

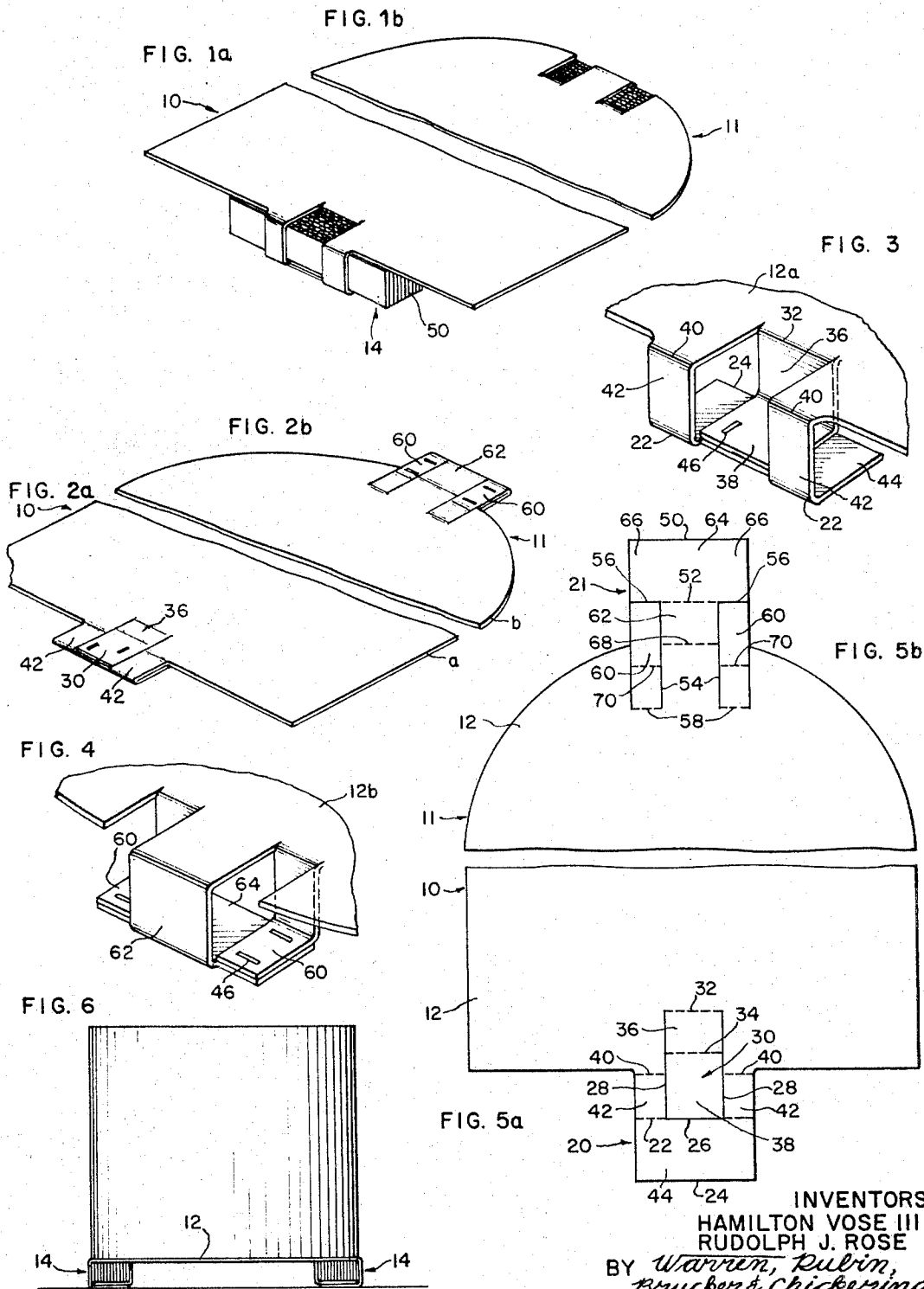
July 8, 1969

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3,453,973

COLLAPSIBLE PAPERBOARD PALLET AND METHOD

Filed Dec. 29, 1967



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3,453,973

COLLAPSIBLE PAPERBOARD PALLET AND METHOD

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Filed Dec. 29, 1967, Ser. No. 694,676

Int. Cl. B65d 19/20

U.S. Cl. 108—51

9 Claims

ABSTRACT OF THE DISCLOSURE

The present invention relates to an improved paperboard pallet construction which is readily formed from a single paperboard blank, and easily erected into a load bearing pallet.

