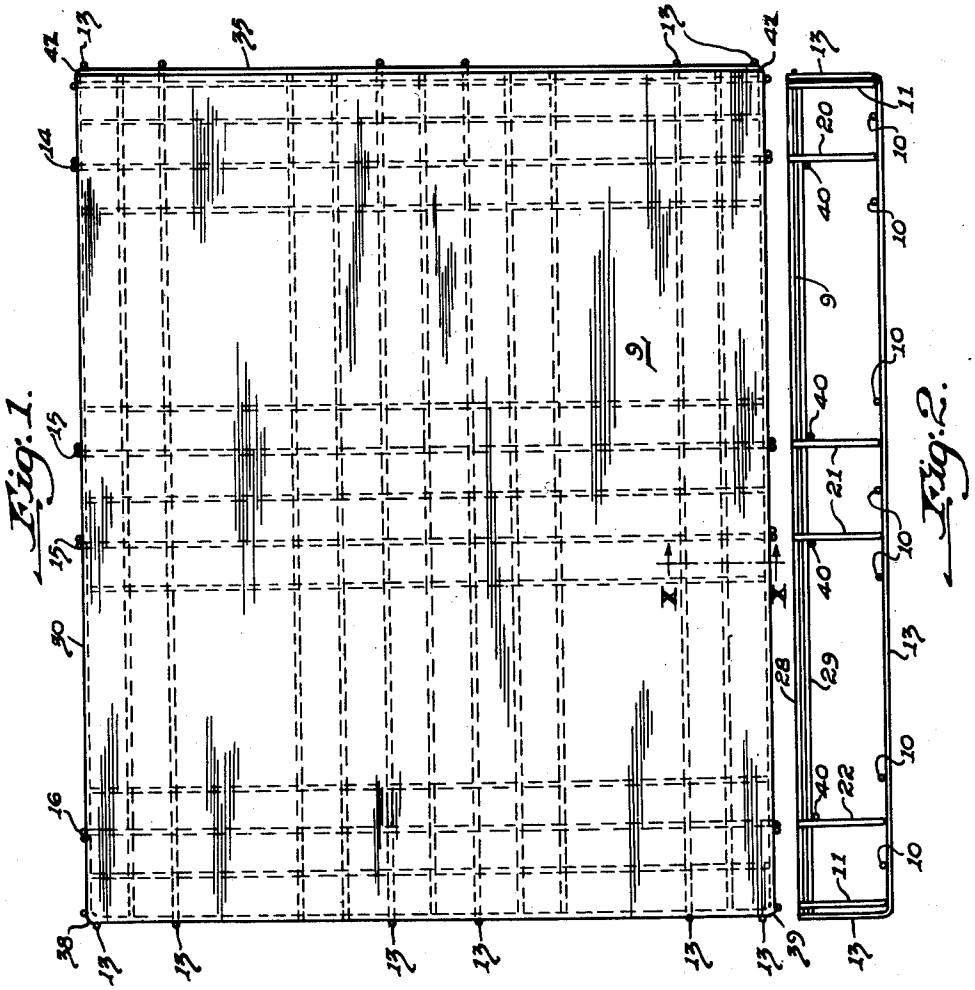


Fig. 1.

Fig. 2.

Inventor
CHARLES W. HOLET.

By Archworth & Martin
His Attorney

March 8, 1949. C. W. HOLET 2,463,622

PALLET FOR SUPPORTING AND TRANSPORTING ARTICLES

Filed Nov. 26, 1946 8 Sheets-Sheet 2



Fig. 4.

