Aug. 19, 1952 L. J. BUDD 2,607,475

PALLETIZED SHIPPING STRUCTURE

Filed Aug. 3, 1949 2 SHEETS—SHEET 1

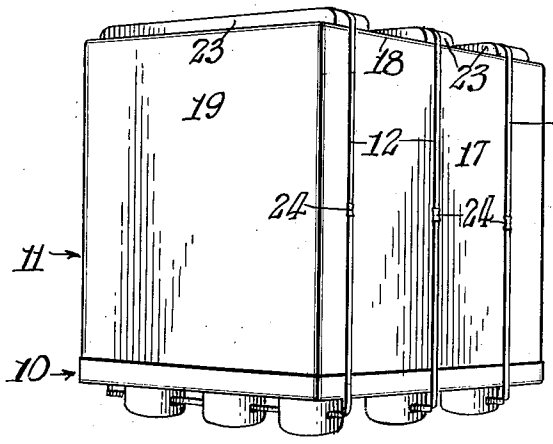


FIG. 1.

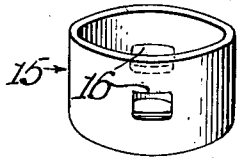


FIG. 3.

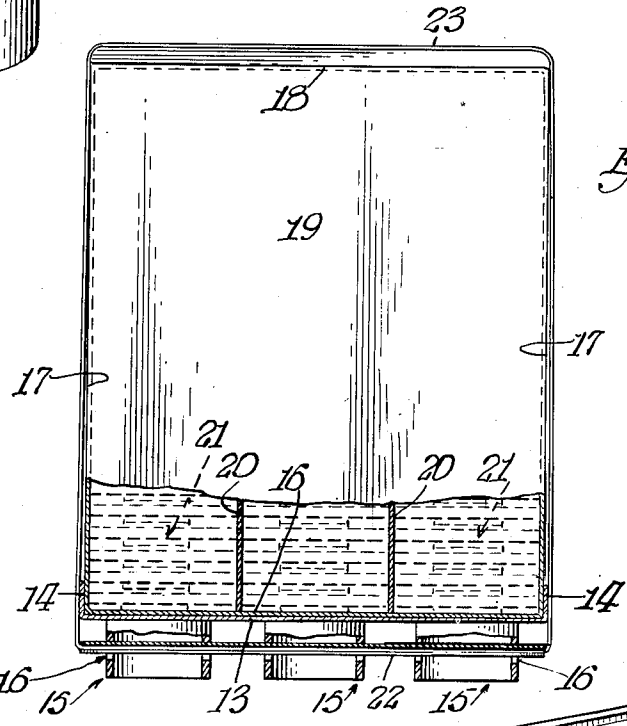


FIG. 2.

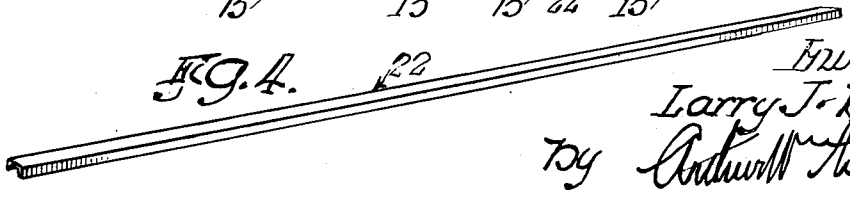


FIG. 4.

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Filed Aug. 3, 1949 2 SHEETS—SHEET 2

FIG. 5.

