

[54] **PACKING CONTAINER OR THE LIKE**

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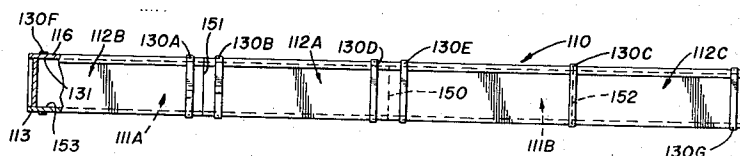
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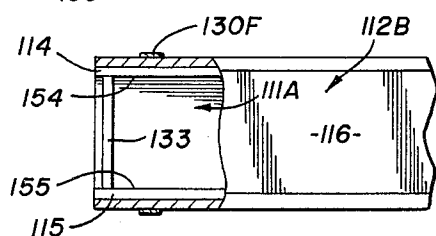
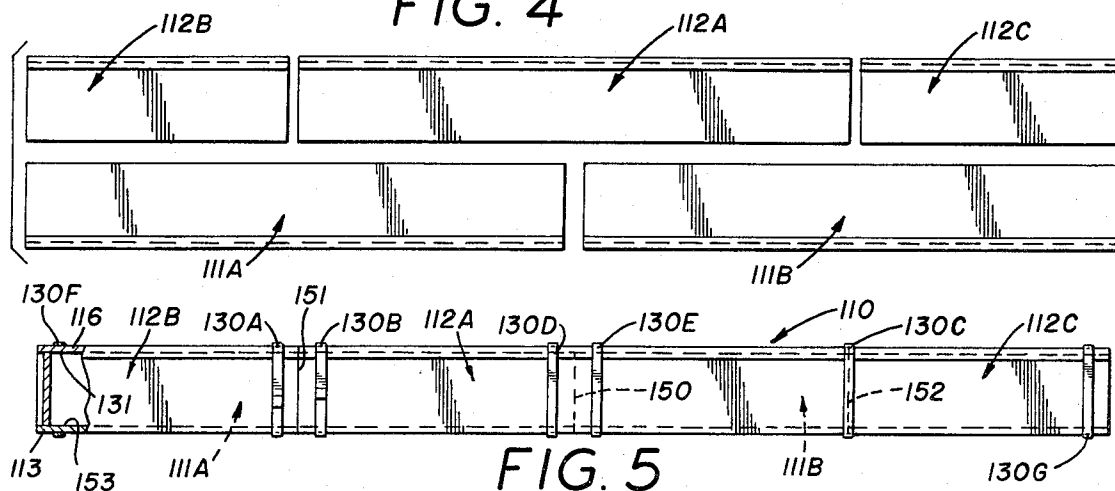
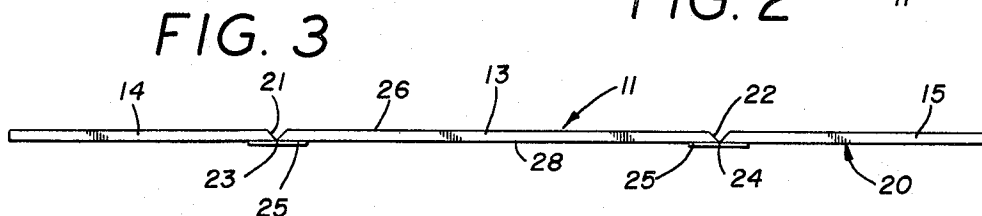
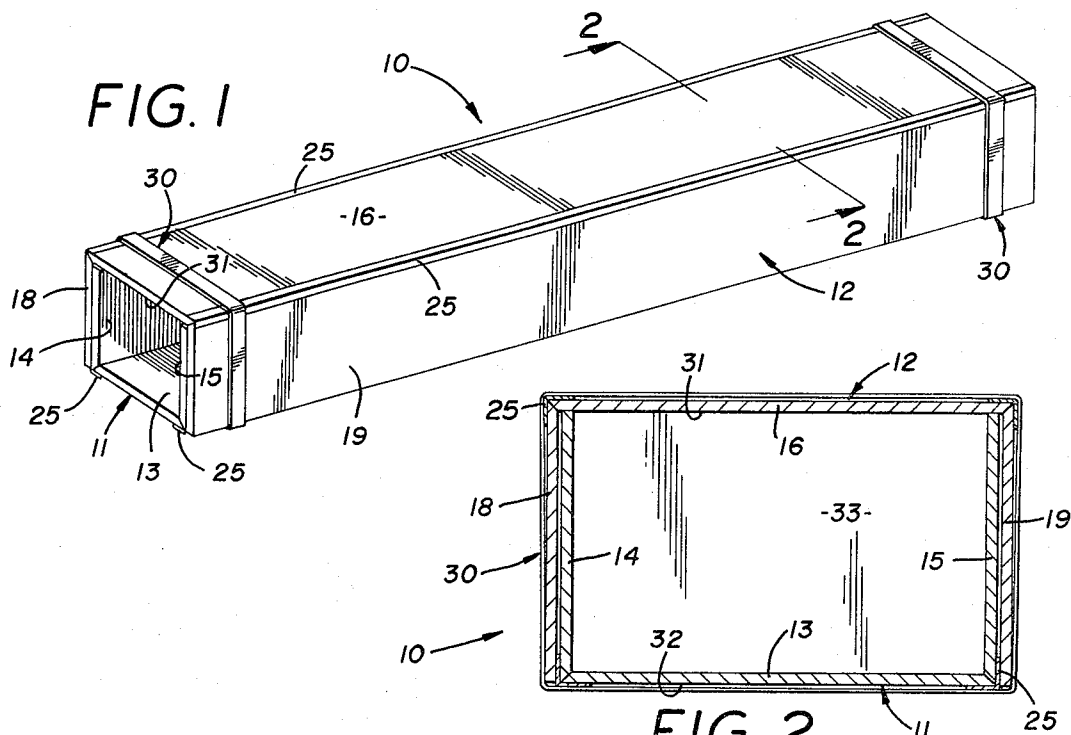
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[57] **ABSTRACT**