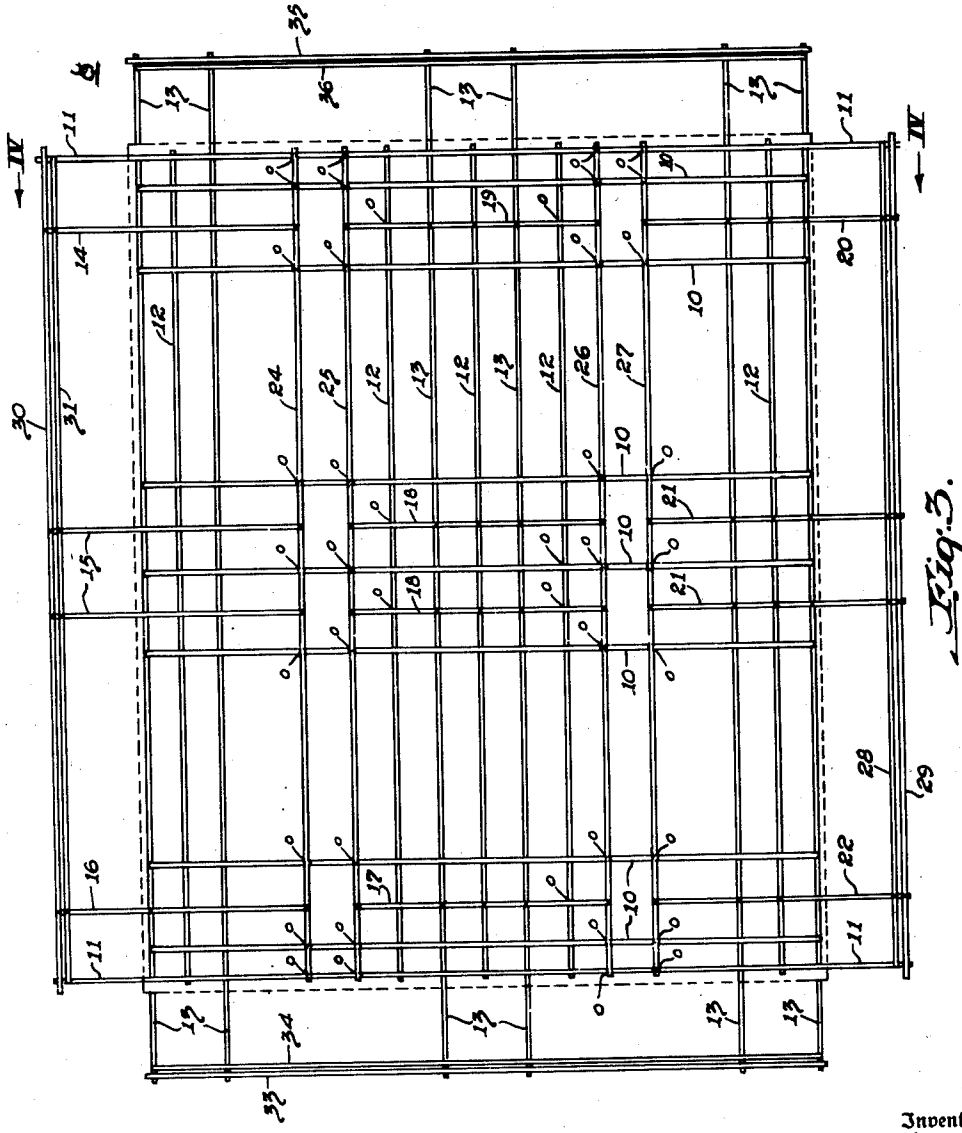


Fig. 3.

Inventor
CHARLES W. HOLET.
By Archwood Martin
his Attorney

March 8, 1949. C. W. HOLET 2,463,622

PALLET FOR SUPPORTING AND TRANSPORTING ARTICLES

Filed Nov. 26, 1946 8 Sheets-Sheet 3

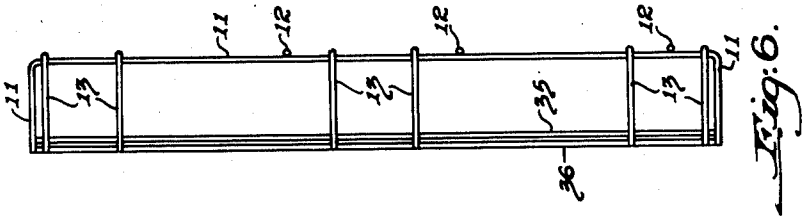


Fig. 6.

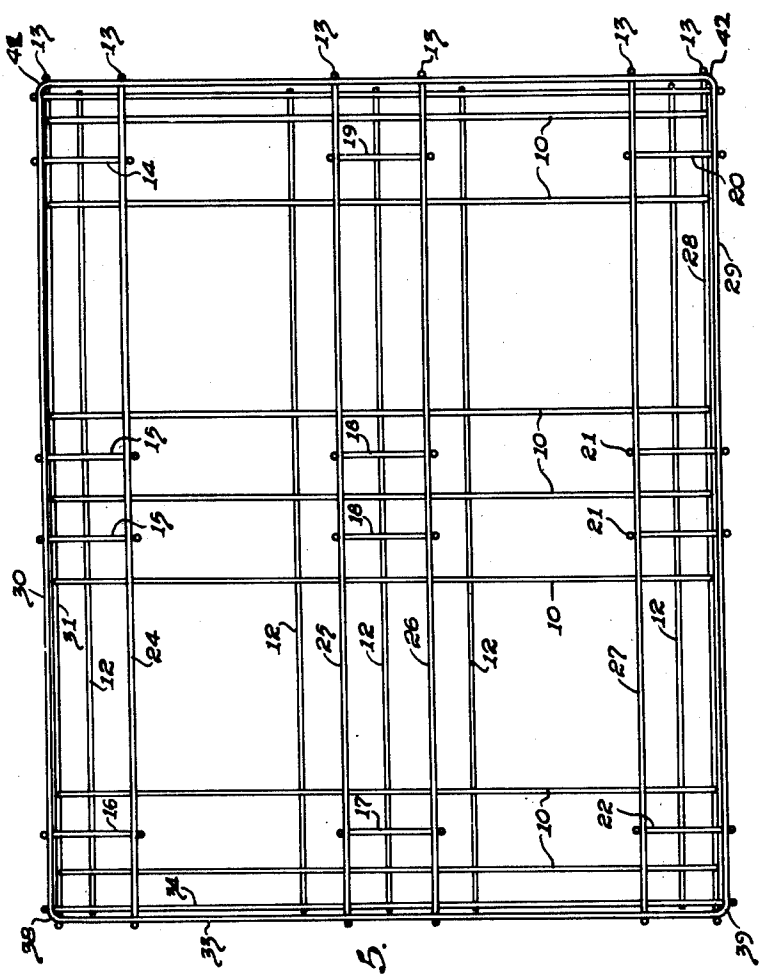


Fig. 5.

