May 5, 1964 R. C. HOULE 3,131,656

PALLET

Filed Dec. 20, 1963 2 Sheets-Sheet 1

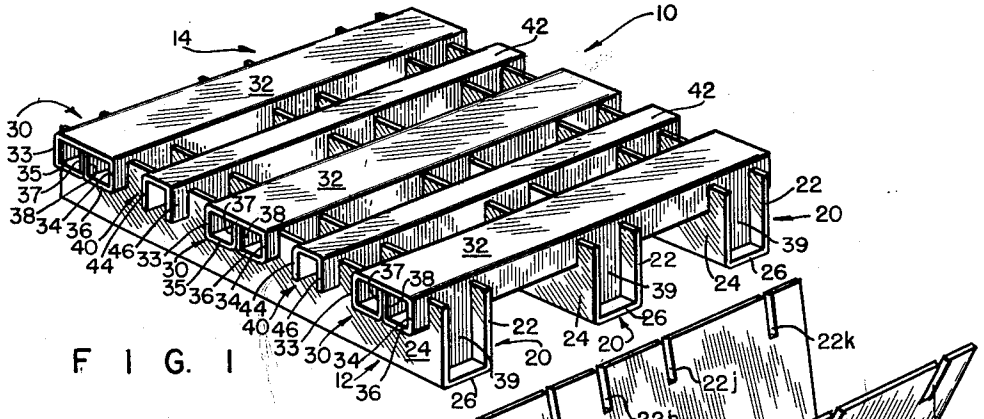



FIG. 1

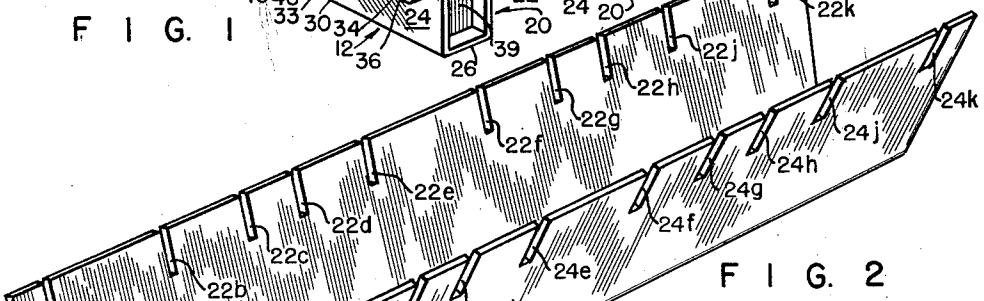



FIG. 2

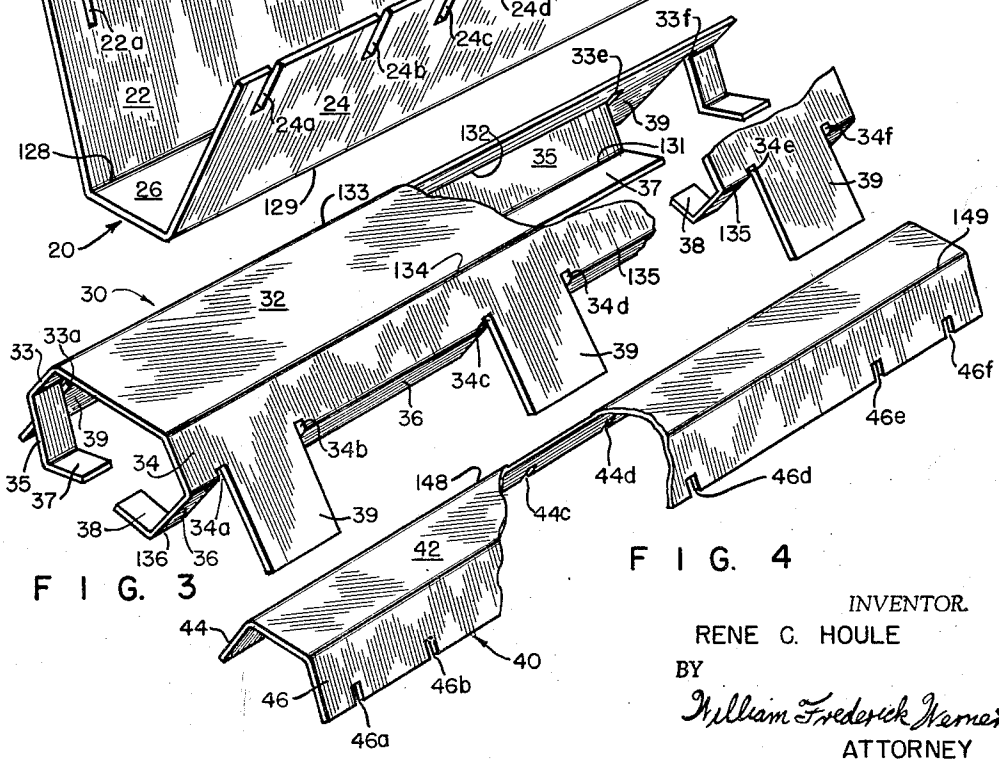



FIG. 3

FIG. 4

INVENTOR.
RENE C. HOULE
BY
William Frederick Warner
ATTORNEY

May 5, 1964 R. C. HOULE 3,131,656

PALLET

Filed Dec. 20, 1963 2 Sheets-Sheet 2

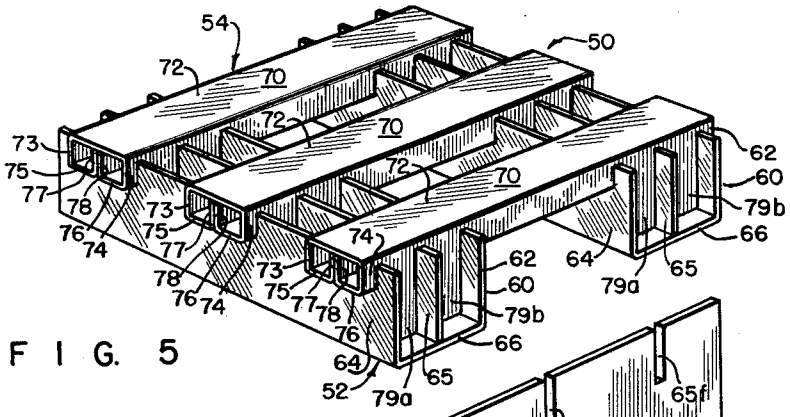



FIG. 5

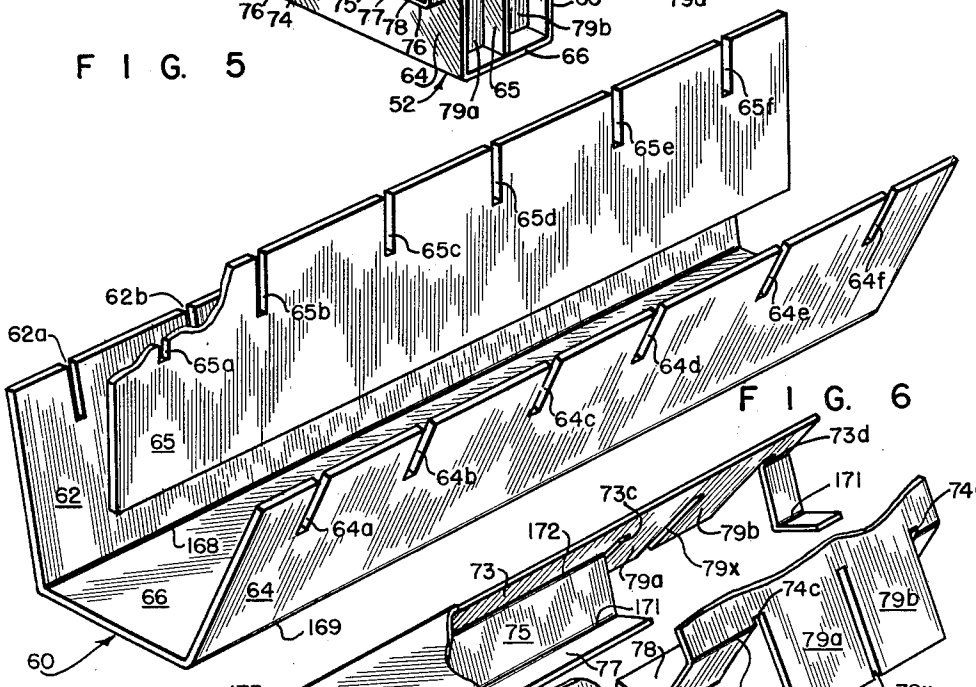



FIG. 6

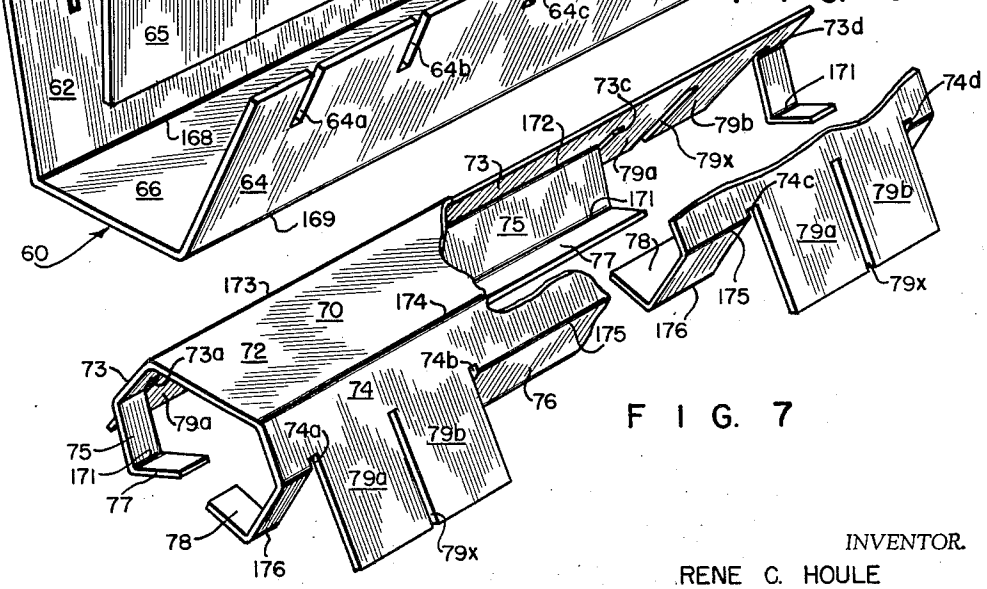



FIG. 7

INVENTOR.
RENE C. HOULE
BY
William Frederick Warner
ATTORNEY

United States Patent Office 3,131,656 Patented May 5, 1964



3,131,656

# PALLET

Rene C. Houle, 11 Salem Drive, North Providence, R.I.

Filed Dec. 20, 1963, Ser. No. 332,048
14 Claims. (Cl. 108—56)

This invention relates to portable material support platforms commonly called pallets or skids and often used in conjunction with fork life trucks.