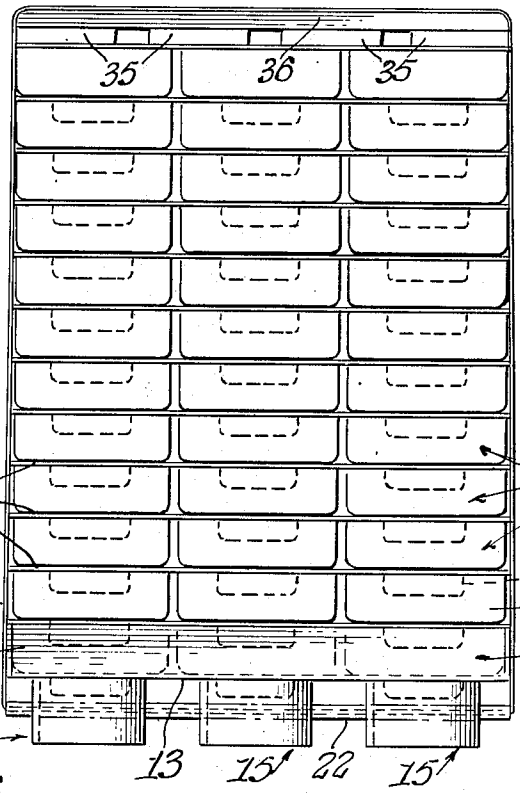


FIG. 9.

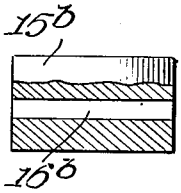


FIG. 10.

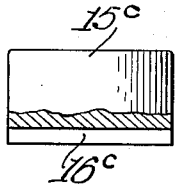


FIG. 6.

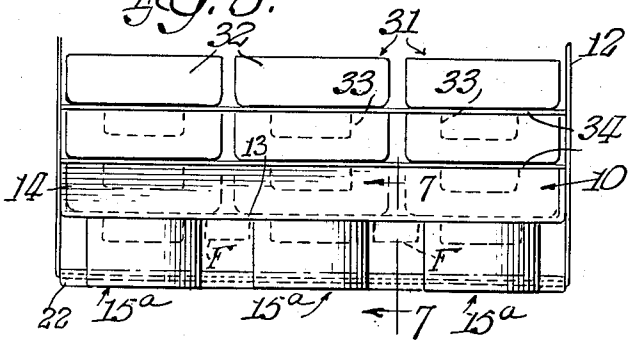


FIG. 7.

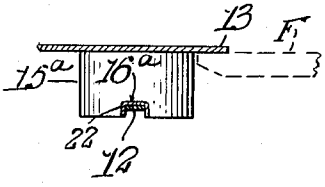


FIG. 8.

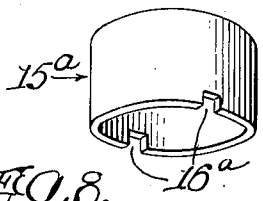
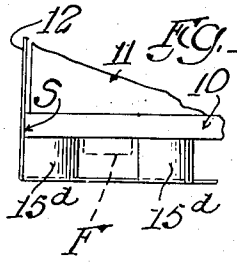


FIG. 11.



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2,607,475

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PALLETIZED SHIPPING STRUCTURE

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Application August 3, 1949, Serial No. 108,408

4 Claims. (Cl. 206—46)

1

This invention relates to improvements in palletized shipping structures and it consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The palletized shipping structure with which the present invention is more especially concerned, embodies therein a pallet that includes a platform preferably of paper board, having rows of depending supporting members on its bottom and adapted to support a commodity load, the load and the pallet being secured together as a shipping structure by means of tensioned members in the form of metallic straps or bands that pass over the top of the load, down opposite sides thereof and then across the bottom of the platform of the pallet.

A structure of this kind is illustrated and described in my copending application Serial No. 71,234, filed January 17, 1949.

One of the objects of the present invention is to provide a palletized shipping structure, which has greater strength and resistance to damage, and which may be produced at a saving in time and material in fabricating the structure.

Another object of the invention is to provide a structure of this kind, so made that the tensioned members which secure the load and the pallet together may be drawn up tighter and placed under greater tension than heretofore possible without crushing the pallet or its commodity load.

Furthermore, it is an object of the invention to provide a package structure wherein the commodity load may be secured to the pallet equally as well when the load is built up in open tiers as when the load is enclosed in a carton therefor and whereby the structure has a greater range of use in commodity loads.

The above mentioned objects of the invention, as well as others, together with the advantages thereof will more fully appear as the specification proceeds.

In the drawings:

Fig. 1 is a perspective view of a palletized shipping structure embodying the preferred form of the invention, with the commodity load, which comprises a part thereof, being in the form of a filled carton.