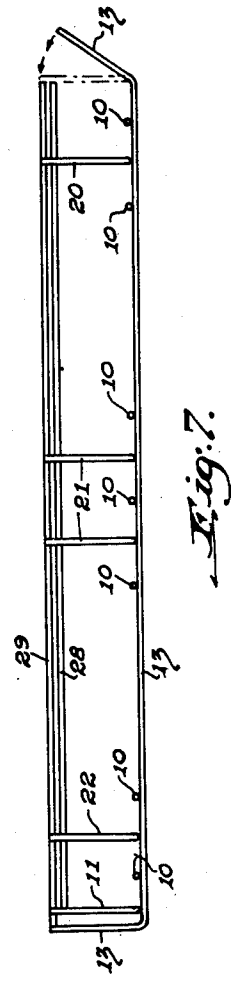


Fig. 7.

Inventor
CHARLES W. HOLET.
By Archworth Martin
his Attorney

March 8, 1949. C. W. HOLET 2,463,622

PALLET FOR SUPPORTING AND TRANSPORTING ARTICLES

Filed Nov. 26, 1946 8 Sheets-Sheet 4

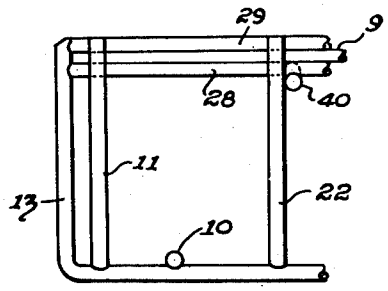


Fig. 8.

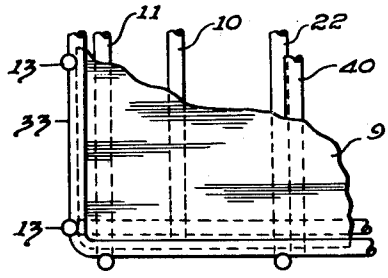


Fig. 9.

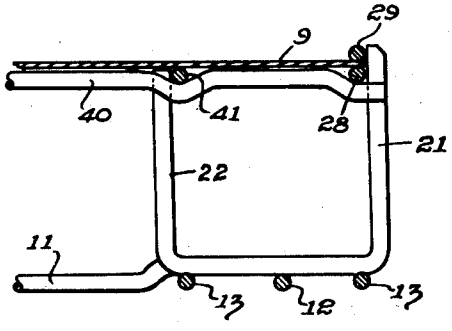


Fig. 10.

Inventor
CHARLES W. HOLET.
By Archibald Martin
his Attorney

March 8, 1949. C. W. HOLET 2,463,622

PALLET FOR SUPPORTING AND TRANSPORTING ARTICLES

Filed Nov. 26, 1946 8 Sheets-Sheet 5

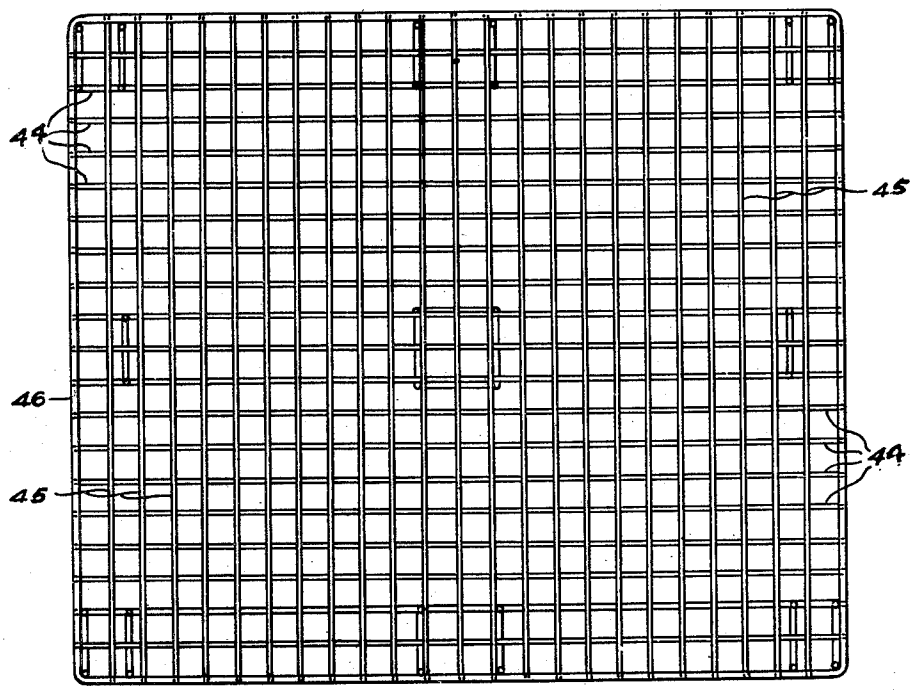


Fig. 11.