Pallets have found considerable use in the transportation and storage of goods. Where goods can be packed on a pallet and shipped as an integral package therewith considerable savings can be achieved because of simplified handling practices. When the pallets are constructed of wood or metal the advantages of their use are limited because of their considerable weight and the complications which arise as a results of the necessity of storing them prior to use and of returning the pallets for reuse.

An object of this invention is to provide a load supporting pallet which can be formed of inexpensive and light materials such as fiberboard.

Another object is to provide a pallet which is formed from sheets of fiberboard folded in a novel manner to give strength and rigidity in use and which may be unfolded after use and returned to its point of origin as flat sheets of fiberboard.

A further object is to provide fiberboard cooperating blanks scored for folding which may be shipped to their place of initial use as flat sheets and then assembled to produce an interlocked pallet construction.

Another object is to provide a pallet whose components are easily replaceable thus simplifying the repair of damaged pallets and increasing their utility.

Other objects will become apparent from the following description of the invention which is associated with the accompanying drawings in which:

FIG. 1 is a perspective view of one embodiment of pallet construction in accordance with my invention;

FIG. 2 is an enlarged perspective view of one component of the pallet shown in FIG. 1, in partially folded position;

FIG. 3 is an enlarged perspective view partially broken away, of a second component of the pallet shown in FIG. 1, in partially folded position;

FIG. 4 is an enlarged perspective view of a third component of the pallet shown in FIG. 1, in partially folded position;

FIG. 5 is a perspective view of another embodiment of pallet construction in accordance with my invention;

FIG. 6 is an enlarged perspective view of two cooperating components of the platform shown in FIG. 1, the outer one of which is in partially folded position;

FIG. 7 is an enlarged perspective view partially broken away of a third component of the pallet shown in FIG. 5, in partially folded position.