Fig. 2 is a view in front elevation of the structure appearing in Fig. 1, but on a somewhat enlarged scale, with portions at the bottom of the structure shown as broken away, for better illustrative purposes.

Fig. 3 is a perspective view of one of a plurality of supporting members for the platform of the pallet appearing in Figs. 1 and 2 and on a scale enlarged thereover.

Fig. 4 is a perspective view of a bar member, one of which may be advantageously used with each row of platform supporting members for

2

engagement by the associated tensioned members of the structure, as will later appear.

Fig. 5 is a view in front elevation of a modified form of palletized shipping structure, which requires no carton as a part thereof, and which will be more fully described later.

Fig. 6 is a view in elevation of portions appearing at the bottom of Fig. 5 and more particularly shows a modified form of pallet supporting member, with which the tensioned members of the structure are engaged.

Fig. 7 is a detail vertical sectional view through a part of the structure appearing in Fig. 6 as taken on the line 7—7 thereof.

Fig. 8 is a perspective view of one of a plurality of modified forms of supporting members embodied in the structure of Fig. 6, on the scale of Fig. 3.

Fig. 9 is a view partly in elevation and partly in vertical section of a supporting member similar to but modified from that appearing in Fig. 3.

Fig. 10 is a view partly in elevation and partly in vertical section of a supporting member similar to but modified from that appearing in Fig. 8.

Fig. 11 is a fragmentary view illustrating a further modified construction.

In general the improved palletized shipping structure serves the purpose of the well known tote boxes, in which for example, suppliers of parts ship them from the point of manufacture to the place of assembly. Such boxes, as before mentioned, are usually made of wood, are expensive to produce, and heavy to handle.

The improved structure has many advantages over such tote boxes, especially as to cost and ease of handling. As a whole, it embodies a pallet that includes a platform having means, such as rows of spaced members, on its underside, to support the platform above the floor in a manner providing passages under the platform for receiving the arms of a lift truck and by which the structure may be transported locally. In one instance, these rows of spaced supporting members are so formed that the members in each row may be operatively engaged and connected by a stiffener bar, with which a part of one of the tensioned members, that secure the load and the pallet together as a structure, is engaged and whereby greater tension may be imposed upon the tension members without crushing the platform of the pallet and drawing the same out of its intended flat condition. In another instance, the supporting members in each row are so formed at the bottom as to be directly engaged and to confine, against lateral movement and displacement, a part of an associated tensioned member. In each instance, however, the force of the tensioned members is transmitted to the platform of the pallet through the supporting members. Thus

removing such applied force from these parts of the platform between such supporting members and which acted to distort and warp the same.

Referring now in detail to that embodiment of the invention illustrated in Figs. 1 to 4 inclusive of the accompanying drawings, the improved palletized shipping structure comprises a pallet 10, a commodity load 11 supported on the pallet and a plurality of tensioned members or bands 12, by which the load and the pallet are secured together as a unitary structure for convenient handling by a conventional lift truck.

The pallet includes a rectangular platform 13 preferably made of paper board stock, which is provided along its four margins with flange extensions 14 foldable into an upright position along suitable fold lines, by which said extensions are connected or joined to the platform, as best appears in Fig. 2. On the underside of this platform are sets of spaced supports 15, arranged as right angled rows, thus leaving spaces between said rows of supports. Preferably the supports are in the form of short, rigid tubular pieces of paper board, secured to the bottom of the platform in any suitable manner. In opposite sides of each member 15, about midway between the top and bottom ends thereof, are openings 16 which, as best shown in Fig. 3, may have a rectangular shape. The supports 15 in each row, in one direction of the pallet, are arranged with the openings 16 therein, in line with one another as appears in Fig. 2.

The commodity load 11 is shown in Fig. 1 as enclosed in a paper board carton having a bottom size substantially the same as that of the platform 13 within its flanges 14 and of a height to suit the contents to be received therein. Such a carton includes a bottom 16 that is engaged upon the platform, upright sides 17, a top 18 and ends 19, as appears in Figs. 1 and 2. Within the carton are upright partitions 20 which divide the same into compartments, each to receive a stack of items 21, shown in dotted lines in said Fig. 2. When possible to do so, it is advisable, in cases where the load is heavy, to arrange the supports 15 as shown, so that there is one under each stack of articles.