Inventor
CHARLES W. HOLET.

By Archibald & Martin
His Attorney

March 8, 1949. C. W. HOLET 2,463,622

PALLET FOR SUPPORTING AND TRANSPORTING ARTICLES

Filed Nov. 26, 1946 8 Sheets-Sheet 6

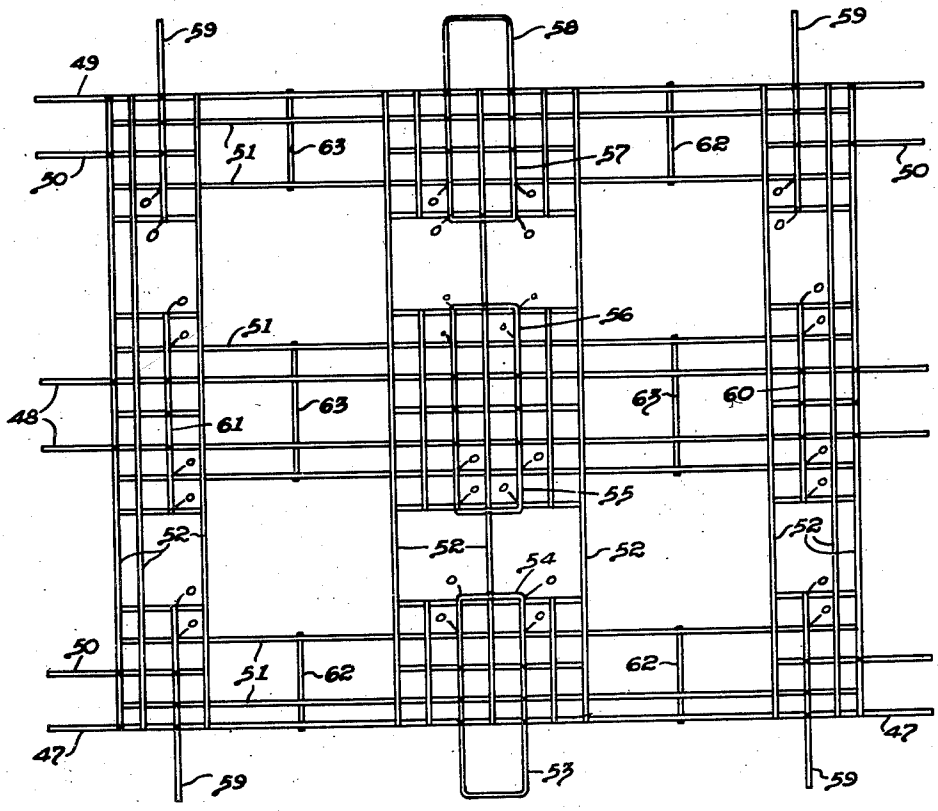


Fig. 12.

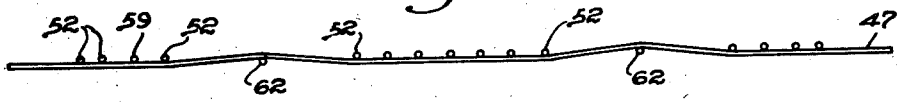


Fig. 13.