With particular reference to FIG. 1, which shows one embodiment of the invention, it is seen that the pallet 10 is made up of two layers, a bottom support layer 12 and an upper support layer 14.

The bottom support layer contains a plurality of elongate support members 20 in parallel relation. A typical member 20 is shown in partially folded position in FIG. 2. Each member 20 has two vertical walls 22 and 24 and a horizontal bottom support wall or web 26. Each vertical wall has slots therein respectively shown at 22*a* through *k* inclusive and 24*a* through *k* inclusive. The spacing and dimensions of these slots will be set forth further on in this description.

The upper support layer contains a plurality of two types of members, 30 and 40 in spaced parallel relation.



FIG. 3 shows a typical member 30 in partially folded position while FIG. 4 shows a typical member 40 in partially folded position.

Member 30 is composed of a top horizontal wall or web section 32, two depending outer vertical wall sections 33 and 34, two horizontal wall sections 35 and 36 and two inner vertical wall sections 37 and 38 joined in the recited sequence 32, 33, 35 and 47 and 32, 34, 36 and 38. Depending from the outer vertical sections 33 and 34 are rectangularly shaped tongues 39.

It will be seen that in each vertical section 33 and 34 adjacent the tongues 39 short slots are formed. For convenience these are referred to as slots 33*a* through *f* and 34*a* through *f*, respectively in the vertical wall sections 33 and 34.

The member 40, shown in FIG. 4 in partially folded position is composed of a horizontal wall or web section 42 and two vertical wall sections 44 and 46 depending one from each side of section 42. In each side wall section short slots 44*a* through *f* and 46*a* through *f* are respectively formed.

All of the slots in all of the members are made wide enough to comply with the material which is inserted in the slots. The slots 22*a–k* and 24*a–k* are preferably made approximately slightly less in length than three quarters of the total height of the members 30 and 40. The length of the slots 33*a–f*, 34*a–f*, 44*a–f* and 46*a–f* are then made sufficiently long to permit the upper edges of sections 22 and 24 to abut the interior surfaces of sections 32 and 42. In addition this permits the ends of tongues 39 to abut the interior surfaces of sections 26 if the interior height from the lower end of tongue 39 to the interior surface of section 32 is the same as the interior height of member 20 from the interior surface of section 26 to the upper edges of sections 22 and 24. This is a desirable dimensional control since it results in greater strength and rigidity. Accordingly, it is shown in this embodiment.

The spacing of the slots in the members 20, 30 and 40 is determined by the spacing of the members with which the slots are interlocked. The spacing of the members is determined by the load to be supported by the pallet 10 and the size and spacing of the forks which are to lift the pallet.

In constructing the pallet 10 the members 20, 30 and 40 are first formed from blanks. The blank for member 20 is slotted at 22*a–k* and 24*a–k* and folded on scored lines at 128 and 129.

The blank for member 40 is slotted at 44*a–f* and 46*a–f* and folded on scored lines at 148 and 149.

The blank for member 30 is slotted at 33*a–f* and 34*a–f* and folded on scored lines at 131, 132, 133, 134, 135 and 136. It is desirable that tongues 39 be in the same planes as sections 33 and 34. Preferably all of the blanks are made of corrugated fiberboard. The corrugations, though not shown in the drawings are preferably oriented in all of the members at right angles to the longitudinal axis of each member.

All of the folds on all of the members 20, 30 and 40 are right angle folds which when the members are interlocked contribute toward the load retaining strength of the pallet.

The pallet 10 is then formed by placing members 20 on the floor or a support base with the slots 22*a–f* and 24*a–f* extending upwardly. The members 30 are then engaged with the members 20 by interengaging the slots 32*a–f* and 34*a–f* with the slots 22*a* and *b* and 24*a* and *b*, slots 22*e* and *f* and 24*e* and *f*; and slots 22*j* and *k* and 24*j* and *k*. These are not interengaged in the order recited but rather in the order partially recited as follows: 34*a* with 22*a*; 34*b* with 24*a*; 34*c* and *d* with 22*a* and 24*a*

of another member **20**, etc. In placing the members **20** and **30** together care should be taken that tongues **39** extend properly into abutting relation with the interior surface of section **26**. The members **40** are then placed on members **20** with the slots **44***a–f* and **46***a–f* interengaging the proper slots of the members **20**.

