April 29, 1952 L. J. BUDD 2,594,287

PALLET CONTAINER ASSEMBLY FOR SHIPPING ARTICLES

Filed Jan. 17, 1949 2 SHEETS—SHEET 1

FIG. 1.

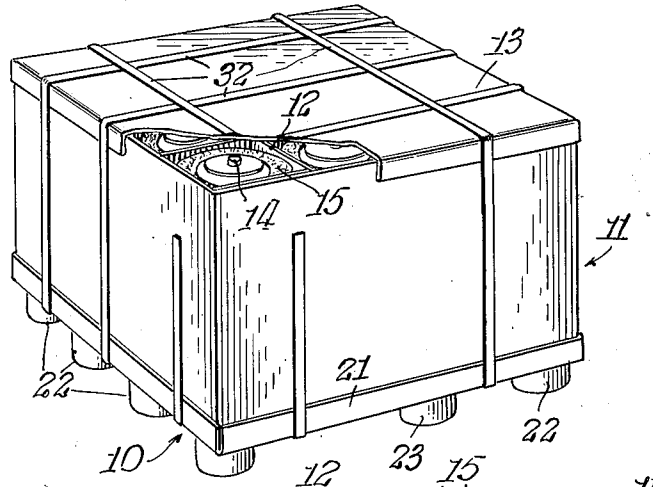


FIG. 3.

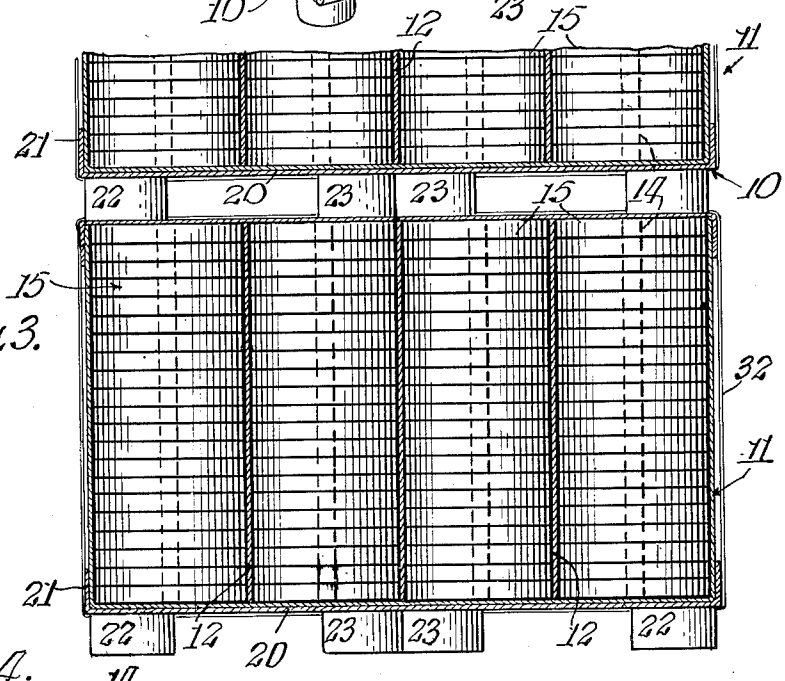


FIG. 4.

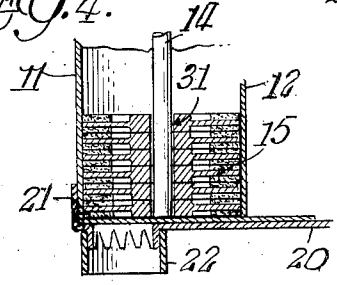
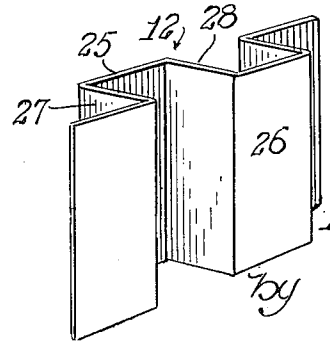


FIG. 5.



Inventor
Larry J. Budd
By Arthur M. Nelson
Atty.