Inventor
CHARLES W. HOLET
Archwood & Martin
His Attorney

March 8, 1949. C. W. HOLET 2,463,622

PALLET FOR SUPPORTING AND TRANSPORTING ARTICLES

Filed Nov. 26, 1946 8 Sheets-Sheet 7

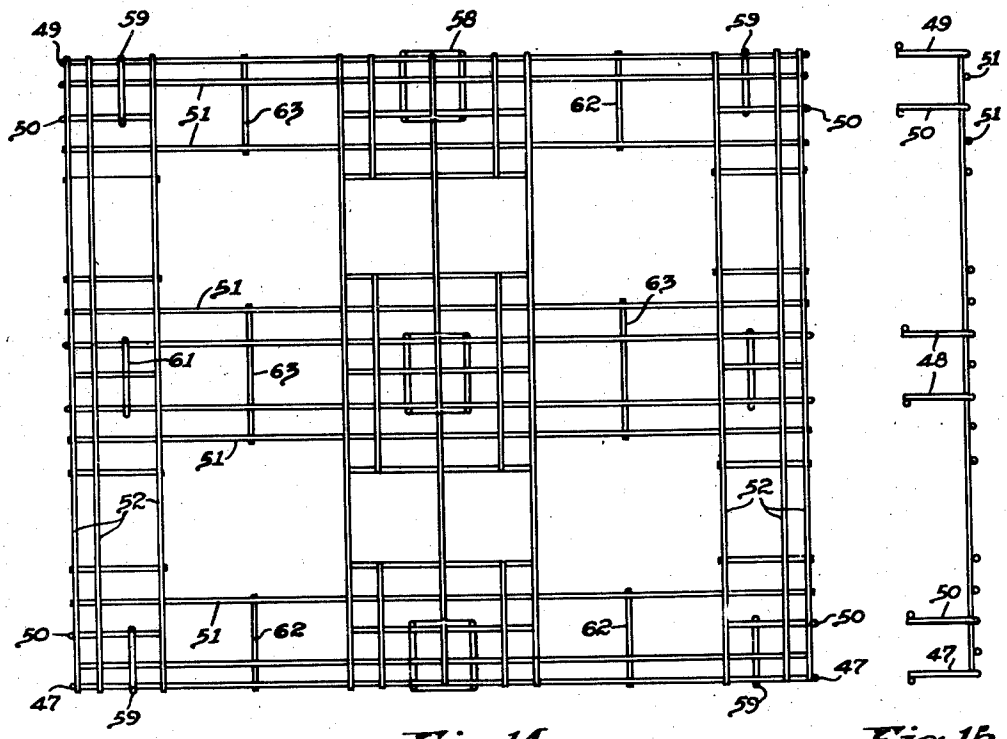


Fig. 14.

Fig. 15.

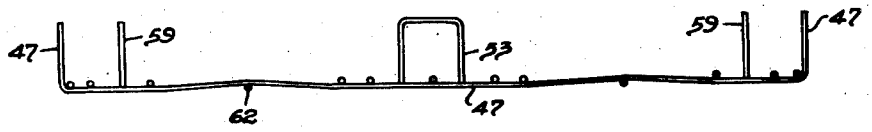


Fig. 16.

Inventor
CHARLES W. HOLET.

By Archibald & Martin

his Attorney

March 8, 1949. C. W. HOLET 2,463,622

PALLET FOR SUPPORTING AND TRANSPORTING ARTICLES

Filed Nov. 26, 1946 8 Sheets-Sheet 8

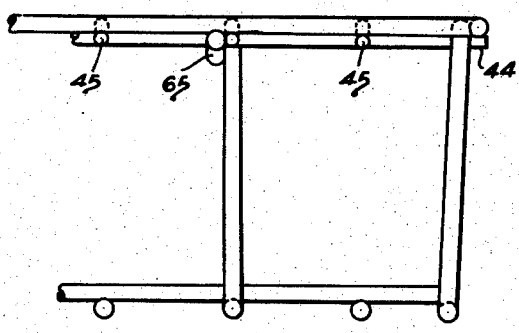


Fig. 17.

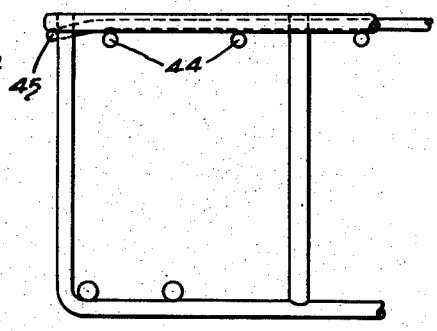


Fig. 18.

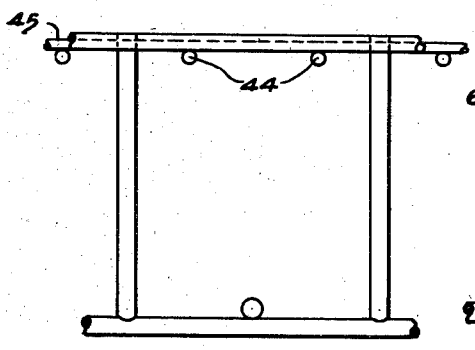


Fig. 19.

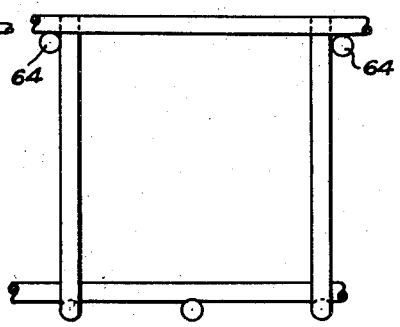


Fig. 20.

Inventor
CHARLES W. HOLET.

By Archibald Martin

His Attorney

Patented Mar. 8, 1949

2,463,622

UNITED STATES PATENT OFFICE

2,463,622

PALLET FOR SUPPORTING AND TRANSPORTING ARTICLES

Charles W. Holet, Dickerson Run, Pa., assignor to Oscar F. Arthur, Connellsville, Pa.

Application November 26, 1946, Serial No. 712,352

10 Claims. (Cl. 248—120)

1

My invention has for one of its objects the provision of a pallet for use in storing and transporting articles and which can readily be stacked in either a loaded or unloaded condition, and which can conveniently be handled by trucks of the ordinary fork-lift type, my pallet being of lighter weight for a given load sustaining load capacity than various types of pallets heretofore used.

