Dec. 2, 1952 P. A. NEMOEDE 2,620,117

PALLET LOAD DIVIDER TRAY

Filed June 9, 1950

Fig. 1

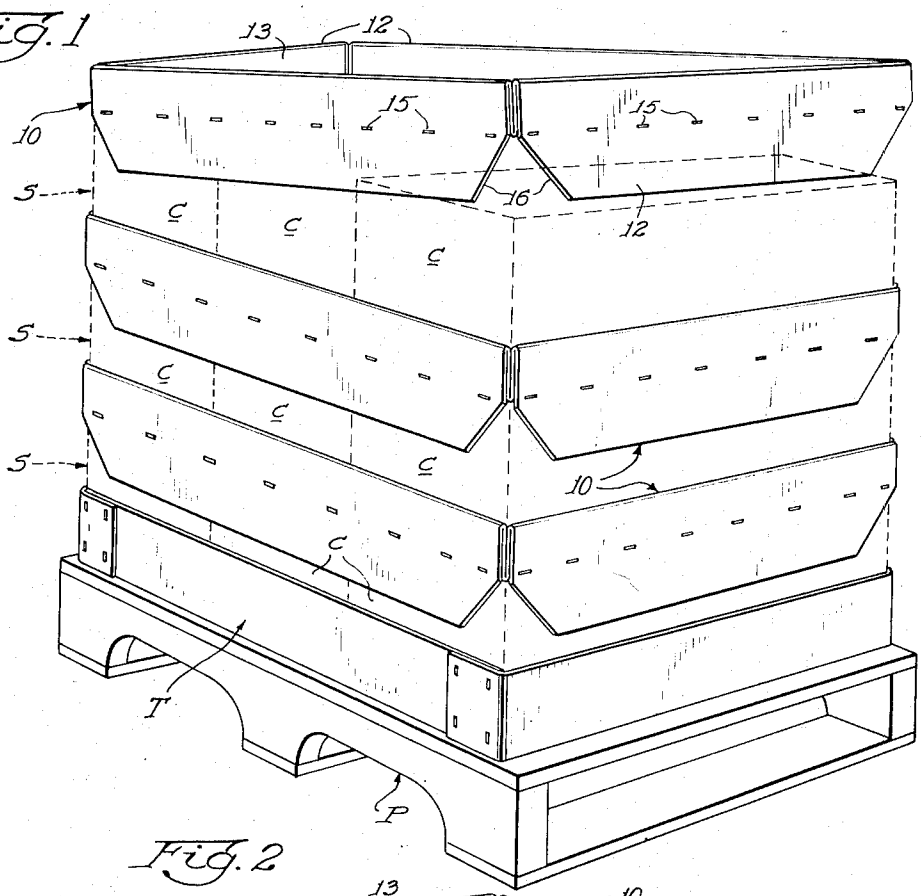


Fig. 2

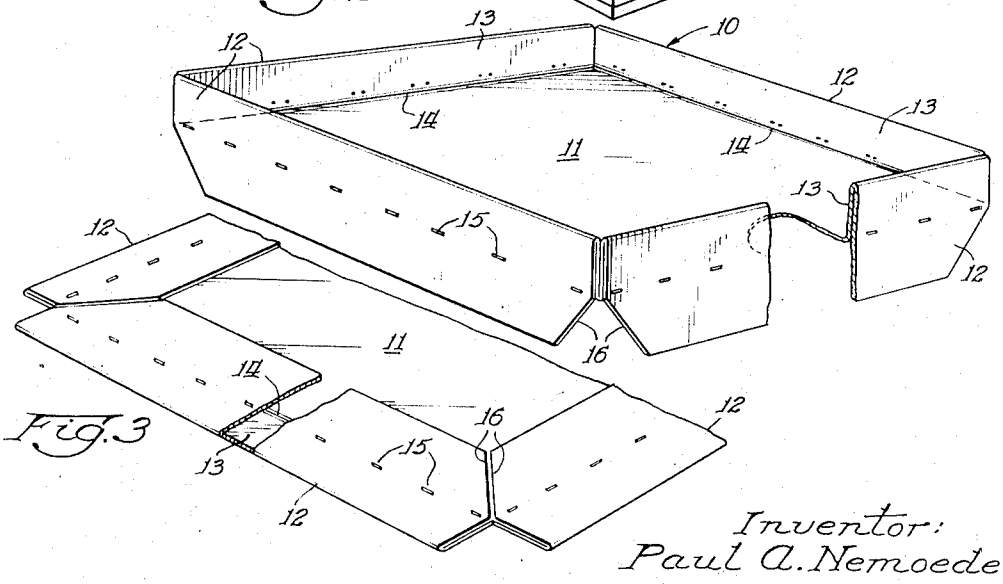


Fig. 3

Inventor:
Paul A. Nemoede
By: E. A. Wagonseller
Atty.