A container is disclosed that comprises one or more base units of substantially U-shaped section over which one or more cover units of inverted, substantially U-shaped section are received with the side walls on the cover units contiguously embracing the side walls on the base units. Each base and cover unit is engaged by at least one strap means when the units are assembled as a container. Moreover, when multiple base and/or cover units are employed to provide a composite container of greater overall length than the length of the individual base and cover units, the abutments between successive base units are staggered in relation to the abutments between successive cover units. This result can best be achieved by employing modular base and cover units. In any event, both the base and cover units are preferably folded into their U-shaped configuration from sheet material that has been incised with V-shaped rabbets along predetermined fold lines that are preferably reinforced with hinge means. End closure members may be positioned within the container transversely thereof and retained either by frictional engagement with the base and cover units or other securing means operative therebetween.

5 Claims, 6 Drawing Figures





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PACKING CONTAINER OR THE LIKE

BACKGROUND OF THE INVENTION

The present invention relates as well to containers which facilitate reuse as it does to containers which possess not only structural rigidity but also offer the other major features that epitomize the most desirable attributes for a container.

Containers serve many purposes. Primarily, they are receptacles in which articles may be packed for shipment, but they may also be receptacles for confining their contents to a given locus. In this latter regard, for example, even a concrete form is a container. Heretofore, when structural rigidity was required of a container it was fabricated from lumber. However, the cost of even the lowest grade, green lumber militates against its desirability. In addition, because of the knots and shrinkage cracks inherent to low grade, improperly cured, or green, lumber, experience has shown that approximately a 25 percent loss is occasioned in cutting the lumber to dimensions suitable for making containers.

Other drawbacks attendant upon the use of lumber for shipping containers are legion. For example, if the contents are subject to deterioration upon exposure to the elements, a lining impervious to air and/or water must almost universally be employed with wooden containers. The use of lumber also increases the tare weight, and even that will fluctuate widely in relation to the moisture content of the wood. Such fluctuations have often led to errors in computing the weight of the articles being shipped. Typical of an error in this regard, a container may be weighed empty, loaded and shipped to its destination. At its destination the loaded container is weighed to determine the combined weight of the container and contents. The weight of the contents are then customarily computed by deducting the tare weight from the combined weight. Should the moisture content of the wood have increased between the sequential determination of the tare and combined weights, the weight of the contents would be computed to be greater than they actually are; should the moisture content of the wood have decreased between the sequential determination of the tare and combined weights, the weight of the contents would be computed to be less than they actually are. In either situation the wooden container is the culprit.

