Jan. 12, 1954 L. J. BUDD 2,665,806

PALLETIZED SHIPPING STRUCTURE

Filed Aug. 3, 1949

2 Sheets-Sheet 1

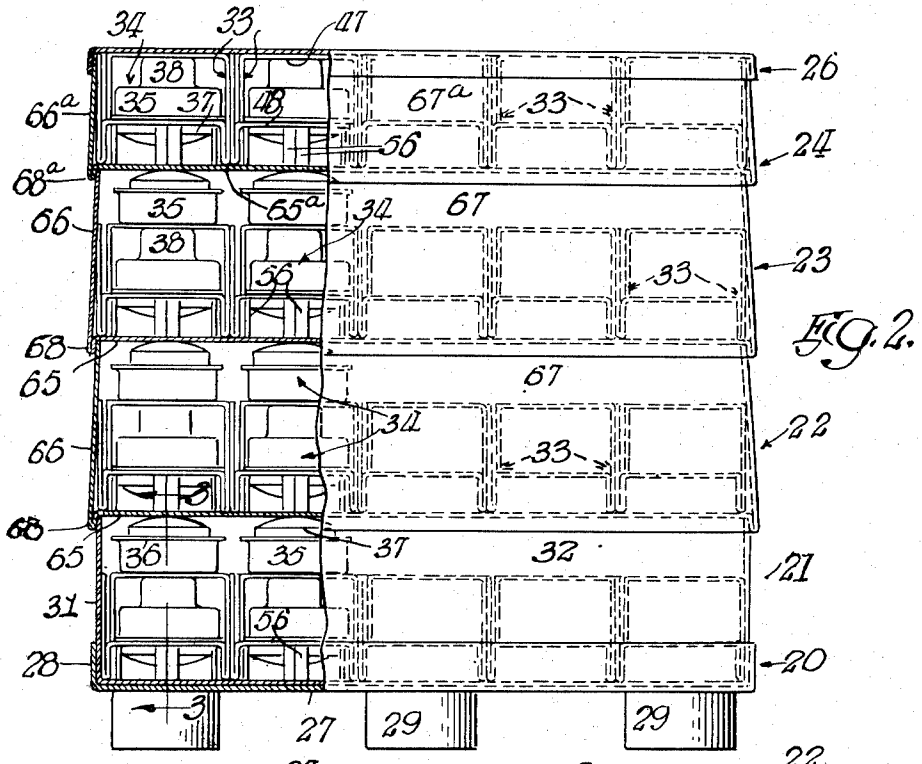


FIG. 2.

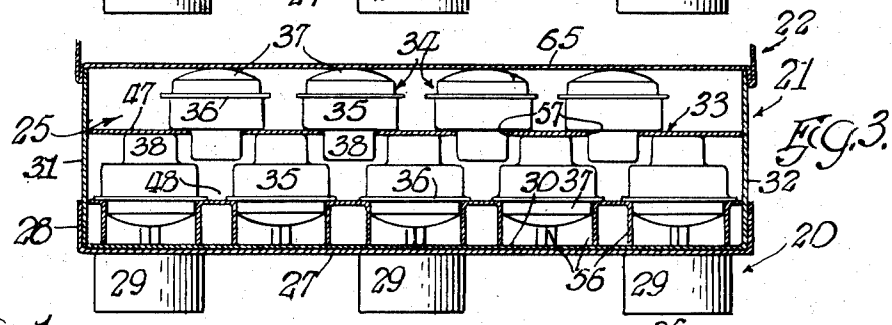
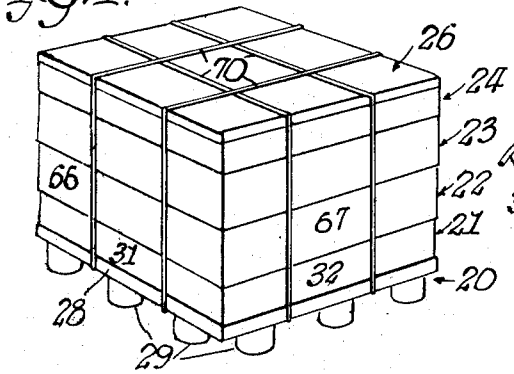


FIG. 3.

FIG. 1.



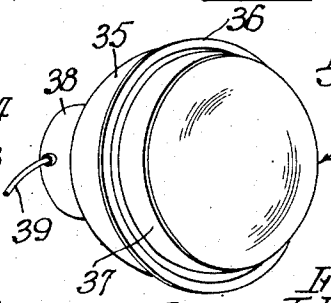


FIG. 4.