Referring now to FIG. 5, another embodiment which incorporates the principles of this invention is indicated by the numeral **50**. This embodiment like **10**, is also made up of two layers, a bottom support layer **52** and an upper support layer **54**.

The bottom support layer **52** contains a plurality of members **60** in parallel relation. A typical member **60** is shown in partially folded position in FIG. 6. Each member has a horizontal bottom support wall or web **66** and two upstanding vertical walls **62** and **64**. Each vertical wall **62** and **64** has slots **62***a–f* and **64***a–f* formed respectively therein.

Within each member **60** is a removable upstanding vertical web member **65** which has slots **65***a–f* corresponding to the slots **62***a–f* and **64***a–f*.

The upper support layer **54** contains a plurality of members **70**. FIG. 7 depicts a typical member **70** in partially folded position. Each member **70** has a horizontal top wall or web section **72**, two outer vertical wall sections **73** and **74**, two horizontal wall sections **75** and **76** and two inner vertical wall sections **77** and **78** joined in the recited sequence **72**, **73**, **75** and **77** and **72**, **74**, **76** and **78**.

Depending vertically from the outer vertical wall sections are rectangular tongues **79***a* and **79***b*. Between the tongues **79***a* and *b* is a slot **79***x* which is interengaged with the slots **65***a–f* in the completely assembled pallet.

It will be seen that in each outer vertical section **73** and **74**, adjacent the outside of the tongues **79***a* and *b* are short slots, referred to here as **73***a* through *d* and **74***a* through *d*, respectively in the wall sections **73** and **74**.

As with the pallet **10**, all of the slots in members **60** and **70** are made wide enough to comply with the material which is inserted in the slots. The slots **62***a–f*, **64***a–f*, and **65***a–f* are preferably made approximately slightly less in length than three quarters of the total height of the members **70**. The lengths of the slots **73***a–d*, **74***a–d* and **79***x* are then made sufficiently long to permit the upper edges of sections **62** and **64** and of member **65**. In addition this permits the ends of tongues **79***a* and *b* to abut the interior surfaces of sections **66** if the interior height from the lower ends of tongues **79***a* and *b* is the same as the interior height from the interior surface of section **66** to the upper edges of sections **62** and **64** and member **65**. As with pallet **10** this is a desirable dimensional control since it results in greater strength and rigidity. Accordingly it is also shown in FIG. 5.

The spacing of the slots in this embodiment, pallet **50**, is determined by the spacing of the members with which the slots are interlocked. The spacing of the members is determined by the load to be supported by the pallet and the size and spacing of the forks which are to lift the pallet.

The members **60** and **70** which with member **65** comprise the pallet **50**, are preferably made from corrugated fiberboard blanks which are scored to permit folding. Member **60** has scored lines at **168** and **169** and is slotted at **62***a–f* and **64***a–f*. Member **70** has scored lines at **171**, **172**, **173**, **174**, **175** and **176** and is slotted at **73***a–d* and **74***a–d*. When folded, the folds are right angle folds. In interlocked relation the members are strengthened by the particular folding arrangements. Additional strength and rigidity are obtained from corrugated fiberboard when the corrugations are oriented in all of the members at right angles to the longitudinal axis of each member.

The pallet **50** is formed by placing the member **60** with the section **66** downwardly and the sections **62** and **64** extending upwardly. Member **65** is then placed between sections **62** and **64** with the slotted edge extending upwardly. The members **70** are then engaged with the members **60**, the slots **79***x* interengaging the slots of member **65**. The slots in member **70** engage the slots in member **60** in the order partially recited below: **74***a* and *b* with **64***f* and **62***f*; **73***a* and *b* with **64***e* and **62***e*. As with the FIG. 1 embodiment care should be taken that tongues **79***a* and *b* extend properly into abutting relation with the interior surface of section **66**. With the proper dimensional control previously referred to, the outer edges of the members **60** and **65** between the slots **62***a* and *b*, **65***a* and *b*, **64***a* and *b*; **62***c* and *d*, **65***c* and *d*, **64***c* and *d*; and **62***e* and *f*, **65***e* and *f*, **64***e* and *f* abut the interior surfaces of sections **72**, while the ends of tongues **79***a* and *b* abut the interior surfaces of sections **66**.

