

May 19, 1964

D. B. PHILLIPS

3,133,511

COLLAPSIBLE WALL UNIT FOR STACKING ON PALLETS

Filed Aug. 3, 1962

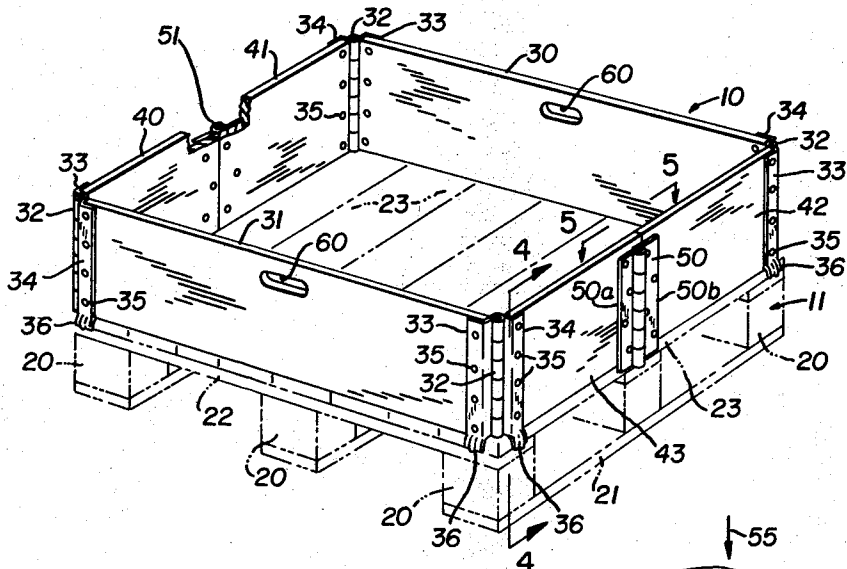


FIG. 1

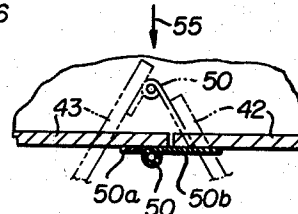


FIG. 5

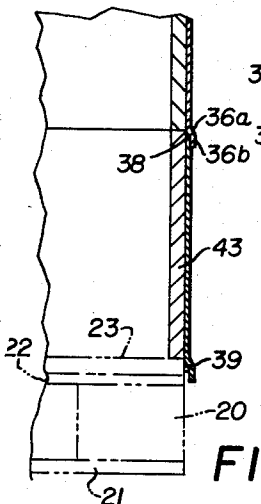


FIG. 4

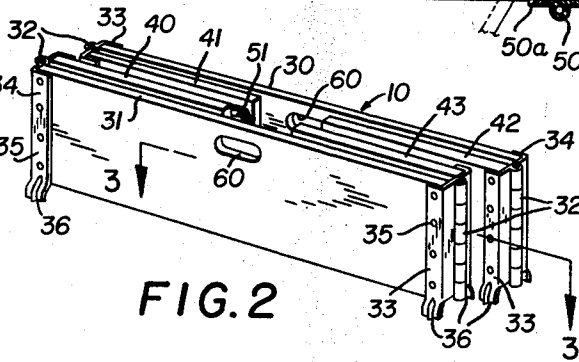


FIG. 2

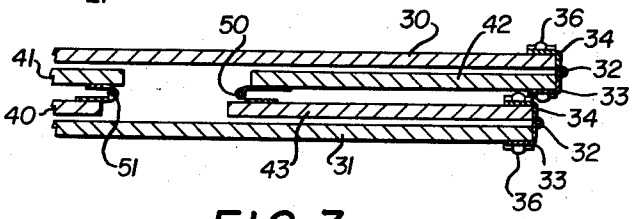


FIG. 3

INVENTOR.
DAVID B. PHILLIPS
BY *William Freeman*
ATTORNEY

1

2

3,133,511

COLLAPSIBLE WALL UNIT FOR STACKING ON PALLETS

David B. Phillips, Berea, Ohio, assignor to Hinchcliff Hardwood Lumber Company, Strongsville, Ohio, a corporation of Ohio

Filed Aug. 3, 1962, Ser. No. 214,687

2 Claims. (Cl. 108—55)

This invention relates to the art of article storage and in particular relates to a collapsible type of wall unit that is adapted to be used in connection with conventional material handling pallets for the purpose of providing containers of varying heights.

In the known prior art, it has long been realized that material handling can be effectuated by the use of material handling pallets that are normally approachable from any of four sides so as to be liftable by a lift truck having a fork that is insertable within the pallet. A typical pallet of the type herein being discussed is set forth in U.S. Patent 2,967,036, issued January 3, 1961, to David Phillips.

While pallets of this general type and description have enjoyed wide spread usage in industry, it has been found that the range of utilization of the same could be materially increased if the same could be provided with side walls that would cooperate with the pallet to form an open box-like structure within which small parts could be assembled without danger of loss during transport. In this regard, it is preferable that the wall forming unit be detachable with respect to the pallet and it is further desirable that the unit be collapsible so as to utilize a minimum amount of storage space during periods of non-use.