Loss of moisture content from the wood also causes any container made therefrom to shrink, if not crack, so that any binding material, such as strapping, will loosen. Moreover, if nails are used rather than strapping, there is always the danger that the contents will be damaged by the careless placement of the nails. Irrespective of how the container is secured, however, a wooden container is by nature bulky so that valuable shipping space is consumed by the container itself.

SUMMARY OF THE INVENTION

It is, therefore, an object of the present invention to provide a container that is structurally sound, weighs considerably less than a wooden container of corresponding strength, obviates the necessity of liners to protect the contents, possesses weight and moisture stability, may be readily reuseable, increases the shipping volume, may be knocked down for facile storage and empty shipment and yet be readily assembled and secured, without the necessity of using nails, to present a smooth exterior.

It is a further object of the present invention to provide a container, as above, that can be assembled of modular components to provide an overall length greater than the length of any individual modular component without seriously impairing either the structural integrity of the container or the other characteristics which exemplify the present container.

These and other objects, together with the advantages thereof over existing the prior art forms which will become apparent from the following specification, are accomplished by means hereinafter described and claimed.

In general, a container embodying the concept of the present invention comprises at least one base unit of substantially U-shaped section and at least one cover unit of inverted,

substantially U-shaped section. The cover unit is received over the base unit with the side walls of the former embracingly engaging the side walls of the latter. So assembled, the units are retained as a container by strap means which bind the perimeter of the assemblage at longitudinally spaced intervals.

The base and cover units may be of modular, longitudinal length so that a plurality of such units can be interfitted to constitute a composite container of greater overall length than the length of any individual modular component. When a plurality of such modular units are assembled as a composite container, the abutments between the successive cover units are staggered in relation to the abutments between successive base units, and each unit is engaged by at least one strap means that binds the outer periphery of the resulting container.

The base and cover units are both well adapted to be manufactured from sheet material by incising a V-shaped rabbet along each of two predetermined fold lines that are preferably reinforced by a hinge means to permit the units to lie flat when not being used as part of a container and yet be readily folded to their U-shaped configuration for assembly as a container.

Two alternative embodiments of the present invention are shown by way of example in the accompanying drawings and described in detail without attempting to show all of the various forms and modifications in which the invention might be embodied; the invention being measured by the appended claims and not by the details of the specification.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of one form of a container embodying the concept of the present invention, this form of the container being assembled with a single cover unit embracingly engaging a single base unit and secured by a pair of longitudinally spaced strap means;

FIG. 2 is an enlarged cross section taken substantially on line 2—2 of FIG. 1;

FIG. 3 is an end elevation of a piece of sheet material that has been incised with two, V-shaped rabbets along predetermined fold lines reinforced by a hinge means so that the material can be stored flat or folded into a base or cover unit;

FIG. 4 is an exploded side elevation of modular base and cover units oriented for assembly as an alternative form of a container embodying the concept of the present invention;

FIG. 5 is a side elevation, partly broken away and partly in section, of a container assembled from the modular units depicted in FIG. 4 and secured by strap means applied in alternative dispositions; and,

FIG. 6 is an enlarged partial top plan, partly broken away, of the container depicted in FIG. 5.

DESCRIPTION OF TWO PREFERRED EMBODIMENTS

Referring more particularly to the drawings, an assembled container embodying the concept of the present invention is identified generally by the numeral 10 in FIGS. 1 and 2. The container 10 has at least one open ended base unit 11 and one open ended cover unit 12. The base unit 11 has a floor portion 13 from the longitudinal edges of which a pair of opposed side walls 14 and 15 extend in generally parallel relation such that the transverse section of the base unit is of substantially U-shaped configuration.