The structure is not only simple and economical, but is capable of being engaged by a lift truck irrespective of its position on the floor, thus making it highly maneuverable.

The present invention relates to pallets for supporting a load for storage and transportation, and more particularly to pallets formed of paperboard or the like.

The use of pallets in storing inventory provides a convenient and efficient means of maintaining goods in segregated groups, and greatly increases the ease with which the goods may be handled. By using pallets, the goods placed thereon may be stored in warehouses, and transported by conventional shipping without ever being removed from the pallet itself.

In some instances where inter and intrastate shipping as well as interplant transportation and storage is contemplated, familiar wooden and metal pallet structures become impractical because of their weight, which must be figured in the cost of shipping. In order to minimize dead shipping weight, efforts have been made to develop practical pallet structures from paperboard materials. In many instances, however, such pallets have become structurally complex as a result of efforts to build in reasonable load-bearing capacities. Also, many such pallets are not readily assembled for use, and thus costly to use.

It is an object of the invention, in view of the foregoing, to provide an improved and simplified paperboard pallet construction which is lightweight while being capable of supporting heavy loads.

It is another object of the invention to provide an improved paperboard pallet which is formed of a single paperboard blank, easily stored and transported in that condition, and readily erected to a load-bearing position when ready to be used.

Still another object of the invention is to provide an inexpensive paperboard pallet construction which supports a load above the floor so as to permit handling by a forklift truck, and has the further advantage of being readily engaged by the tines of the forklift truck irrespective of the position of the pallet on the floor or dock.

Another, and still further, object of the invention is the provision of an improved paperboard pallet which requires a minimum of materials in its manufacture and collapsible into an essential planar form for transportation and storage prior to use, and which may be discarded after use.

These and other objects and advantages of the present invention will become apparent from the following detailed description, taken in conjunction with drawings wherein:

FIGURES 1a and 1b are fragmentary portions of an exemplary pallet, illustrating alternative embodiments of the channel forming straps and deck configuration;

FIGURES 2a and 2b are fragmentary portions similar to FIGURES 1a and 2b, illustrating the channel-forming

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straps in their collapsed position for storage or shipping of the pallet prior to use;

FIGURE 3 is an enlarged fragmentary portion of the channel-forming structure of FIGURE 1a;

FIGURE 4 is a figure similar to FIG. 3, illustrating the channel forming structure of FIGURE 1b;

FIGURES 5a and 5b are fragmentary portions of pallet blanks which may be formed into the constructions of FIGURE 1a and 1b, respectively; and

FIGURE 6 is an elevation of an exemplary erected pallet in its load-bearing position.

While the invention is susceptible of various modifications and alternative constructions, particular illustrative embodiments are set out in the drawing and will be described in detail hereinafter. It will be understood that the invention is not intended to be limited to the particular disclosed forms, but rather to cover all modifications, alternative constructions, and equivalents falling within the spirit and scope of the invention.

With reference now to the drawings, alternative embodiments of a paperboard pallet construction are illustrated, which constructions are readily erected from a simple blank formed from a single sheet of paperboard material, and which is collapsible for storage and transportation, and inexpensive enough to be disposable after use at the instance of the user.

With particular reference now to FIGURES 1a and 1b, a pallet 10, constructed in accordance with the present invention is there illustrated, and comprises a load-supporting deck 12 which is elevated above the floor or dock by means of load-bearing feet indicated generally at 14. The feet 14 are, as may be seen in FIGURE 1a or 1b, relatively small in proportion to the deck 12. Despite the relative smallness of the feet, however, tests have shown that by using 200-pound test paperboard and disposing feet on opposite sides of the supporting deck, loads of 1500 pounds are readily supported on a 30-inch span between the peripheral edges of the feet.

In accomplishing this load-bearing capability, the pallet which comprises the present invention is nonetheless simply constructed from a single sheet of paperboard material with minimum waster, and a minimum of operations necessary to its formation and erection into the load supporting condition of FIGURES 1a and 1b.