Another object of my invention is to provide a pallet structure which, except for the deck sheet, may readily be formed of a single sheet of welded wire mesh or the like.

Another object of my invention is to provide a pallet wherein legs which are relatively spaced have extended footing areas, and, at their upper ends, are provided with means for supporting and retaining in place a deck sheet thereon, in an improved manner.

Still another object of my invention is to provide an improved method of making pallets of the character referred to.

In the accompanying drawings, Figure 1 is a plan view of a completed pallet made according to my invention; Fig. 2 is an edge view thereof; Fig. 3 is a plan view showing a mat of welded wires or rods previous to the bending of certain members thereof into position to support a deck sheet; Fig. 4 is a view taken on the line IV—IV of Fig. 3; Fig. 5 is a plan view of the mat frame in its completed form, with the deck sheet omitted; Fig. 6 is an end view of the structure of Fig. 5; Fig. 7 is a side view of the structure of Fig. 5, but showing a portion of the mat frame only partly bent to its completed position, previous to the insertion of the deck plate; Fig. 8 is an enlarged view of a corner structure of a completed pallet; Fig. 9 is a fragmentary plan view thereof, Fig. 10 is a sectional view taken on the line X—X of Fig. 1, but with some small modification, Fig. 11 shows a plan view of a modified form of pallet embodying my invention; Fig. 12 is a plan view of a mesh sheet used in forming a footing and supporting framework for a deck sheet; Fig. 13 is an edge view of the mat of Fig. 12; Fig. 14 is a plan view showing the sheet of Fig. 1, with portions thereof bent upwardly in position to receive a deck sheet; Fig. 15 is an end view of the structure of Fig. 14; Fig. 16 is a side view thereof; Fig. 17 is an enlarged side view of a portion of the pallet at one corner thereof; Fig. 18 is an end elevational view thereof at one corner of the pallet, and Figs. 19 and 20 are respectively fragmentary side elevational and end elevational views of the pallet.

The base or supporting frame 8 for a deck sheet or pallet plate 9 is formed from a single sheet

2

formed from wire or light rods welded together, as by automatic fabric-welding machines of various well known forms, the wires being assembled in sheet form and then bent to a shape that will support the deck sheet in elevated position, so that the forks of a lifting truck can be moved into the pallet, beneath the deck sheet, for transporting or stacking.

The mesh sheet as shown in Figs. 3 and 4 comprises a series of transversely-extending wires 10 and 11 that overlie and are welded to longitudinally-extending wires 12 and 13, this overlying arrangement being shown more clearly in Fig. 4. A second series of wires variously designated as 14, 15, 16, 17, 18, 19, 20, 21 and 22 are placed on the wires 12 and 13, in the same plane as the wires 10—11 and are welded to certain of the wires 12 and 13 at the points marked x, the circles at certain points of intersection being employed to indicate the crossings at which these wires 14 to 22 are not welded.

A series of wires respectively numbered 24, 25, 26 and 27 overlie and are welded at their points of intersection to the wires 14 to 22 but are not welded to 10 and 11. Pairs of wires 28—29 and 30—31 overlie and are welded to the outermost extremities of the wires 14—15—16 and 20—21—22 respectively as well as to the wires 11. The wires 28 and 29 are spaced apart slightly to serve as a groove for receiving an edge of a pallet plate when the mesh has been bent to form, and the same is true of the wires 30—31. Similarly, wires 33 and 34 are welded in spaced-apart relation to the wires 13 at one end of the mesh sheet and spaced-apart wires 35 and 36 are welded to the opposite ends of these wires 13 so that when the end portions of the mesh sheet are bent up, the endmost edges of the pallet deck will be received into the spaces between these wires.

Upon completion of a mat as shown in Fig. 3, those portions of the wires 11, 14, 15 and 16 that extend beyond the wire 13 at one edge are bent upwardly to the position shown more clearly in Fig. 6. Similarly, at the opposite edge of the mat, the wires 11, 20, 21 and 22 are bent upwardly. Thereupon, those portions of the wires 13 that extend beyond one end of the mat and which carry the wires 33—34 are bent upwardly, and the adjacent ends of the wires 38 and 33 at one corner of the mat are welded together as shown at 38 in Fig. 5. Also the wires 29 and 33 are welded together at 39.

Also those portions of the wires 14, 15 and 16 that extend between and are welded to the wire 24 and the adjacent wire 13 are bent upwardly about

this wire 13 as an axis. Because the wire 24 is not welded to the wires 10 and 11, it will be raised to approximately the plane of the wires 31 and 34, to serve as a support for the deck sheet 9, and one end of the wire 24 will be welded to the wire 34. Similarly, the inner portions of the wires 20, 21 and 22 will be bent upwardly, thus raising the wire 27 to the plane of the wire 34, so that it can be welded to the wire 34 and thus assist in supporting the deck sheet.