The cover unit 12 has a top portion 16 from the longitudinal edges of which a pair of opposed side walls 18 and 19 extend in generally parallel relation such that the transverse section of the cover unit 12 is of substantially inverted U-shaped configuration.

The base and cover units with which a container embodying the concept of the present invention can be assembled may well be fabricated from sheets of flat, flexible sheet material. As shown in FIG. 3, a base unit 11 may be fabricated from a sheet 20 of material such as Masonite that has been provided with two, laterally spaced, precisely mitered, V-shaped rabbets 21 and 22 incised into one surface 26 of sheet 20 and ex-

tending longitudinally along the medial portion of the sheet. The apex of each rabbet defines respective fold lines 23 and 24 in the opposed surface 28 of sheet 20 and along each of which a strip of pliable, pressure sensitive, adhesive tape 25 may be applied to serve as a hinge means in order to permit the respective side walls 14 and 15 to be folded from a position within the plane of the floor 13 to a position perpendicular to the floor 13, as required to achieve the U-shaped cross sectional configuration of a base unit 11.

The two strips of tape 25 may also be employed to prevent the side walls 14 and 15 from moving laterally away from the floor portion 13 and thereby maintain the contiguous relationship of the side walls 14 and 15 to the floor portion 13 along the corresponding fold lines 23 and 24 during those occasions when the base unit is not rigidly confined by the strap means 30 (hereinafter more fully described) as a component of the container 10.

Although the base and cover units may be formed by any desired method on any desired apparatus, the method disclosed in U.S. Pat. No. 3,456,701, and the apparatus disclosed in U.S. Pat. No. 3,322,171 are particularly well adapted for the manufacture of such units and reference to the disclosures therein may be made for the details of constructing the base and the cover units.

Referring again to container 10, as depicted in FIGS. 1 and 2, for a more detailed disclosure of the dimensional relationship between the base and cover units which ensure the structural integrity of the container, the width of the top portion 16 with respect to the width of the floor portion 13 is such that when the cover and base units are assembled the side walls 18 and 19 of the cover unit 12 contiguously embrace the side walls 14 and 15 of the base unit 11. That is, the width of the top portions 16 equals the width of the floor portion 13 plus the thickness of the two side walls 14 and 15.

In addition, when the units 11 and 12 are assembled, the greatest beam strength for the resulting container 10 is achieved if the side walls 14 and 15 of the base unit 11 extend sufficiently outwardly of the floor portion 13 substantially to engage the inwardly facing surface 31 on the top portion 16. By the same token, the side walls 18 and 19 of the cover unit 12 preferably extend outwardly of the top portion 16 a generally similar distance, but in any event should not extend beyond the plane delineated by the outer surface 32 on the floor portion 13.

As best shown in FIG. 1, strap means 30, such as the well-known prior art metallic bands, are employed to bind the perimeter of the assembled base and cover units 11 and 12 at longitudinally spaced intervals. In fact, such strap means can be applied to the exterior periphery of the container 10 with sufficient tension that they not only bind the base and cover units 11 and 12 together but also secure one or more end closure members 33 (FIG. 2) oriented transversely within the container by the frictional engagement of the closure member 33 with the floor portion 13 and the opposed side walls 14 and 15 of base unit 11 and with the top portion 16 of cover unit 12. Although a purely frictional engagement of this nature is wholly satisfactory and does facilitate a selective longitudinal location of the closure members 33 so as to provide the spacing therebetween necessary to accommodate the longitudinal extent of whatever may be placed within the container, other securing means may also be employed. For example, one or more of the walls on either the base or cover units in contact with the closure member may be rabbeted to receive the corresponding edge of the closure member. In fact, even staples, nails or the like may, if desired, be used to secure the closure members 33 within the container.

Strap means of this nature may be employed with equal facility irrespective of whether the cover and base units 11 and 12 each extend the full length of the container 10 or are modular units in a composite container 110, as depicted in FIG. 5.