It will be understood that changes to items such as parts may be made without departing from the principles of this invention. Further, terms used in the description and the appended claims which may imply and "upper" and "lower" relation or a "vertical" or "horizontal" relation are intended to be limiting only to the extent that they define the relationship of the parts, irrespective of the position of the pallet as a whole. While reference has been made to portions of the components as "sections" these may be also referred to as "panels."

I claim:

1. A portable materials handling pallet adapted for use with a fork lift truck comprising:
   - (A) a bottom support layer containing a plurality of spaced parallel elongate support members, each of said support members including:
     - (1) two vertical walls with a plurality of slots contained therein,
       - (*a*) the slots in one wall being oriented in coincident relation to the slots in the other wall
     - (2) a horizontal bottom support wall joining the two vertical walls
   - (B) an upper support layer containing a plurality of spaced parallel support members in interengaging relation with the members of the lower support layer, and being at right angles therewith, at least some of the upper support members comprising,
     - (1) an elongate hollow trussed rectangular unit presenting two inner and two outer upright vertical sections and one upper and two lower horizontal sections,
     - (2) a plurality of vertically depending rectangular tongues extending downwardly from the outer vertical sections of said trussed unit,
     - (3) a slot adjacent each side of each tongue extending into each outer vertical section,
   - (C) said tongues being contained within the vertical walls of said bottom support layer members and
   - (D) the slots of said bottom support layer members and said upper support layer members being in interengagement.

2. A pallet according to claim 1 wherein each of the elongate members is constructed of corrugated fiberboard with the corrugations extending at right angles to the longitudinal axis of said member.

3. A pallet according to claim 1 wherein the interior height of the members of said bottom support layer is substantially equal to the interior height of said rectangular tongues whereby said tongues extend into abutting relation with the interior surface of said bottom support wall and portions of the upper edges of said vertical walls engage the interior surface of said upper horizontal section.

4. A portable materials handling pallet adapted for use with a fork lift truck comprising:
   - (A) a bottom support layer containing a plurality of spaced parallel elongate support members including:
     - (1) two vertical walls with a plurality of slots contained therein

(a) the slots in one wall being oriented in coincident relation to the slots in the other wall

(2) a horizontal bottom support wall joining the two vertical walls

(3) a vertical web intermediate said two vertical walls and parallel thereto

(B) an upper support layer containing a plurality of spaced parallel support members in interlocking relation with the members of the lower support layer and being at right angles therewith, said upper supports members comprising,

(1) an elongate hollow trussed rectangular unit presenting two inner and two outer upright vertical sections and one upper and two lower horizontal sections,

(2) a plurality of vertically depending rectangular tongues extending downwardly from the outer vertical sections of said trussed unit,

(a) said tongues depending from said sections in spaced pairs,

(3) a slot adjacent each side of each tongue extending into each outer vertical section,

(C) said tongues being contained within the vertical walls of said bottom support layer members with the tongues of each pair straddling said vertical webs

(D) the slots of said bottom support layer members and said upper support layer members being in interengagement.

5. A pallet according to claim 4 wherein each of the elongate members is constructed of corrugated fiberboard with the corrugations extending at right angles to the longitudinal axis of said member.

6. A pallet according to claim 4 wherein the interior height of the member of said bottom support layer is substantially equal to the interior height of said rectangular tongues whereby said tongues extend into abutting relation with the interior surface of said bottom support wall and portions of the upper edges of said vertical walls engage the interior surface of said upper horizontal section.

7. A portable materials handling pallet adapted for use with a fork lift truck comprising:

(A) a bottom support layer containing a plurality of spaced parallel elongate support members, each of said support members including:

(1) two vertical walls with a plurality of slots contained therein,

(a) the slots in one wall being oriented in coincident relation to the slots in the other wall

(2) a horizontal bottom support wall joining the two vertical walls

(B) an upper support layer containing a plurality of spaced parallel elongate support members in interengaging relation with the members of the lower support layer, and being at right angles therewith, said upper support layer comprising:

(1) first members having two vertical parallel walls with a plurality of slots in the lower edges thereof

(2) a horizontal top support wall joining the two vertical walls,

(3) second members interposed between and parallel to said first members, said second members comprising:

(a) an elongate hollow trussed rectangular unit presenting two inner and two outer upright vertical sections and one upper and two lower horizontal sections,

(b) a plurality of vertically depending rectangular tongues extending downwardly from the vertical sections of said trussed unit,



(c) a slot adjacent each side of each tongue extending into each outer vertical section,

(4) said tongues being contained within the vertical walls of said bottom support layer members and

(C) the slots of said bottom support layer members and said upper support layer members being in interengagement.