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PALLET CONTAINER ASSEMBLY FOR SHIPPING ARTICLES

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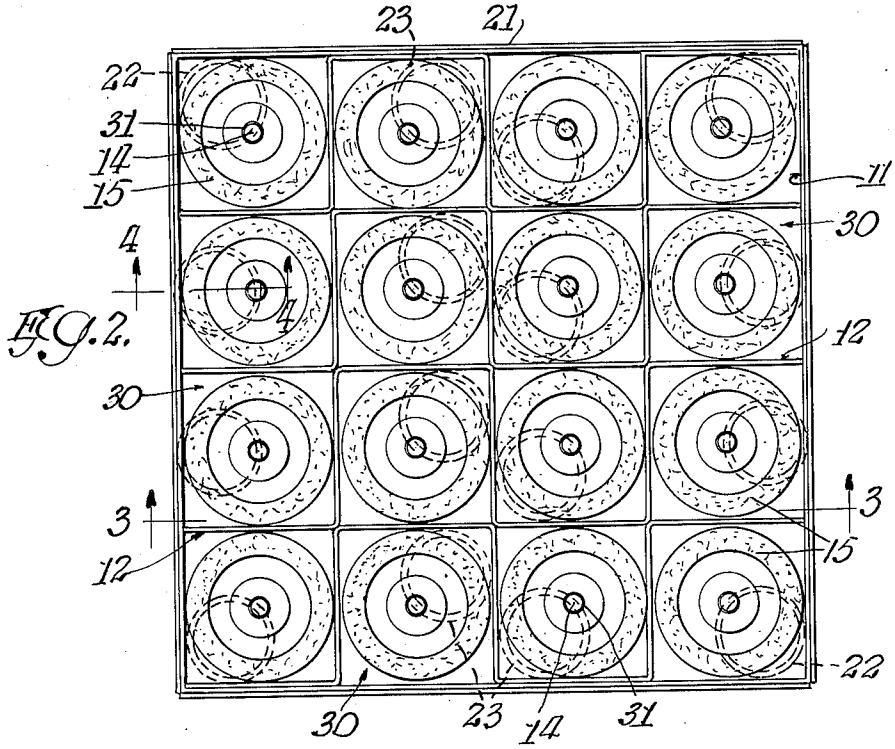


FIG. 2.

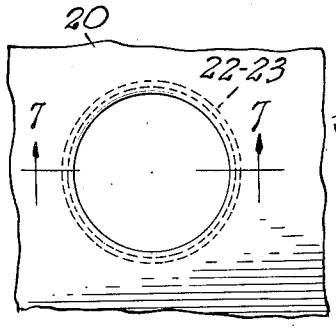
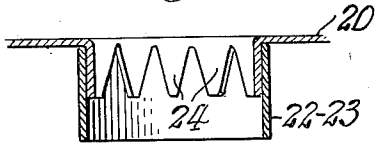


FIG. 6.

FIG. 7.



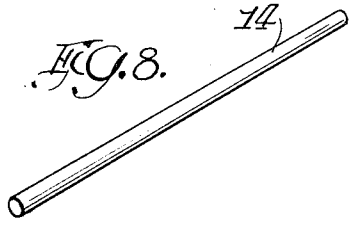


FIG. 8.

Inventor
Larry J. Budd
by Arthur M. Nelson
Atty

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UNITED STATES PATENT OFFICE

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PALLET CONTAINER ASSEMBLY FOR SHIPPING ARTICLES

Larry J. Budd, Chicago, Ill., assignor to Pallet Devices, Inc., Melrose Park, Ill., a corporation of Illinois

Application January 17, 1949, Serial No. 71,236

7 Claims. (Cl. 206—65)

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This invention relates generally to pallet container assembly for shipping articles.

The invention is also concerned with the packaging for shipment of heavy apertured articles of which clutch plates for automobile power plants are one example and to which reference will be made later.

One of the objects of the invention is to provide a pallet container assembly which can be formed of light, relatively inexpensive material and which shall have the various parts so formed and arranged that the assembly is adapted to hold heavy loads and also to permit easy handling by conventional lift trucks.

Another object of the invention is to provide a pallet container assembly of the type referred to in which a number of assemblies can be stacked one above the other for storage and in which one or more assemblies can be handled by conventional lift trucks.

Again it is an object of the invention to provide a pallet container assembly particularly adapted to the packing and transportation of apertured articles arranged in multiple stacks within the container with packing means serving the function of preventing shifting of individual articles and also as vertical load bearing columns when one or more pallet-container assemblies is arranged in superposed relation on the lowermost assembly.

It is also an object of the invention to provide a pallet container assembly in which the pallet supporting legs are so disposed relative to the articles packed in the container that all of the articles at least of the first tier, are arranged with a face portion disposed so as to transmit the article load, at least in part, to the solid end portion of the underlying pallet supporting legs.