With reference to FIGURES 5a and 5b, portions of blanks are there illustrated which may be erected into the pallet constructions of FIGURES 1a and 1b, respectively. As illustrated in FIGURES 5a and 5b, the blank may be either rectangular or circular, or any other appropriate, although preferably uniform shape, depending upon the intended use. At each point where a load-bearing foot is to be positioned, the blank is provided with an integrally formed outwardly extending tab, indicated generally at 20.

Referring initially to FIGURE 5a, and FIGURES 1a, 2a and 3, respectively, the tab 20, in this embodiment, is formed with a score line 22 inwardly of the terminal end 24 of the tab. The distance between the score line 22 and the terminal end 24, which defines a cross flap 25 is preferably equal to the width of the foot 14 extended beneath the deck. The score line 22 is provided with a central cut 26, and longitudinal cuts 28, which extend into the pallet deck 12, defining, with the cut 26, a central strap 30. A transverse score line 32 connects the cut 28, and as may be seen in FIGURE 3, in erecting the pallet, the central strap 30 is folded downwardly at right angles to the deck so as to extend therebelow. A second transverse score line 34, which is spaced from the score line 32 by a distance equal to the anticipated height of the foot 14, extends between the cuts 28 to define a section 36 between the score lines. Again referring to FIGURE 3, the strap 30 is folded on the score line 34 at right angles with the

section 36 so that a foot section 38 defined between the score line 34 and the end of the strap, is substantially parallel with the deck 12.

The remaining portion of the tab comprises parallel spaced straps 39, joined at their ends by the flap 25. The straps are scored along the peripheral edge of the deck, on lines 40, and the sections 42 between the score lines 22 and 40 are folded downwardly, as may be seen in FIGURE 3, to define the vertical terminal wall of the pallet, which is preferably disposed at the peripheral edge of the deck 12. The cross flap 25 is folded, at the score line 22, inwardly at right angles to the sections 42 to a position beneath, and in face to face abutting relation with the tongue 38. It will now be seen that, by interlocking the sections 38 and 44, such as by staples 46, a channel is defined beneath the deck by serially spaced interlocking walls formed by the straps.

With reference to FIGURES 1 and 6, load-bearing filler material, indicated generally at 50, is inserted in the channel to thereby complete the foot 14 which supports the pallet in a load-receiving position.

It is contemplated that the load-bearing filler material may be strips of corrugated cardboard having high compressive strength, and may comprise a series of substantially identical individual strips, or a single piece of corrugated cardboard which is partially severed and folded, in the manner of an accordian, and inserted in the channel.

With reference to FIGURES 2a and 2b, it will be seen that once the blank of FIGURES 5 and 5a is formed in the manner just described, the pallet structure is collapsible into an essentially flat member having a thickness, only in the flap engagement area, no greater than twice the thickness of the blank from which it is formed, and is therefore, readily stored and shipped prior to use. The filler material is likewise easily stored and shipped, making the pallet structure convenient to be maintained, in its knocked down condition, in quantity prior to use.

With reference now to FIGURES 1b, 4 and 5b, an alternative load-bearing foot construction is illustrated. In this construction, less interrupted area is provided in the surface of the deck. This embodiment differs from the FIGURE 1a embodiment principally in the channel forming structure. In the FIGURE 1b embodiment the channel is formed by scoring the tab along a transverse line 52 disposed inwardly of the terminal end 50 by a distance equal to the width of the foot, and then cutting along the score line 52 inwardly from the side edges of the tab to a predetermined distance. Longitudinal cuts are then made along lines 54 which extend from the cuts 56 inwardly to a transverse score line 58 disposed inwardly from the peripheral edge of the deck by a distance equal to the load-bearing width of the foot being formed. In this manner, parallel straps 60 are formed on either side of a central strap 62, but unlike the previous embodiment, the ends of the straps 60 are not connected. A central strap 62, formed between the straps 60 terminates in an end portion 64 having transversely extending ears 66. The central strap is scored at 68, and folded at the score line, downwardly at right angles to the surface of the deck 12. The portion 64 is folded along score line 52 inwardly at 90 degrees to the previously bent portion.

In a like manner, the flanking straps 60 are folded downwardly along score lines 58, and again along score lines 70 so that the terminal portions of the strap 60 overlap the ears 66 on the end portion 64 of the central strap. The overlapping areas of the straps are then interconnected such as by gluing, or as by staples, and a channel of serially spaced straps, which is illustrated in FIGURE 4 is formed.