Patented Dec. 2, 1952

2,620,117

UNITED STATES PATENT OFFICE

2,620,117

PALLET LOAD DIVIDER TRAY

Paul A. Nemoede, Keller, Tex., assignor to Container Corporation of America, Chicago, Ill., a corporation of Delaware

Application June 9, 1950, Serial No. 167,159

1 Claim. (Cl. 229—30)

1

The present invention relates to a divider tray for pallet loads or the like, and more particularly to such a divider tray which is reusable, and is collapsible for storage or return for reuse.

While a divider tray according to my invention may take many forms, the illustrative embodiment disclosed herein may be described briefly as comprising a rectangular panel of substantially the dimensions of the pallet with which it is to be used, there being hinged on each edge of the panel a wall member of substantially the same length as the panel edge. Preferably, as in the present instance, the wall members are integral with the panel. The wall members are so formed that when they are disposed angularly relative to the panel they extend beyond both faces thereof, or in other words the hinge line of each wall member is intermediate its longitudinal edges. The divider tray in collapsed condition is substantially flat, with the portions of the wall members on one side of the hinge lines overlapping the adjacent margins of the panel. To avoid overlapping and interference of the wall members in the collapsed tray, the corners of these portions are cut away at a 45° angle, or are otherwise so formed as not to interfere with each other. The tray is erected for use from the collapsed condition merely by swinging the wall members to substantially right angles with the panel, which may then be disposed on the top of a section or layer of the load with the portions of the wall members below the panel engaging about the sides of the load section and the wall member portions above the panel in position to engage about the sides of another load section to be disposed over the first. The tray thus holds vertically stacked sections of the load from shifting horizontally relative to each other and provides a unitary load from a number of separate load parts or sections, without need for straps or similar bindings, or for crates, cases, or the like to hold the load. After the pallet has been unloaded, the trays may be collapsed for return with the pallet to the point of origin for use with another load. Important advantages reside in the lightness and strength of the tray, together with its cheapness and reusability. The collapsible construction is another important advantage. An important feature is that the divider tray permits the load to be handled intact from the point of shipment not only to its destination but to the actual point of use, as for example a particular machine in a factory. Loading and unloading are simplified and speeded by the use of my tray.

One object of the invention is to provide a

2

pallet load divider tray collapsible to substantially flat condition for storage or shipment and capable of being quickly erected for use as a common retaining means for adjacent sections of a load. Another object is the provision of a collapsible pallet load divider tray of paperboard or the like which may be used many times and requires a minimum of space for storage or shipment. A further object is the provision of a collapsible load divider tray having a tray panel with wall members hinged on its edges intermediate their height to project beyond both faces of the panel in erected condition and to lie in substantially the same plane as the panel in collapsed condition. It is also an object of the invention to provide a collapsible load divider tray of paperboard or the like which in set up condition provides a lower portion to telescope over a lower load section and an upper tray portion to receive an upper load section. Still another object is the provision of a load divider tray of such construction as to cap a lower load section and receive an upper load section for rigidifying the load for handling as a unit. A still further object is the provision of a load divider tray with a portion insertible between upper and lower load sections and walls on the edges of said portions projecting beyond both faces thereof to engage both load sections for preventing relative shifting of the sections. It is an additional object to provide a blank for such a collapsible pallet load divider tray.

Other and further objects, advantages and features of the invention will be apparent to those skilled in the art from the following description, taken with the accompanying drawings, in which:

Fig. 1 is a perspective view of a plurality of the divider trays employed in a pallet load;

Fig. 2 is a perspective view of a divider tray according to this invention, with a part broken away to show the construction more clearly; and

Fig. 3 is an enlarged fragmentary perspective view of the divider tray in collapsed condition, inverted from the position of Fig. 2.