Also both ends of each of the wires, 17, 18 and 19 that are respectively welded to the wires 25 and 26 are bent upwardly from the base wires 10 and 11, thus raising the wires 25 and 26 into position that they can be welded to the wire 34 and thus serve to assist in supporting the deck sheet. To stiffen the upper portion of the framework, rods 40 which extend the full width of the structure are welded to the sides of the leg elements and to the undersides of the wires 24, 25, 26, 27, 28 and 31, as shown more clearly in Fig. 2. Where still greater bracing strength is required for the upper ends of the legs, and greater vertical support for the deck sheet is required, additional tie rods (Fig. 10) and welded to the sides of leg elements such as 14—15—16; 17—18—19 and 20—21—22.

The deck sheet 9 may now be slid into place in the groove-like spaces formed by the wires 28—29, 30—31 and 32—34. Thereupon, the other end of the mesh sheet, which carries the wires 35—36, will be bent upwardly to bring the ends of the wire 35 into engagement with the ends of the wires 29 and 30 and welded connection of these wires effected at 42, the wire 36 being welded to the adjacent ends of the wires 24—25—26—27.

The bending of certain portions of the mesh sheet to generally channel form not only provides adequate support for the deck sheet at various points throughout its undersurface, but gives a truss-like or girdle-like effect to the pallet frame, and nevertheless, the forks of a lifting truck can enter into the frame from eight different directions.

The wires or rods entering into the mesh structure will be of gauges adequate for the strength desired. For example, in a pallet about 32 inch by 40 inch and having a depth of about 4½ inches, the wires may mainly be 2-gauge (¼ inch), although for greater strength, I prefer to make the shorter wires or rods 14 to 22 inclusive of 0-gauge.

The decksheet 9 may be of any suitable material such as expanded metal, ply wood, and sheet metal in which later case, it may contain a sufficient number of perforations to reduce its weight without seriously weakening it. Where a sheet having a fairly flat surface is used, such as ply wood or sheet metal, the top surface of the sheet may be coated with a tacky material such as one of the well known non-hardenable adhesives. When packages are placed on such a surface, rope lashings are not required, because the packages will be adequately held by the adhesive during handling and transportation, and can, nevertheless, be removed therefrom by the application of a force which is not great enough to damage the pallet or the packages. Slipping of the packages on the deck will be prevented or stopped by the marginal wires that overlie the deck sheet near its edges.

As shown in Fig. 11, the pallet comprises a deck sheet having longitudinally-extending rods 44 that are overlaid by and are welded to transversely-extending rods 45. The ends of the wires 45 are bent downwardly to a common plane with the wires 44. The wires 44 and 45, near their ends, are welded to the underside of a marginal member 46 which may be formed of a single rod or formed of four rods welded together.

The framework for supporting the deck sheet is formed from a mat shown in plan view in Fig. 12, the members of the mat where they cross being welded together except at those crossings marked *o*. The mat comprises wires 47, 48 and 49 that extend longitudinally for some distance beyond the body portion of the mat, so that their extremities may be bent up to form legs or supports for the deck. Four short wires 50 also extend beyond the body portion of the mat, so that their extensions can be bent up. Wires 51 are approximately coextensive in length with the finished pallet.

Wires 52 extend crosswise of the pallet, the full width thereof in overlying relation with the longitudinal wires. Yoke-shaped elements 53, 54, 55, 56, 57 and 58 are welded at points *x* where they cross other wires, but are not welded at the points of intersection or crossing marked *o*, so that they may be bent up to form deck supports. Short wires 59 are provided near each corner of the mat and other wires 60 and 61 at points between certain of the corners. These elements also can be bent upwardly, to U-form, to assist in supporting the deck sheet, since they are not welded at their crossings which are marked by *o*. Short tie rods 62 and 63 underlie and are welded to certain of the longitudinally-extending wires, to stiffen and brace the same.

When a sheet has been formed to the contours shown in Fig. 12, which can suitably be done on an automatic electrical welding machine, the various supporting elements 47, 48, 49, 50, 53, 54, 55, 56, 57, 58, 59, 60 and 61 have their extremities bent upwardly to form legs or supporting elements, as shown more clearly in Figs. 15 and 16. The framework thus formed will then be welded to the deck sheet of Fig. 11, the upper portions of these leg elements being variously welded to the marginal rods 46 of the deck sheet and to certain of the other wires in the deck sheet. Additional strength is provided by welding heavier longitudinally-extending rods 64 and transversely-extending rods 65 to the sides of the legs and to under surfaces of the deck mesh, at suitable spacings or intervals for the required strength.

I claim as my invention:

1. A pallet comprising groups of leg elements, the elements of each group being laterally spaced from one another and the groups being spaced apart, tie members of metal rods welded to the lower ends of the elements in each group, to form a widened footing therefor and to maintain the elements of each group in unitary relation, tie rods connecting the groups together at their lower ends, and extending the full width of the pallet structure, at its lowermost plane, and means for supporting a deck sheet on the upper ends of the leg elements and connecting it thereto.