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PALLETIZED SHIPPING STRUCTURE

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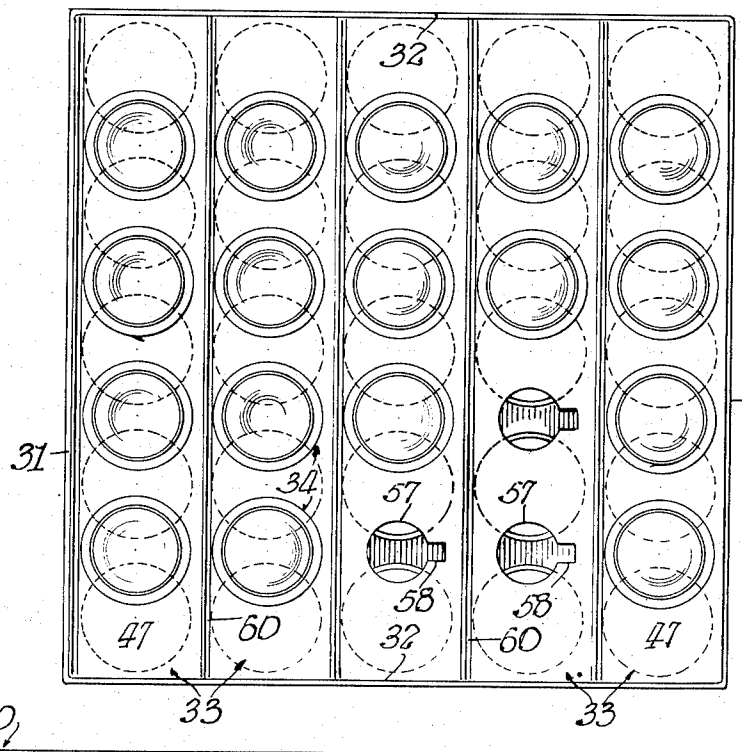


FIG. 5.

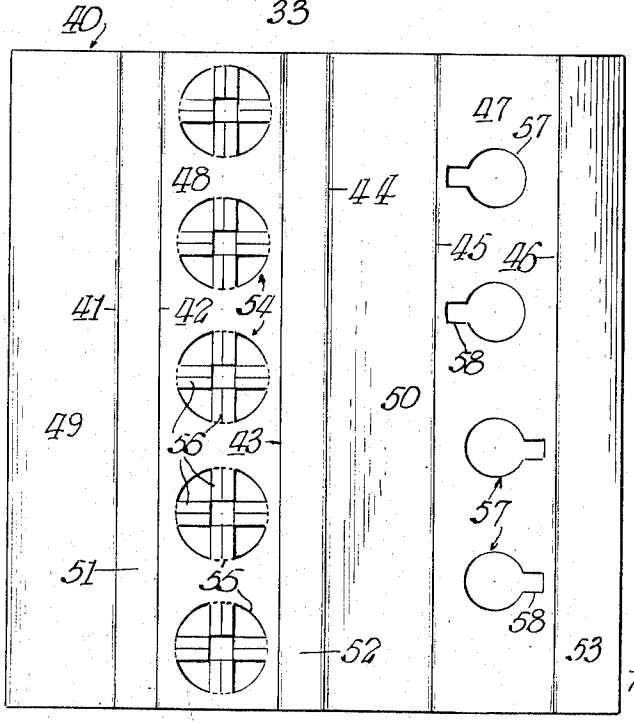


FIG. 6.

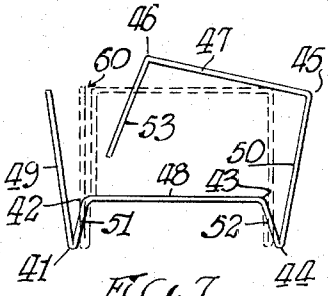


FIG. 7.

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PALLETIZED SHIPPING STRUCTURE

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Application August 3, 1949, Serial No. 108,409

2 Claims. (Cl. 206—65)

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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 present invention is more particularly concerned with a structure of this kind, for the lot shipment of articles of a type requiring spaced packing to prevent breakage, of which an automobile headlight unit of the sealed beam type, is one example. The conventional unit of this kind includes a sheet metal shell-like casing having a housing of smaller diameter at each end, one for the lamp of the unit and the other for the lens thereof. The lens of such unit is made of glass and is likely to be broken in shipment unless it is well protected.

One of the objects of the present invention is to provide a structure of this kind wherein a substantial number of articles, such for example as headlight units, may be packed therein in spaced apart relation and securely held against relative shifting and against engagement with each other which might result in such damage to the units in transport.