Another object of the invention is to provide an assembly of this kind wherein both the container and the pallet are made of light weight material at a cost making it feasible to discard them after one transportation use and in which the load in the containers of the upper tiers of a stack thereof is not imposed wholly upon any one container, but by means arranged in the center holes of the plates in each stack is transmitted to the floor or the like surface upon which the stack stands.

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

In the drawings:

Fig. 1 is a perspective view of a pallet container

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assembly embodying the preferred form of the invention with parts of the cover thereof shown as broken away for better illustration purposes.

Fig. 2 is a top plan view of the container with the cover removed and on a scale enlarged over that of Fig. 1.

Fig. 3 is a transverse vertical sectional view through the pallet container assembly as taken on the line 3—3 and on the scale of Fig. 2, but showing a fragmentary part of a superposed pallet container assembly on the lower assembly.

Fig. 4 is a detail vertical sectional view through a side portion of the assembly as taken on the line 4—4 and on the scale of Fig. 2.

Fig. 5 is a perspective view of a fragment of a partition forming member that may be advantageously employed in the improved assembly.

Fig. 6 is a view in elevation, on an enlarged scale, of a fragment of the pallet forming a part of the improved assembly.

Fig. 7 is a vertical detail sectional view as taken on the line 7—7 of Fig. 6.

Fig. 8 is a perspective view of a rod-like compression element forming a part of the improved package and adapted to be disposed in the aligned center holes of a stack of the articles within the container of the assembly, and which will be more fully described later.

In general the improved assembly embodies a pallet that includes a paper board platform with members or legs on the underside thereof that support the platform from and above a floor. As shown these legs are in the form of paper board tubes and they are disposed in a special relation with respect to the articles to be packed in the container. Also the structure is such as permits the entry of the arms of a lift truck under the platform. Disposed upon the platform of the pallet is an open top container. In the specific illustration means are inserted to divide the container into rectangular upright cells or compartments, each to receive a vertical stack of clutch plates, with their center holes disposed in alignment so as to receive a rod-like compression member. In packing a cell or chamber, a number of plates are placed one upon the other in the bottom of each cell and in which they are centered. Thereafter the bottom end of a compression member is entered into the aligned center holes of the plates now in the stack. As this member has a fairly snug fit in said holes, it will stand in a substantially upright position, wherein it is centered with respect to the associated cell or compartment. Thereafter in packing others of such plates to make up a complete stack thereof, each plate is placed with its center

hole aligned with the top end of said member so that said member passes therethrough and as the plate descends to its place in the stack, it slides down said member to be guided thereby into aligned position with the topmost plate of that much of the stack already disposed in the cell.

The members mentioned are of a length approximating the height of the containers and the supporting members for the platform of the pallet are so disposed that a solid end portion (in this instance an end wall) of each support is vertically in line with the said member. After the container has been packed, a cover is applied to the open top of the container to close the same and then the entire assembly is strapped together to produce a unitary assembly. When these assemblies are arranged in tiers, the compression members in said containers are vertically aligned with each other and with said portions of the supporting members and thus function therewith, while in tier, as rigid load supporting columns.

Referring now in detail to that embodiment of the invention illustrated in the drawings, the same includes a pallet **10**, an open top container **11**, a cellular filler **12** for dividing the container into compartments, as well as a cover **13** for the open top of the container, a compression member **14** extending through the aligned center holes of the clutch plates **15** in each stack, and some means whereby the assembly is secured together as a unitary assembly.

Preferably the pallet includes a rectangular platform **20** made of paper board stock and provided along each of its four margins with flange extensions **21** that may be turned along suitable fold lines, by which they are attached to the container into an upright position. On the underside of this platform are four rows of laterally spaced supports with a row **22** along each of two opposite sides thereof and with a pair of rows **23** intermediate the side rows and arranged on opposite sides of the center line through the platform, parallel with said rows. The special disposition of the supports in these rows will be described in more detail later.

Preferably these supports are each in the form of short rigid pieces of paper tubing and each may be secured to the platform as shown in Figs. 6 and 7. In these figures the support is indicated by the members **22—23** and it is of a diameter greater than its axial length. Parts of the platform are formed on the circle of the inside of each support with a plurality of downwardly turned tongues **24**. These tongues are of a length less than the length of a supporting member and engage and are adhesively united to the inner face of the upper end of the associated support.