Production of an improved collapsible wall unit for use with material handling pallets of the type above described accordingly becomes the principal object of this invention, with other objects thereof becoming more apparent upon a reading of the following brief specification, considered and interpreted in the light of the accompanying drawings.

Of the drawings:

FIGURE 1 is a perspective view showing the improved collapsible wall unit operatively associated with a pallet that is illustrated in phantom lines.

FIGURE 2 is a view of the collapsible wall unit in collapsed or folded position.

FIGURE 3 is a sectional view taken on the lines 3—3 of FIGURE 2.

FIGURE 4 is a vertical section taken on the lines 4—4 of FIGURE 1.

FIGURE 5 is a fragmentary plan view taken on the lines 5—5 of FIGURE 1.

Referring now to the drawings and in particular to FIGURE 1 thereof, the improved collapsible wall unit, generally designated by the numeral 10, is shown positioned on a material handling pallet 11 so as to cooperate therewith to form an open top container of the type disclosed, with the collapsible wall unit bounding the periphery of the pallet and being further adapted to have a similar unit stacked upon it so as to raise the height of the open container to that desired for the purpose involved.

With regard to the pallet, it suffices to say that the same is shown as being of generally rectangular configuration and further includes a plurality of spacer blocks 20, 20 that are operatively associated with top and bottom stringers 21, 21 and 22, 22 so that the bottom surface of the container is defined by the deck boards 23, 23, as clearly shown in FIGURE 1 of the drawings.

Referring now to the drawings for a detailed construction of the collapsible wall unit 10, it will first be noted that the same includes a pair of first side wall elements designated by the numerals 30 and 31, with each of these

first side wall elements 30 and 31 being of identical dimension and with the length dimension thereof being slightly less than the edge dimension of the pallet defined by the stringers 21 and 22, for example. Secured to the free ends of the wall elements 30 and 31 are hinge members 32, 32 of which there are four in number and with all four such units 32, 32 being identical in configuration.

Accordingly, and referring to FIGURES 1 and 2, each hinge 32 includes right angle strap portions 33 and 34, with one leg of each right angle strap portion 33 and 34 being adapted to be secured against the outer face of a side wall member while the remaining right angle leg portion of each strap abuts against the end of the side wall portion, as is clearly shown in FIGURE 1, with the straps being attached to the side wall members by the use of bolts 35, 35, as is clearly indicated in FIGURE 1.

It should be noted in this regard that each of the flanges will be formed with a conventional circular housing so as to facilitate insertion of the usual hinge pin that permits 180 degree movement of the hinges shown in FIGURE 1.

Adjacent the lower edge of each hinge 32 are provided lug members 36, 36, with one such lug member 36 depending from the lower edge of the leg of each strap portion 33, 34 that engages the exterior wall of a side wall component as is clearly shown in the drawings. The detailed construction of the lug 36 just described is shown best in FIGURE 4, and it will be noted that the same includes a downwardly and outwardly tapering section 36a, as well as a parallel section 36b that is spaced from the plane of the strap so as to overhang the upper edge of an adjacent edge in the event the units are stacked, or to overhang the edge of the pallet 11, as shown in FIGURE 4 of the drawings. Preferably in this regard, the upper edge of each strap portion is chamfered, as at 38, to facilitate engagement with the tapering section 36a. It is further evident that the pallet per se could be provided with a tapered wedge block 39 that would more snugly seat the lugs 36, as is shown in FIGURE 4.

While one strap of each flange 32 is secured to an end of either the side wall 30 or 31, as described, the remaining right angle strap of each flange is secured to any one of the second series of side wall members that are designated by the numerals 40, 41, 42 and 43, with attachment of the flanges being as in the case of the side walls 30 and 31. One leg of the strap abuts the end of the member 43, for example, while the other leg abuts the exterior surface thereof, and with this arrangement being shown clearly in FIGURES 1, 2 and 3 of the drawings.

Referring next to FIGURE 1, it will be noted that the construction of the collapsible wall units 40, 41, 42 and 43 further envisions the use of two hinges 50 and 51, with the hinge 50 connecting the free ends of the side wall elements 42 and 43, while hinge 51 connects the free ends of the side wall elements 40 and 41. The hinges 50 and 51 are identical in configuration and the hinges are specially constructed for the purpose of providing additional stability to the erected wall unit, as will now be described.

In this regard, it will first be noted that the top edge of the hinges 50 and 51 are spaced downwardly from the top edges of the side wall elements with which they are associated, with the hinge per se having a height dimension equal to the height dimension of the walls, with the result that the bottom edge of the hinge overhangs the lower edge of the walls so as to be engaged by the deck boards 23, 23, thus preventing collapse of the hinged side walls upon the application of external pressure against the same in the region of the hinge.