Referring particularly to Figs. 2 and 3, there is shown a divider tray 10 formed of paperboard which comprises a panel 11 of rectangular shape and having wall members 12 integral therewith. Each wall member is hinged on an edge of the panel 11 by means of a hinging portion 13 extending from an edge of the wall member to the panel edge and swinging about a hinge line 14 extending along the panel edge. The portion 13 and wall member 12 are folded along their com-

mon edge to lie in close, substantially parallel relation, and are secured together by staples 15 adjacent the hinge line. The wall member 12 has a greater extent transversely of the hinge line 14 than the hinging portion 13, so that it extends on both sides of the hinge line while the hinging portion extends on one side only of the hinge line. The wall member is thus hinged intermediate its width or height to the edge of the panel. The ends 16 of the portions of the wall members on the opposite sides of the hinge lines 14 from the hinging portions 13 are formed to extend at an angle of 45° to the hinge lines.

The tray 10 in erected condition as shown in Fig. 2 has the wall members 12 disposed substantially perpendicular to the panel 11, thus providing a dual tray structure with retaining walls extending from both faces of the panel, or two tray portions each bottomed by the panel 11. The tray 10 may thus be disposed with the panel 11 between two parts or sections of a load, and receive portions of both load sections to hold them against relative shifting as more fully explained hereinafter. In collapsed condition of the tray, as shown in Fig. 3, the hinging portions 13 lie in the plane of the panel 11, and the wall members 12 are disposed substantially parallel to the panel. The portions of the wall members on the opposite side of the hinge lines 14 from the hinging portions 13 overlap the marginal portions of the panel. The ends 16 of these wall member portions, by reason of their angular formation, avoid any overlapping of adjacent wall members and permit the wall members to lie flat against the panel 11. In order to erect or collapse the tray 10, it is only necessary to swing the wall members 12 to the desired position.

The tray may be considerably changed in many respects from the particular embodiment disclosed. The panel 11 obviously may be of other than rectangular shape, to conform substantially to the shape of the load sections. The panel may also have its central portion cut away, or otherwise be apertured, to decrease the weight of the tray. Although the wall members 12 are shown as of the same lengths as the panel edges on which they are hinged, this is not necessary in every case. More than one wall member may be hinged on one panel edge. Again, for special applications, wall members may be omitted from one or more of the panel edges. The wall members 12 may be otherwise hinged on the panel edges than by the integral hinging portions 13. For example, the hinging portion may be integral only with the panel and stapled or otherwise secured to the wall member, or the reverse construction might be used. Again, the hinging portion can be separate from both the panel and wall member and suitably secured to both, in which case it can conveniently take the form of a strip or strips of suitable tape adhesively secured to the panel and wall member. The wall members and hinging portions of the disclosed embodiment may be secured together by adhesive or other suitable means instead of the staples 15, if desired. The ends 16 may of course be formed otherwise than as disclosed so as to avoid overlapping in collapsed condition of the tray. The tray may be inverted from the position shown in Figs. 1 and 2, if desired. Similarly, the tray could be collapsed by swinging the wall members so that the hinging portions 13 lie against the panel 11, the ends of the portions and wall members being suitably formed so as not to interfere with each other. Other changes may also be made, if desired.

Paperboard is a preferred material for the tray because it is light enough not to add materially to the weight of the load and strong enough to withstand the stresses imposed on the tray and permit repeated reuse of the tray. The tray may, however, be formed of other materials, as for instance sheet metal or plywood, which has sufficient strength and yet is relatively light. Details of the tray construction may be modified as required by the particular material employed, such as the hinging of the wall members on the panel.

The operation of the tray 10 in the loading of a pallet is best explained in connection with Fig. 1, in which three of the trays are shown as employed in the arrangement of a load on a pallet P. Three sections S of the load are shown as vertically stacked on the pallet, each section in this case being made up of three similar sub-divisions C, which may be cartons, cases, sleeves, or other containers for the articles or material comprising the load, and which are arranged closely against each other. A conventional paperboard tray T, which may be collapsible, is disposed on the pallet to cap the bottom of the bottom section S. One of the trays 10 is disposed over the top of this bottom section with the panel 11 extending horizontally thereover, and the next higher load section is disposed with its bottom on the panel 11. The wall members 12 extend upwardly and downwardly from the panel about the sides of the upper and lower load sections, which are thus both engaged or received in the dual tray structure. The tray 10 is of course made to fit quite snugly about the load sections, so as to prevent undue looseness or play in the load. Another tray is telescoped over the top of the second load section S, and a third load section is placed in this second tray. The addition of trays and load sections may be continued until the desired load has been packed on the pallet P. Then the topmost load section, if desired, may be capped by another tray T and the pallet with its load then may be moved by a lift truck or the like to a desired point.