The container is divided into a plurality of rectangular compartments by a plurality of the members **12**, before mentioned, each made from a strip of paper board or the like, of a width approximating the height of the container **11**. This strip is transversely creased upon opposite sides to form laterally offset panels **25—26** connected at their ends by transverse panels **27—28**, as best appears in Fig. 5.

When these strips are disposed in the container, they coact to provide square compartments **30**, best shown in Fig. 2.

Each compartment **30** is of such size as to accommodate a vertical stack of apertured articles herein shown as the clutch plates **15**, before mentioned, for automobile engines and each has a center hole **31** therein. When a stack of such plates is disposed in a compartment the holes **31** therein are substantially centered with respect to the associated compartment.

To accomplish the desired results it has been necessary to conceive of an arrangement of the legs or pallet platform supporting members which will permit entry of the arms of a conventional lift truck and also be so disposed relative to the articles to be packed in the associated container that the load will be transmitted to a solid end portion of the legs, at least in part.

In the illustrative case the supporting members **22** and **23** are so disposed that solid end portions thereof (end wall portions in this instance) are aligned with the center holes **31** in the clutch plates. Thus a solid end portion of each supporting member is disposed in line with said centers, as best appear in dotted lines in Fig. 2.

It is to be noted from said Fig. 2 that the supports in the rows **22** are disposed along opposite sides of the platform with the endmost ones thereof at the four corners of the platform. The supports **23** in the intermediate rows are arranged in a staggered fashion upon opposite sides of the center line of the platform parallel with said portions. This arrangement of supports provides a passageway between each of the rows **22** and **23** of such supports permitting the entry of the arms (not shown) of a lift truck.

As the compression members **14**, one of which is shown in Fig. 8 as a dowel-like rod, are each of a length approximating the height of the container **11**, the top ends of said members are flush with the top edges of the container. When the compartments **30** of the containers each holds a stack of clutch plates **15**, with a member **14** disposed in the aligned center holes therein, the cover **13** is applied to the open top end of the container to close the same. When the cover is thus in place, certain areas thereof in line with the centers of the compartments will engage the top ends of all the members **14**. Thereafter, flat steel strip-like strappings **32** are employed to secure the cover in a closed position on the container and to hold the container in place upon the platform of the pallet to provide a unitary package.

When thus packed, the members **14** serve a number of functions in that they each resist lateral shifting of the plates in the stack while the package is in transport. Also, when the completed pallet container assemblies are stacked one upon the other, with the same sides of the container disposed at the same sides of the tier, the members **14** coact with portions of the supporting members in line therewith to form rigid columns for supporting the load of the plates supplementing to an important degree such support as the walls of the container may afford.

It will be seen that when the containers of superposed assemblies are stacked with the members **14** in vertical alignment there will, in effect, be a continuous supporting column composed of the supporting legs of the several pallets, the aligned members **14**, and the sheet stock of the pallet platforms, container bottom and the container top or tops of all containers except the uppermost container. Relatively great loads can thus be supported in structures made of such relatively inexpensive material as paper or paperboard stock.

When the containers have been emptied of their contents they may be discarded as their cost is relatively low. Because of the light weight of the assembly the freight charge is considerably less than that for the heavy wooden containers heretofore used for similar shipping purposes.

In the drawings the bottom of the container and the platform of the pallet are each shown as being constituted of a single piece of paperboard. If desired, however, these parts may be made of several layers. The extra layers of material need not necessarily be adhered to the adjacent parts of the container and pallet platform respectively since they could be confined by the upright sides of the container and pallet respectively.

While in describing the invention I have referred in detail to the form and construction of the parts involved as well as to the manner of building up the assemblies, 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 package of apertured articles embodying therein a pallet including a platform and supporting members on the underside thereof and arranged for the entry of lift truck arms between certain ones thereof, an open top container having a bottom engaged upon said platform, means in the container for dividing the same into a plurality of article receiving compartments, a plurality of articles arranged as a vertical stack in each compartment and engaged upon the bottom thereof with the apertures of said articles in alignment with each other and in alignment with at least a portion of a platform supporting member, means disposed in the aligned apertures in each stack and engaging at its bottom with the bottom of the container and having its top end disposed in the plane of the open top end of the container, and a closure for the top end of said container and engaged at spaced points with the top ends of at least certain of said last mentioned members.