When the carton has been loaded with the items 21, the cover parts are folded down to form the top 18 for the carton.

The loaded carton, disposed upon the platform, is thereafter secured thereto as follows:

A stiff elongated beam-like bar 22, which is preferably of a channel bar cross section and of a length approximating the width of the platform 13 of the pallet, is inserted through the aligned openings 16 in a row of supports 15. The bar is inserted so that the flanges extend downwardly from its web, which is engaged flatwise against the upper ends or edges of the openings 16.

A cleat or bar 23 of wood or other suitable material is thereafter disposed transversely upon the top of the carton, one in line with each row of supports 15 having the aligned openings therethrough.

Thereafter metallic bands 12, before mentioned, are applied to hold the loaded carton upon the pallet so as to coact therewith in forming the improved shipping structure. A portion of each band is inserted through an associated bar 22 and another portion thereof is passed up along one side of the carton, then longitudinally of a cleat 23 and then down the other side of the carton for attachment to the other end of the band at said other side of the carton. By means of a conventional tool (not shown) the band ends are drawn toward each other and tensioned and then said ends are secured together by means of a conventional clip 24, as appears in Fig. 1.

In Fig. 5 a modified form of palletized package structure is shown wherein a carton is not required when certain items are being packed for shipment. In said figure the pallet is of the same construction as that described in connection with respect to Figs. 1 to 4 inclusive with the exception that in the platform 13, in line with the upper end of the supports 15, are suitable openings.

The items 31 shown therein are, for illustrative purposes, in the form of metallic shells used in automobiles. Each includes an annular body 42 open at its upper end and having a central extension 33 of reduced diameter projecting from the bottom thereof.

In making up a palletized shipping structure of said items 31 in connection with a pallet, a layer of such items is disposed upon the platform, with the extension 33 of each item thereof extending through a hole in the platform to project into the top end of a support 15, the bottom of the body 42 of the item 31 resting flatwise upon the platform about said holes. A separator sheet 34 preferably of relatively heavy paper board is disposed upon the top edge of the bodies of all of the items constituting the first layer upon the platform, which separator has holes therein arranged to line up with the holes in the platform.

A second layer of items is then disposed upon the first or bottommost separator sheet, with the extensions 33 of said items extending down through the holes in said separator sheets. Thereafter other tiers are built upon the first one to the desired height. A separator sheet is preferably provided at the top.

A set of stiffening cleats 35 of wood or other suitable material is disposed upon the top separator sheet to extend in one direction thereof, and then a second set of stiffening cleats 36 is disposed upon the first one to extend at a right angle thereto. The cleats 36 are disposed in line with each row of supports 15 in which the aligned openings are provided.

Metallic bands 12, as before, are disposed in surrounding relation upon the thus far built up structure, with a portion of each band passing through a bar 22, and with another portion extending longitudinally of a cleat 36. When the ends of said bands are drawn together so that said bands are placed under tension, the ends of each band are clipped together. It is to be noted that the items also provide vertical stacks that are indeed rigid and which are securely held together by means of the tensioned bands.

Figs. 6, 7 and 8 illustrate a modified form of supporting member which may be advantageously used as a part of the pallet in the structure, and which member is indicated by the numeral 15a. This member depends from the bottom of the platform, as before, but instead of having the aligned openings 16 in its opposite sides, it is formed in opposite sides of its bottom margins with downwardly opening recesses 16a, which are of a depth greater than the thickness of the bands 12 and the member 22 used therewith. When the band is in place upon the structure, portions of each band extend through aligned recesses 16a in a row of supports 15, the band surrounding the remaining portion of the structure and being tensioned. When said portions

of the bands are disposed in the aligned recesses 16a in each row of supports 15a, said portions are disposed above the plane of the bottoms of said supports but well below the bottom of the pallet platform.