Another object of the invention is to provide a structure of this kind which includes a plurality of pack members or combined containers or supports arranged side by side in a tray-like container and with each member adapted to be readily packed with articles in such a manner as to be readily removed therefrom when required.

Also it is an object of the invention to produce a structure of this kind which, though light in weight, is strong and rigid and which reduces shipping costs.

Again, it is an object of the invention to provide a structure for shipping articles which requires substantially less sheet material than has heretofore been necessary and which, therefore, reduces the packing costs.

The above mentioned objects of the invention, as well as others along 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.

Fig. 2 is a view in end elevation of the structure, before being tension bound, on a scale enlarged over that of Fig. 1, with portions of the ends of the trays of the structures broken away better to show the arrangement of the unit containers and supports in said trays, and illustrating automobile headlights as the specific article packed in the structure.

Fig. 3 is a vertical detail sectional view through a part of the structure as taken on the line 3—3 of Fig. 2.

Fig. 4 is a perspective view on a somewhat enlarged scale of one of a number of headlight units, being the illustrative article packed in said structure.

Fig. 5 is a top plan view of the bottommost

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tray of the structure when packed with a number of combined containers and supports and each of which holds two sets or tiers of articles.

Fig. 6 is a plan view of a blank from which the combined unit containing and supporting member, embodied in the structure, is made, and

Fig. 7 is a view on a somewhat enlarged scale in end elevation of the blank appearing in Fig. 6, in the course of its being folded into condition for use.

The present invention is more especially concerned with a palletized shipping structure. As by way of illustration, and not by way of limitation, automobile headlight units are shown as the article to be packed in the shipping structure. Each article includes a circular casing having a lamp housing at one end and a lens housing at the other, both of which are of smaller diameter than the main housing.

In general, the structure comprises a pallet including a platform with laterally spaced supports on the bottom thereof, a vertical stack of open top trays, each holding a plurality of side by side packages of a length approximating that of the tray, each package being constituted by a combined article holding and supporting member. The members in all of the trays except the top tray are packed with upper and lower longitudinal tiers or layers of articles, with the articles of one tier arranged in planes between and facing in a direction opposite those of the articles in the other tier. The members in the top tray contain only one tier of articles and when this top tray is packed, it is closed by a cover. The assembly is bound together as a unitary structure by tensioned bands that pass under the platform of the pallet, up the sides of the trays and across the top of the cover in both directions.

Referring now in detail to that embodiment of the invention illustrated in the drawings, the improved palletized shipping structure includes a pallet **20**, a plurality of open top trays **21**, **22**, **23** and **24** respectively vertically stacked thereon and each filled with packages **25**, a cover **26** for the open top of the topmost tray and some later mentioned means whereby the pallet, the trays and the cover are bound together as a compact unitary structure.

Preferably the pallet is of the kind which includes a rectangular platform **27** made of paperboard stock and which is provided along its four margins with flange extensions **28** folded into an upright condition along scored lines by which they are joined to the platform. On the underside of the platform are rows of laterally spaced supports **29** thereby providing between said rows, in two directions, passageways for the entry of the arms (not shown) of a lift truck. Preferably said supports are in the form of relatively short rigid pieces of paper tubing secured to the platform in any suitable manner.

The trays **21**, **22**, **23** and **24** are each made of suitable paper board stock each having a plan

area approximately the same as the platform 27 of the pallet. The tray 21 which is hereinafter referred to as the "first" tray of the stack has a bottom 30 that rests flatly upon the platform 27 within the flange 28 thereof, and sides and ends 31 and 32 respectively. Preferably the tray is formed by folding a suitably cut and scored blank (not shown) into tray form, the sides and ends of which are secured in operative relation in any suitable manner.

Within the first tray is located a plurality of the packages 25 before mentioned, each comprising a combined container and supporting member 33 for upper and lower tiers of articles 34, one of which appears in perspective in Fig. 4. Each article comprises a circular body 35 having a flange 36 on one end and projecting from this end of the body is a lens casing 37 and projecting from the other end of the body is a lamp housing 38, from which leads a length of current conductor 39.