2. A palletized package of apertured articles embodying therein a pallet including a platform and supporting members on the underside thereof and arranged for the entry of lift truck arms between certain ones thereof, an open top container having a bottom engaged upon said platform, means in the container for dividing the same into a plurality of article receiving compartments, a plurality of articles arranged as a vertical stack in each compartment and engaged upon the bottom thereof with the apertures of said articles in alignment with each other and in alignment with at least a portion of a platform supporting member, means disposed in the aligned apertures in each stack and engaging at its bottom with the bottom of the container and having its top end disposed in the plane of the open top end of the container, a closure for the open top end of said container and engaged at spaced points with the top ends of at least certain of said last mentioned members, and means passing about and securing the container, and the cover and the pallet together against relative lateral movement.

3. A palletized package of apertured articles embodying therein a pallet including a platform and supporting members on the underside thereof and arranged for the entry of lift truck arms between certain ones thereof, an open top container having a bottom engaged upon said platform, means in the container for dividing the same into a plurality of article receiving compartments, a plurality of articles arranged as a vertical stack in each compartment and engaged upon the bottom thereof with the apertures of said articles in alignment with each other and in alignment with at least a portion of a platform supporting member, means disposed in the aligned apertures in each stack and engaging at its bottom with the bottom of the container and having its top end disposed in the plane of the open top end of the container, a closure for the open top end of said container and engaged at spaced points with the top ends of at least certain of said last mentioned members, and means passing about and securing the pallet, container and cover together against relative movement.

4. In a palletized package of articles each having a center hole therein, a pallet including a platform and tubular supporting members on the underside thereof, an open top container having a bottom engaged upon said platform, a plurality of said articles arranged as a vertical stack upon the bottom of the container with their center holes in alignment, and a member having a length approximating the height of the container disposed in said aligned holes of said stack of articles with its bottom end engaged with the bottom of the container and over and in line with at least a solid portion of said tubular member and with its top end disposed substantially in the plane of the top of the container.

5. In a palletized package of articles each having a hole within its periphery, a pallet including a platform, a container having a bottom engaged on said platform, stacks of articles in said container, each engaged upon a predetermined area of the bottom thereof, the articles in each stack being arranged with the holes thereof in substantially vertical alignment, a plurality of rigid supporting members for and on the underside of said platform, one for each of said areas of the bottom of the container and disposed with a portion thereof in line with said holes in the stack of articles above the associated area, and a plurality of members, one for each stack, each of said members having a length approximating the height of the container and being disposed in the aligned holes in the articles in the associated stack and holding said articles against lateral displacement, the bottom end of each member being engaged upon the bottom of the container in line with a portion of the rigid supporting member below said stack, the top end of each member being disposed substantially in the plane of the top of the container.

6. A shipping structure comprising a pallet having an upper supporting surface, a plurality of laterally and transversely spaced aligned supporting legs secured to an undersurface of said pallet, a container having a bottom wall in flatwise contact with said pallet supporting surface and upstanding side walls extending thereabove, divider means sub-dividing the interior of said container into vertically extending cells each overlying at least one of said legs secured to the undersurface of said pallet, vertical stacks of articles disposed in said cells and having aligned registering apertures, said cells being of substantially the transverse dimensions of said articles and of substantially the height of said stacks of articles, and vertically extending members projecting into each of said cells and each of said

stacks, thereby retaining said articles in superimposed load bearing relation within said cells, each of said vertically extending members directly overlying and being vertically aligned with the corresponding supporting leg.

7. A shipping structure comprising a pallet having an upper supporting surface, a plurality of laterally and transversely spaced aligned supporting legs secured to an undersurface of said pallet, a container having a bottom wall in flatwise contact with said pallet supporting surface and upstanding side walls extending thereabove, divider means extending parallel to said upstanding side walls and substantially normal to the container bottom wall for sub-dividing the interior of said container into vertically extending cells, each of said cells directly overlying at least a portion of one of said legs secured to the undersurface of said pallet, vertical stacks of articles disposed in said cells, the articles in each of said stacks having aligned registering apertures, vertically extending members projecting into each of said cells and extending through the registering apertures of each of said stacks to abut the pallet supporting surface, a top closure member

overlying each of said cells and contacting the upper end of each of said vertically extending members to retain the same in upright position, each of said vertically extending members directly overlying and being in vertical alignment with the corresponding one of the supporting legs to retain said articles in superimposed load bearing relation within said cells.

LARRY J. BUDD.

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