2. A pallet comprising groups of leg elements, the elements of each group being laterally spaced from one another and the groups being spaced apart, tie members of metal rods welded to the lower ends of the elements in each group, to form a widened footing therefor and to maintain the elements of each group in unitary relation, tie rods connecting the groups together at their lower ends, and extending the full width of the pallet structure, at its lowermost plane, and means for supporting a deck sheet on the upper ends of the

leg elements and connecting it thereto, the said supporting means including rods welded to the leg elements near their upper ends and extending from each group to other groups, in position to assist in supporting a deck sheet.

3. A pallet comprising groups of leg elements, the elements of each group being laterally spaced from one another and the groups being spaced apart, tie members of metal rods welded to the lower ends of the elements in each group, to form a widened footing therefor and to maintain the elements of each group in unitary relation, tie rods connecting the groups together at their lower ends, to maintain them against relative displacement, means for supporting a deck sheet on the upper ends of the leg elements and connecting it thereto, the said means comprising a pair of vertically-spaced bars welded to those elements nearest to each edge of the pallet, in position to receive the edges of a deck sheet between them, and horizontally-extending rods welded to leg elements of a plurality of groups, to hold them against relative displacement and in position to be engaged by the under side of a deck sheet.

4. The method of forming pallets, which comprises forming a mesh sheet by welding together longitudinally and transversely extending rods, certain of the longitudinal rods extending to a greater distance than the length desired for the pallet and certain of the transverse rods extending to a greater distance than the width desired for the pallet and still other rods being of shorter dimension than either the length or width of the finished pallet, the last-named rods being welded only near their mid portions to rods that are crossed thereby, and bending the projecting ends of the longer rods and the end portions of the shorter rods upwardly to approximately a common plane so that they may serve as legs for a pallet deck.

5. The method of forming pallets, which comprises forming a mesh sheet by welding together longitudinally and transversely extending rods, certain of the rods being of shorter length than either the length or width desired for the completed pallet, and being welded only adjacent to their mid portions, to rods which they cross, bending upwardly end portions of the shorter rods to form U-shaped leg elements, and securing horizontally-extending tie members to the leg elements adjacent to their upper ends.

6. The method of forming pallets, which comprises forming a mesh sheet by welding together longitudinally and transversely extending rods, certain of the rods being of shorter length than either the length or width desired for the completed pallet, and being welded only adjacent to their mid portions, to rods which they cross, bending upwardly end portions of the shorter rods to form U-shaped leg elements, securing horizontally-extending tie members to the leg elements adjacent to their upper ends, and bending edge portions of the sheet upwardly to serve as supporting elements for a deck sheet.

7. The method of forming pallets, which comprises forming a mesh sheet by welding together longitudinally and transversely extending rods, certain of the rods being of shorter length than either the length or width desired for the completed pallet, and being welded only adjacent to their mid portions, to rods which they cross, bending upwardly end portions of the shorter rods to form U-shaped leg elements, securing horizontally-extending tie members to the leg elements adjacent to their upper ends, bending edge portions of the sheet upwardly at the sides and ends thereof, to serve as supporting elements for a deck sheet, and welding together the upwardly-bent side and end portions, at the corners of the structure.

8. The method of forming pallets, which comprises forming a mesh sheet by welding together longitudinally and transversely extending rods, certain of the rods being of shorter length than either the length or width desired for the completed pallet, and being welded only adjacent to their mid portions, to rods which they cross, bending upwardly end portions of the shorter rods to form U-shaped leg elements, and securing horizontally-extending tie members to the leg elements adjacent to their upper ends, certain of the shorter rods being located adjacent to the edges of the sheet and others adjacent to the mid portion of the sheet.

9. A pallet comprising groups of leg elements, the elements of each group being laterally spaced from one another and the groups being spaced apart, tie members of metal rods welded to the lower ends of the elements in each group, to form a widened footing therefor and to maintain the elements of each group in unitary relation, tie rods connecting the groups together at their lower ends, to maintain them against relative displacement and to provide an extended surface at the lowermost plane of the pallet structure, a deck sheet of lattice-like form having certain of its members welded to the upper ends of the leg elements, and a marginal stiffening member welded to the lattice members at the sides and ends of the deck sheet, on the upper surfaces thereof and being welded also to those leg elements which are adjacent to the sides and ends of the pallet.

10. A pallet comprising groups of leg elements, the elements of each group being laterally spaced from one another and the groups being spaced apart, tie members of metal rods welded to the lower ends of the elements in each group, and extending the full length of the pallet structure, other tie rods connecting the groups together at their lower ends, and extending the full width of the structure, and a deck sheet of lattice-like form having certain of its members welded to the upper ends of the leg elements.

CHARLES W. HOLET.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
813,499	Johnson	Feb. 27, 1906
928,961	Grasberger et al.	July 27, 1909
936,736	Porter	Oct. 12, 1909
1,794,113	Hoyos	Feb. 24, 1931
1,832,772	Hallowell et al.	Nov. 17, 1931
2,109,784	Shepard et al.	Mar. 1, 1938