For the purpose of preventing movement of the second side wall members 40, 41, 42 and 43 around their respective points of hinged connection at the hinges 50 and 51, it will further be noted that each hinge 50 is constructed

to have a narrow strap portion 50a and a wide strap portion 50b, with the portion 50b overlying the joint between the members 42 and 43 so that the same are locked against movement resulting from force applied in the direction of the arrow 55, as shown in FIGURE 5 of the drawings. It will be noted, however, from FIGURE 5 that the collapsible wall unit 10 can be collapsed upon removal from the pallet, with the partially collapsed position being shown in chain dotted lines in FIGURE 5 and with the fully collapsed position being shown in FIGURES 2 and 3 of the drawings.

It will be noted that the offsetting of the hinges 50 and 51, as just described, further achieves the additional advantage of permitting the members to be spaced in closer parallelism upon collapsing, with the offsetting serving to offset the corner hinges from each other and permit overlapping thereof as shown in FIGURE 3 of the drawings. In this manner, a more compact unit is achieved for storage purposes.

In use or operation of the improved collapsible wall unit, it is merely necessary that the unit be assembled to the condition shown in FIGURE 2 of the drawings, for example. At this time and when it is desired to position the same on a pallet of appropriate dimension, it is merely necessary that the wall unit be unfolded to the approximate position shown in FIGURE 1, whereupon the lugs 36, 36 of each hinge 32 will be disposed in right angle relationship to each other to thus permit engagement thereof with the right angle corner portion of the pallet, with this condition being shown in FIGURE 1. With the pallet thus positioned, it will be apparent that forces directed inwardly on the hinge point will be resisted by the overlap of the lower end of the hinges 50 and 51, with the deck board 23, while outwardly collapsing forces will be resisted by the offset hinge construction, as is shown in FIGURE 5 and described above.

In the event it is desired to increase the height of the pallet to accommodate more goods, it is merely necessary that another wall unit of similar dimension be unfolded until it assumes the four-sided configuration shown in FIGURE 1, and at this time the lugs 36, 36 thereof can be slipped over the chamfered upper edge 38 of the straps of the first applied unit and the height of the unit will thereby be increased, while the rigidity of the resulting container will be further increased by virtue of the fact that the depending edges of the hinges 50 and 51 will retain the same, since these depending edges will abut the collapsible wall members 40, 41, 42, 43.

Upon completion of use, it is merely necessary that the units be grasped and lifted slightly, as for example by the openings 60, 60, and folded to the position of FIGURE 2, whereupon the unit 10 and the pallet can be appropriately stored in a minimum amount of space.

It will be seen from the foregoing that there has been provided a new and improved type of collapsible wall unit having particular utility in connection with material handling pallets. It has been shown how the collapsible

wall unit has maximum rigidity in its open or upright condition, while being collapsible to the smallest possible space.

While a full and complete description of the invention has been set forth in accordance with the dictates of the patent statutes, it is to be understood that the invention is not intended to be limited to the specific form herein shown.

Accordingly, modifications of the invention may be resorted to without departing from the spirit hereof or the scope of the appended claims.

What is claimed is:

1. A collapsible wall unit adapted to be stacked on a pallet having right angle corners to define an open container, comprising; two first rigid sidewall members each having a height dimension and length dimension that is slightly less than one edge dimension of said pallet; four first hinge members each having one strap portion secured to the four ends of said sidewall members; four second sidewall members of substantially equal dimensions and each having a height dimension corresponding to the height of said first pair of sidewalls, a length dimension equal to about half the remaining edge dimension of said pallet, and one end secured to the remaining strap of said first hinge; two second hinges having their respective straps secured to the remaining ends of said second sidewall members, whereby said first and said second sidewalls are arranged contiguously hinged together; and guide lugs carried by the lower edge of said first sidewalls, whereby said lugs of each said first hinge may engage each said corner of said pallet in right angle relationship and thus position said first sidewall in right angle relationship to said pallet and said second sidewalls.

2. The device of claim 1 further characterized by the fact that the hinge point of said second hinges is located inwardly from the remaining ends of said hinged second wall elements whereby one said strap of each said second hinge resists pivoting of said second sidewall members beyond one hundred eighty degrees with respect to said first sidewall members.

References Cited in the file of this patent

UNITED STATES PATENTS

372,215	Gage	Oct. 25, 1887
490,320	Smyth	Jan. 24, 1893
521,905	Young et al.	June 26, 1894
900,552	Kade	Oct. 6, 1908
1,072,550	Wilson	Sept. 9, 1913
1,185,563	Wells	May 30, 1916
1,370,732	Corbett	Mar. 8, 1921
2,057,334	Mannum	Oct. 13, 1936
2,178,570	Fichman	Nov. 7, 1939
2,579,685	Loose	Dec. 25, 1951
2,905,513	Kane	Sept. 22, 1959

FOREIGN PATENTS

169,279	Sweden	Nov. 3, 1959
---------	--------	--------------