One way of applying the tray is shown in Fig. 1, in which a third tray 10 is illustrated as partially applied. One end of the tray panel is disposed on an end of the load section with three of the wall members at least partially engaged against the sides of the section, and the other end of the tray then swung down into position on the load section. In applying the tray, the lower parts of the wall members may be swung outwardly so as to avoid any interference from the load, and after they have passed below the top of the load section may be permitted to swing automatically to a position engaging the sides of the load section, by reason of the natural or inherent resilience of the paperboard.

The tray is easily made from a simple blank, the form of which will be clear from Fig. 3, which may be taken as showing the tray in its original collapsed condition when first formed. A single sheet of paperboard is cut to provide a generally cross-shaped blank which is scored to provide a rectangular central panel comprising all of the blank but the arms. This panel, corresponding to the panel 11 of the tray, is defined by the score lines which serve as the hinge lines 14. Each arm of the blank outwardly of the central panel is divided into two panels corresponding to the hinging portion 13 and wall member 12, defined from each other by a score line parallel to the edge of the central panel. To form the tray from

the blank, it is only necessary to fold the blank on the score lines between the panels corresponding to the wall members 12 and hinging portions 13, so that the wall members overlie the hinging portions and the adjacent edge portions of the panel 11, as shown in Fig. 3, and then drive the staples 15. The tray 10 may be left in this collapsed condition for storage or shipment, and set up for use when desired.

It will be seen that the tray prevents relative shifting of the load sections engaged by it, for horizontal movement in any direction of one of the sections relative to the other is resisted by one or more of the wall members. Each wall member bears on both sections, and because of its hinged arrangement acts as a lever to react against the force of the load section which tends to move. In addition, any force applied against the wall members in one direction is resisted by the opposed wall members through the panel 11, the tray 10 thus being somewhat anelogous to a tie member. The load sections are therefore held in substantially fixed position relative to each other.

The tray of this invention provides a means for combining into a single unitary load a plurality of load subdivisions or sections which eliminates any need for crating or encasing the subdivisions or strapping or otherwise tying them together. Since each pair of adjacent sections is held against shifting and each pair has one section common to another pair, all the sections are held against shifting, substantially as though they were disposed in a carton or sleeve. The pallet may easily be loaded, since the load is built up section by section, the open top of each tray 10 being readily available and accesible for deposition of the load components. The loaded pallet may be moved by a lift truck to or from a suitable vehicle or storage space without the use of any means for securing the load to the pallet. The load may similarly be moved to the precise point of use of the contents without requiring any preliminary opening or breaking down of the load. The contents may be unloaded at the point of use by merely lifting the top capping tray T, removing the contents of the top load section S, then removing the topmost tray 10, and so on. No time is lost in opening the load, and no tools are needed. After the contents have been unloaded, the trays 10 may be collapsed and returned with the pallet and the trays T for use with another load, requiring a minimum of space. Under ordinary circumstances and with only ordinary care, the trays may be reused several times.

It should be obvious that the tray is not limited to use with pallets, since it may be used to unify any load of several parts or sections. The sections themselves may be unitary, or may consist of a plurality of items or subdivisions. Although the tray is intended primarily for use with vertically stacked load sections, it may also be disposed vertically between sections of a load to prevent relative shifting in a vertical direction.

From the foregoing, it will be clear that the illustrative embodiment of the invention does not exhaust the inventive concept, and that many changes may be made in the disclosed tray without going beyond the scope of my invention. It is therefore not intended that the invention be limited otherwise than as required by the appended claim, with due regard to the spirit as well as the literal wording thereof.

I claim:

A collapsible load divider formed from a single sheet of paperboard material or the like comprising in its collapsed condition a substantially rectangular panel, inner wall members each hingedly joined to one edge of said panel and extending outwardly in the plane of said panel and outer wall members each hingedly joined to one of said inner wall members, along fold lines parallel to the corresponding edges of said panel, said outer wall members being folded inwardly to overlie the corresponding inner wall members and being secured to the corresponding inner wall members along lines parallel to and adjacent the panel, said outer wall members also having portions extending inwardly over said panel, said portions having their adjacent sections cut away along lines forming oblique angles to their long edges sufficiently to prevent overlapping thereof, whereby the collapsed load dividers may be compactly stacked during storage and shipment.

PAUL A. NEMOEDE.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,092,672	Weber	Apr. 7, 1914
1,818,320	Gorsuch	Aug. 11, 1931
2,534,010	Frye	Dec. 12, 1950