8. A pallet according to claim 7 wherein each of the elongate members is constructed of corrugated fiberboard with the corrugations extending at right angles to the longitudinal axis of said member.

9. A pallet according to claim 7 wherein the interior height of the member of said bottom support layer is substantially equal to the interior height of said rectangular tongues whereby said tongues extend into abutting relation with the interior surface of said bottom support wall and portions of the upper edges of said vertical walls engage the interior surface of said upper horizontal section.

10. A portable materials handling pallet adapted for use with a forklift truck, said pallet including at least two elongate interengaging members:

(A) one of said members comprising:

(1) two vertical walls with a plurality of slots in each wall in the upper edge thereof

(a) the slots in one wall being oriented in coincident relation to the slots in the other wall,

(2) a horizontal bottom support wall having an interior and exterior surface joining the two vertical walls,

(B) the other of said members comprising:

(1) a hollow trussed rectangular unit presenting two inner and two outer upright vertical sections and three horizontal sections,

(2) at least one rectangular tongue depending downwardly from each outer vertical section

(3) a slot adjacent each side of each tongue extending into each outer vertical section

(C) said tongues being contained between the two vertical walls of said one member with the ends of said tongues abutting the interior surface of said bottom support wall,

(D) the slots adjacent each tongue being in interengagement with slots in said upper edges.

11. A pallet according to claim 10 wherein each of the elongate members is constructed of corrugated fiberboard with the corrugations extending at right angles to the longitudinal axis of said member.

12. A kit for the construction of a portable materials handling pallet, said kit including:

(A) a first flat fiberboard blank adapted to be folded into an elongate pallet member,

(1) said blank having two spaced scored lines to divide said blank into two side panel portions and a bottom panel portion

(2) each side panel portion having slots in its edge extending parallel to said scored lines

(B) a second flat fiberboard blank adapated to be folded into an elongate pallet member,

(1) said blank having six spaced scored lines to divide said blank into a top panel portion, two outer side panel portions, two bottom panel portions and two inner side panel portions,

(2) each outer side panel portion having slots for engagement with at least some of the slots in said first blank when both blanks are folded into members and interengaged,

(a) said slots in said second blank being spaced to form at least one rectangular tongue on each outer side panel portion which extends into said first member to abut said bottom panel of said first member when both blanks are folded into members and interengaged.

13. A kit for the construction of a portable materials handling pallet, said kit including:

(A) a first flat fiberboard blank adapted to be folded into an elongate pallet member,

(1) said blank having two spaced scored lines to divide said blank into two side panel portions and a bottom panel portion

(2) each side panel portion having slots in its edge extending parallel to said scored lines

(B) a second flat rectangular fiberboard blank having slots in one of its long edges

(C) a third flat fiberboard blank adapted to be folded into an elongate pallet member,

(1) said blank having six spaced scored lines to divide said blank into a top panel portion, two outer side panel portions, two bottom panel portions and two inner side panel portions,

(2) each outer side panel portion having slots for engagement with at least some of the slots in said first and second blanks when said first and third blanks are folded into members and assembled with said second blank

(*a*) said slots in said third blank being spaced to form paired tongues on each outer side panel portion which extend into said first



member, straddling said second blank and abutting said bottom panel of said first member when said first and third blanks are folded into members and interengaged with each other and said second blank.

14. A kit as called for in claim 12 containing:

(A) a third flat fiberboard blank adapted to be folded into an elongate pallet member,

(1) said blank having two spaced scored lines to divide said blank into two side panel portions and a top panel portion

(2) each side panel portion having slots in its edge extending parallel to said scored lines for engagement with at least some of the slots in said first blank when all of said blanks are folded into members and interengaged.

**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 2,479,728 | Darling | Aug. 23, 1949 |
| 2,709,557 | Geisler | May 31, 1955 |
| 2,928,638 | Parker | Mar. 15, 1960 |
| 3,000,603 | Hemann | Sept. 19, 1961 |
| 3,113,532 | White | Dec. 10, 1963 |