Each member 33 is made from a rectangular blank 40 of paper board appearing in Fig. 6 and which is provided with spaced apart parallel score lines 41 to 46 inclusive. These lines extend longitudinally of the blank which has a length approximating the length of the tray 21. Said score lines divide the blank into top and bottom panels 47—48, side panels 49—50, flange forming panels 51—52 between the panels 48—49 and 50 respectively, and a third flange panel 53 along one side of the top panel and joined thereto by the score lines 46. In the bottom panel 48 are longitudinally spaced areas 54 defined by circular cut and scored lines 55 of a diameter approximating that of the lens casing 37 of an article 34. Said lines 55 define oppositely disposed pairs of split fingers 56 each having a length approximating the width of the flange panels 51—52. In the bottom panel 47 is a row of openings 57 each having a lateral recess 58 and each opening has a diameter approximating that of the lamp housing 38 of an article 34. These openings are spaced the same distance apart as the areas 54 in the panel 47 and are disposed in planes midway between said areas. Preferably there are five of such areas 54 in the panel 48 and four of such openings 57 in the panel 47.

In folding the blank 40 into a condition for use, the flange panels 51—52 are turned downwardly from opposite sides of the panel 48 along the lines 42—43 and after which the side panels 49 and 50, which are of the same width, are turned upwardly along the lines 41—44 so that bottom margins of the side panels engage the flange panels and to which they may be secured in any suitable manner as by staples, not shown. In Fig. 7 the blank 40 is shown in full lines in a partially complete folded condition and is shown in dotted lines in a fully complete folded condition. In this respect it is pointed out that the top panel 47 is a trifle narrower than the bottom panel and the third flange 53 has a width that approximates the width of that part of the side panels above the flange panels. Thus when the blank is in its set up form as shown in dotted lines in Fig. 7, the third panel 53 has an edge engagement upon the bottom panel and a space 60 is present between the third flange panel and the side panel 49.

The width of each tray 21–24 is so proportioned to the width of each member 33 that when a predetermined number of members 33 is placed side by side in the tray, they will jointly occupy

the area thereof, with their top panels disposed such a distance below the top edge of the tray as approximates the axial length of the casing 35 and lens housing 37 of an article 34. At this time, the top and bottom panels 47 and 48 are spaced apart a distance approximating the axial length of the casing 35 and lamp housing 38 of said units, the flange panels 51—52 having a greater depth than the axial length of the lens housing 37 of a unit 34.

In packing the tray 21, a set up member 33 is placed in the tray, with the bottom edges of the flange panels 51—52 engaged upon the tray bottom 30 and with the side panel 49 engaged against one side of the tray. The top panel 47 is then swung into an out of the way position along the line 45 and assuming the article being packed is a head light 34 it is disposed lens down, in line with an area 54. When hand pressure is downwardly imposed upon the lamp housing end of the unit, the lens casing depresses the fingers 56 downwardly so that they are disposed in a perpendicular position with their end edges substantially engaged with the bottom 30 of said tray. This downward pressure is maintained upon the unit until its flange 36 rests upon the bottom panel 48 at which time the lens housing 37 is disposed below said bottom panel and is engaged at four opposite points with the fingers 56. Other units 34 are placed upon and are pressed downwardly toward the bottom panel in the same way and thereafter the top panel 47 is swung back into a position parallel the bottom panel with the third panel 53 having an edge engagement upon the bottom panel.

A head light unit 34 is then positioned with its lamp housing 38 facing downwardly and this housing is then inserted into the opening 57 in the top panel so that the other end of the casing 35 engages upon the top panel. The conductor 39 for the unit is led up through the extension recess 58 of the opening and is then draped into the adjacent part of the space 60 before mentioned. Other units 34 are placed in position with respect to the associated openings 57. Thus all of the units 34 that engage upon and are supported by the top panel 47 have their lamp casings disposed between the like casings of the units below and the lens of those units, that are supported by said top panel, face upwardly and are disposed preferably slightly below the top edge of the sides and ends of the associated tray. The position of the units is best shown in Fig. 3 and in this position the groups of fingers 56 act as bracing props for the bottom panel and the third panel 53 acts as a brace for that side of the top panel opposite the side joined to the associated side panel through the line 46.

The members 33 act as beams or girders and help to impart rigidity to the packed structure as a whole.

Other members 33 are successively placed in the bottom tray and supplied with the articles 34, which tray then holds five packages 25 of units, of nine units apiece or forty units in the bottom tray in the specific illustration. As is obvious from Figs. 2 and 3 the units are securely held against relative movement and cannot shift laterally to engage and therefore they are protectively confined in place.

The tray 22 which for convenience is called the "second" tray includes a bottom 65 and sides and ends 66 and 67 respectively and the bottom margins of said sides and ends are made to provide a double thickness flange 68 which extends

below the bottom **65** of the tray. The second tray is then placed upon the top of the first tray **21**, with the margin of its bottom resting directly upon the top edge of the sides and ends of the first tray and with its double thickness flange **68** embracing the upper margins of said sides and ends as appears in Fig. 2 and is supported thereby.