Load-bearing filler material 50 is readily received in the channel, thus completing the erected pallet structure. In a manner similar to the first embodiment described, the pallet is collapsible for storage and transportation.

It will be seen in FIGURE 6, the feet 14 are disposed at the peripheral edge of the deck 12. In this way, support is provided to the peripheral edges of the pallet, permitting the pallet to be properly sized for the load which it is to carry. In this way, the pallet is of minimum size for the load it must bear and thus of minimum cost to manufacture. Moreover, since the deck defines the size of the pallet, they may be stacked side by side to save warehouse space.

It will be noted that the feet 14 are relatively small and are spaced from one another so as to permit the tines of a forklift truck to be received either between them, or on either side of one or both of them. Accordingly, the pallet and the load carried thereby are readily manipulated by a forklift truck irrespective of the position of the pallet on the floor or dock. Thus, it is not necessary to be concerned with the position of the pallet prior to loading the same.

It is now apparent that the pallet is simply constructed and readily erected for use, while at the same time being sufficiently economical, both in manufacture and use, as to be disposable at the choice of the user without significant expense.

While only two feet have been illustrated, it will be appreciated that the number of feet may vary with the application to which the pallet is to be put.

What is claimed is:

1. A pallet erected from a sheet of paperboard defining a load bearing deck, said sheet having tabs extending outwardly from the peripheral edge of said deck, said tabs being scored and cut to form a series of serially disposed foldable straps, a portion of said deck being cut to form a longitudinal extension of at least one of said straps, said extended portion being folded downwardly beneath said deck, and the other said straps being folded downwardly at the peripheral edge of said deck, the free ends of said straps being fastened together to form serially spaced interconnected walls defining a channel beneath said deck, and load bearing fillers being secured in said channel to support said deck at the peripheral edges thereof.
2. The pallet construction as disclosed in claim 1 wherein said deck is cut to form an extension of a central strap.
3. The pallet construction as disclosed in claim 1 wherein said deck is cut to form extensions for the straps disposed on either side of a central strap.
4. The pallet construction as disclosed in claim 1 wherein each said tab is scored and cut to form three adjacent straps.
5. The pallet construction as disclosed in claim 2 wherein straps disposed on either side of said central strap are connected by a cross flap integrally formed, and the free end of said central strap is fastened to said cross flap.
6. The pallet construction as set forth in claim 3 wherein said central strap is formed with an end portion extending beyond the free ends of said adjacent straps, said end portion having ears extending transversely of the longitudinal dimension of said strap, and the free ends of said adjacent straps being fastened to said ears.
7. The method of forming a collapsible paperboard pallet capable of being maneuvered by a lift truck comprising the steps of
 - (a) forming a blank of a sheet of paperboard defining a loading deck, with tabs extending outwardly from the peripheral edge thereof,
 - (b) cutting said tabs in said deck so as to form a series of adjacent serially spaced straps, at least one of said straps extending longitudinally into the loading deck,
 - (c) fastening the free ends of said straps together,
 - (d) folding said fastened straps such that the straps extending into said deck are folded downwardly at substantially right angles thereto, and the other

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straps being folded downwardly at the peripheral edge of the deck to thereby define a series of spaced interconnected walls defining a channel, and

- (e) filling each said channel with load bearing material, whereby the deck is supported on said load bearing material about its periphery and above the ground.

8. The method as set forth in claim 7 wherein each tab is formed into three straps, and a central one of the straps is formed with an end portion extending beyond the free ends of the straps adjacent the central strap, and the free ends of the adjacent straps being fastened to the end portion.

9. The method as set forth in claim 7 wherein each tab is formed into three adjacent straps, and the straps on either side of the central strap are interconnected by a cross piece disposed outwardly of the free end of the

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central strap, and the free end of the central strap being fastened to the cross piece.

References Cited

UNITED STATES PATENTS

2,970,797	2/1961	Desbois	108—56
3,000,603	9/1961	Hemann	108—56
3,069,059	12/1962	Desbois	108—55 X
3,079,877	3/1963	Doane	108—56
3,216,376	11/1965	Anderson et al.	108—56
3,232,252	2/1966	Nelson	108—51

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U.S. Cl. X.R.

108—56