One of the advantages of the arrangement illustrated in Figs. 6, 7 and 8 over the form shown in Figs. 1, 2, 3 and 5 is that there is greater space between the bottom of the pallet platform and the top of bar 22. It is thus possible to provide sufficient space to accommodate the arms of a lift truck as indicated by the dotted lines F, without unduly increasing the height of the supports. In this way it becomes possible to insert the arms F from any of the four sides of the pallet.

In Fig. 11 there is illustrated a construction in which certain of the supporting members 15d are arranged so that a portion of the outer surface thereof terminates in a plane coincident with the outer sides of the adjacent pallet base portion. In Fig. 11 the recesses 16a or 16c as the case may be are in the bottom but they may be centrally disposed as in Figs. 3 and 9 if desired. In any event it is not so necessary to use the bar 22 because the force of the pull, when tensioning band or bands 12, is taken by the relatively rigid strong support member and not by the much more easily deformable base portion of the pallet which would be the case were the support member not so located and were the bar member 22 not used.

It will also be noted that the forks F of the lift truck, one of which is shown in dotted lines, may be accommodated in the space between the base portion of the pallet and the top of the tension band when the recesses are at or close to the bottom of the support.

The supporting members 15 and 15a, before mentioned, are tubular in form and preferably made of heavy paper board. However, certain of the advantages of the invention may be had by the use of solid or non-tubular constructions, such as shown in Figs. 9 and 10. In Fig. 9 the support is indicated at 15b, which may be made of wood or other suitable material having a hole 16b extending laterally therethrough to serve the function of the holes 16 in the construction previously described. In Fig. 10 the support is indicated at 15c, which may also be made of wood or other suitable material, and has a recess or groove 16c extending across its bottom to serve the function of the recesses 16a before mentioned.

With the parts made and arranged, as before described, a good strong shipping structure is afforded, which withstands heavy crushing strains without damage.

While in describing the invention I have referred in detail to the form, construction and arrangement of the parts involved, the same is to be considered only in the illustrative sense and therefore I do not wish to be limited thereto except as may be specifically set forth in the appended claims.

I claim as my invention:

1. A palletized shipping structure embodying therein a pallet including a platform and supporting members on the bottom thereof and arranged in rows extending in at least one direction of the platform, a commodity load supported on the top of said platform and tensioned members, one for each row of supporting members, for securing said pallet and load together as a unitary structure, a rigid bar-like member operatively secured to the supporting members in each row thereof, between the ends of said members, portions of said tensioned members being operatively engaged with said load and other portions of said tensioned members being engaged with said rigid bar-like members.

2. A palletized shipping structure embodying therein a pallet including a platform and supporting members on the bottom thereof and arranged in rows extending in at least one direction of the platform, a commodity load supported on the top of said platform and tensioned members, one for each row of supporting members for securing said pallet and load together as a unitary structure, a rigid bar-like member passing through the supporting members in each row between the top and bottom ends thereof, portions of said tensioned members being operatively engaged with said load and other portions of said tensioned members being engaged flatwise of the bottom surface of said rigid bar-like members.

3. A palletized shipping structure embodying therein a pallet including a platform and supporting members on the bottom thereof and arranged in rows extending in at least one direction of the platform, a commodity load supported on the top of said platform and tensioned members, one for each row of supporting members for securing said pallet and load together as a unitary structure, a rigid bar-like member passing through the supporting members in each row between the top and bottom ends thereof, said bar-like members each being in the form of a channel iron with its flanges facing downwardly and with its web engaged with parts of said supporting members in each row, a portion of each tensioned member extending across the top of said load, other portions extending downwardly on opposite sides of the load and a further portion disposed within each bar-like member and engaged with the web disposed between the flanges thereof.

4. A palletized shipping structure embodying therein a pallet including a platform and supporting members on the bottom thereof and arranged in rows extending in at least one direction of the platform, said supporting members in each of said rows having aligned passages therethrough in spaced relation to the bottom of said platform, a commodity load supported on the top of said platform and tensioned members, one for each row of supporting members, for securing said pallet and load together as a unitary structure, and a rigid bar-like member projecting through the aligned passages of the supporting members in each row thereof, portions of said tensioned members being operatively engaged with said load and other portions of said tensioned members being engaged with said rigid bar-like members.

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