Another member **33** is placed in the second tray, toward one side thereof and is packed with units **34** as before described. Other members are successively placed in the tray and filled with units, until this tray is filled with packed members **33**.

The tray **23** which I term the "third" tray is a counterpart of the second tray **22** and the parts thereof therefore bear the same reference numerals. This third tray is positioned upon the now packed second tray and in itself is packed in the same way as the first and second trays.

The tray **24** which I term the "fourth" or "top" tray is structurally similar to the second and third trays except that it has a depth less than that of the said trays and which depth corresponds to the height of a member **33**. The fourth tray includes a bottom **65***a* and sides and ends **66***a* and **67***a* respectively and a double thickness flange **68***a* extending below said bottom.

The fourth tray is positioned upon the top end of the third tray and a member **33** is placed therein along one side thereof. This member then has placed thereinto, only one tier of headlight units, in the same manner as such units of the bottom tiers are placed in each lower tier of the trays below. When this has been done the top panel is folded down as before and other members **33** are placed in the tray and successively filled with units **34** as before. When all five members **33** are filled, the top panels **47** thereof are flush with the top edges of the sides and the ends of the tray **24**.

Preferably a cover **26** is placed upon the open top of the top or fourth tray and the assembly is then in the condition appearing in Fig. 2. Thereafter, tensioned members, such as metallic straps or bands **70** are passed in both directions about the assembly described to operatively secure the parts thereof together as a unitary structure as appears in Fig. 1.

When the structure reaches the place where the packed articles are to be removed the bands **70** are cut and are removed as is also the cover **26**. This exposes the members **33** therein so that the top panel **47** of one of them may be swung open to expose the units within easy reach of the operator.

When one member **33** is empty it may be removed from the tray and other units are removed from the next member **33**, which is likewise removed from the tray as emptied. When all members **33** in the top tray have been emptied and removed from the top tray, said tray is removed from the remainder in the stack thereby exposing the members in the third tray for use. When the third tray has been emptied, it is removed from the second, which when in itself is emptied is removed from the first tray.

It is to be noted that with the parts as described, a considerable number of units may be readily packed in one structure, without requiring each unit being packed in its own container. Also the structure may be unpacked readily, without unpacking each unit from its own container. Thus considerable expense for time and material, required in the individual packing of such units as heretofore, is saved and the units are securely held against shifting or contact, the one with the other. While the packed structure requires considerably less than sheet stock than has been required heretofore, the structure as a whole is rigid and well adapted to withstand the stresses and strains met with in shipment. The various members **33**, distributed throughout the structure, act as hollow beams or girders and add greatly to the strength of the structure as a whole.

While in describing the invention, I have referred in detail to the form, construction and arrangement of the parts involved in the structure, 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. In combination, a pallet having an upper supporting surface, a plurality of pallet supporting legs depending therefrom, a plurality of stacked, partially telescoped open-top trays supported on said pallet supporting surface, and a plurality of dividers positioned in each of said trays, said dividers extending transversely across the entire width of said trays and longitudinally abutting one another for retaining a plurality of separate articles therein, said dividers each comprising a one-piece blank of fibrous sheet material folded to define a pair of spaced laterally extending surfaces provided with offset apertures, each of the apertures of each one of said surfaces being adapted to receive one end of one group of said articles with one of said groups of articles being interposed between the surfaces and the other of said groups of articles projecting upwardly within the tray for abutment with the under surface of the bottom of that tray positioned immediately thereabove.

2. A blank for forming a support for upper and lower rows of oppositely faced articles and comprising a rectangular sheet of paper board scored along parallel lines that define laterally spaced side panels, a partition panel between and joined at its opposite sides by flange panels to the inner margin of said side panels, a top panel joined at one margin to the other side of one of said side panels and at its other margin having a third flange panel joined thereto, said partition panel having a number of openings therein spaced longitudinally thereof, and integral bendable fingers extending thereinto, said top panel having a different number of openings therein for receiving other end portions of articles and which last mentioned openings are disposed in planes midway between the planes of the first mentioned openings.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
Re. 19,525	Juffa	Apr. 9, 1935
325,936	Keith	Sept. 8, 1885
513,644	Leaver	Jan. 30, 1894
1,180,136	Gavin	Apr. 18, 1916
1,344,147	Potter	June 22, 1920
1,464,835	Snyder	Aug. 14, 1923
1,748,256	Tinsley	Feb. 25, 1930
2,238,545	Whiley	Apr. 15, 1941
2,353,376	Votter	July 11, 1944
2,534,010	Frye	Dec. 12, 1950
2,534,011	Frye	Dec. 12, 1950