When, because the length of the desired container exceeds the conventional length of the sheet material from which the

base and cover portions can be fabricated or because it is desired to ship or store the component portions of the container in lengths less than the length of the container itself, modular units can be employed. Container 110 embodies a modular assembly. Specifically, two full base units 111A and 111B are combined with one full cover unit 112A and two partial cover units 112B and 112C so that the abutment 150 of the two base units 111A and 111B is staggered in relation to the abutments 151 and 152 of the cover unit 112B with cover unit 112A and the cover unit 112A with cover unit 112C, respectively. Although it is mandatory that the alternate abutments be staggered in order to assure the structural integrity of the composite container 110, the mathematical relationship of the modular units need not be such that the partial unit be exactly half of the full unit, even though a ratio of that nature provides the optimum alternate spacing between successive abutments of the cover and base units. Because the length of the full modular units need not conform to an exact mathematical relationship to the length of partial units, anyone desiring to use composite containers 110 may customize them to the exact length of the goods being shipped merely by stocking a plurality of pre-grooved sheets 20 in a standard length and cutting the sheets from which the last cover and/or base units are folded for each composite container 110 to the required length.

In order sufficiently to bind a modular container 110 it is necessary that a sufficient number of strap means 130 be used to bind the perimeter of the container 110 so that each base unit 111 and each cover unit 112 will be engaged by at least one strap means. The beam strength of the container 110 has been found to be enhanced by employing strap means within 18 inches on each side of the abutments between successive modular units. As shown in FIG. 5, a strap means 130A is employed within 18 inches on the left side of abutment 151 and strap means 130B is employed within 18 inches on the right side of abutment 151. In some situations a sufficient binding can be achieved by employing a single strap means to engage two successive cover portions. As is also shown in FIG. 5, a single strap means 130C may thus be employed to span the abutment 152 and simultaneously engage both cover units 112A and 112C. It is also preferable to provide strap means cooperative to engage base units 111A and 111B within 18 inches on either side of abutment 150. This may be accomplished by a pair of strap means 130D and 130E, as shown, or, again, by use of a single strap means (similar to strap means 130C) that spans abutment 150.

In addition, end straps 130F and 130G may be employed to secure the ends of container 110 and also to retain the closure members 133 by their frictional engagement with the base and cover units 111 and 112. As shown in FIG. 5, the inner surface 153 on the floor portion 113 of base unit 112A and the inner surface 131 on the top portion 116 of the cover unit 112A as well as the inner surfaces 154 and 155 on the respective side walls 114 and 115 of the base unit 111A, as shown in FIG. 6, frictionally engage the peripheral edges of the end closure member 133 within the container 110.

Irrespective of whether the container is assembled from a single base unit and a single cover unit or whether either or both of the base and cover units are modular, they may be readily disposed in their flat, breakdown configuration (FIG. 3) for storage or shipment empty and then readily folded to their respective U-shaped configurations for assembly as containers. As such, they will by and large not be required to be glued, although for some uses it may be desirable that glue be applied along the V-shaped rabbets 21 and 22 to secure the base and/or cover units in a permanently U-shaped configuration.

In view of the foregoing disclosure it should now be apparent that a container embodying the concept of the present invention possesses those characteristics that epitomize the desired attributes for a container and otherwise accomplish the objects of the invention.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

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1. A container comprising, a base unit having a floor portion and opposed side walls disposed with respect to each other such that the transverse section of the base unit is of substantially U-shaped configuration, a cover unit having a top portion and opposed side walls disposed with respect to each other such that a transverse section of the cover unit is of inverted, substantially U-shaped configuration, the side walls of said cover unit contiguously embracing the side walls of said base unit when said units are assembled as a container, said base and cover units being assembled in abutting, multiple, modular units, the abutment of those modular units comprising said cover being staggered with respect to those modular units comprising said base, and strap means binding the perimeter of said assembled units at longitudinally spaced intervals.

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tervals.

2. A container as set forth in claim 1, in which each cover and base unit is engaged by at least one strap means.

3. A container, as set forth in claim 1, in which at least one strap means binds the perimeter of said container between the staggered abutments on the successively abutted base and cover units.

4. A container, as set forth in claim 1, in which the strap means straddle the abutments between at least selected of the successive base and cover units.

5. A container, as set forth in claim 1, in which the strap means are spaced no more than 18 inches on either side of the abutments between successive modular base and cover units.

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