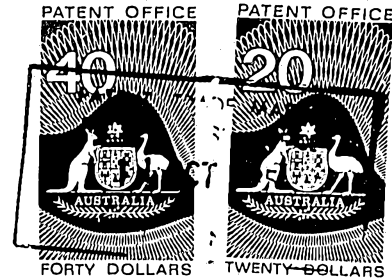


602494

COMMONWEALTH OF AUSTRALIA

The Patents Act 1952-1973

APPLICATION FOR A PATENT



We,

Joseph Alexander & Ivy May ROWLAND

of

M.S. 305, The Hammock, BUNDABERG QUEENSLAND 4670

hereby apply for the grant of a Patent for an invention entitled:

"IMPROVED TRANSPORTATION DEVICE"

which is described in the accompanying Provisional/Complete Specification.

Our address for service is: C/- G.R. Cullen & Company, Patent Attorneys, of Medibank Building, 82 Ann Street, Brisbane, in the state of Queensland, Commonwealth of Australia.

DATED this ELEVENTH day of OCTOBER 1985.

JOSEPH ALEXANDER ROWLAND and IVY MAY ROWLAND

By their Patent Attorneys G.R. CULLEN & COMPANY,

*P.C. Fisher*

P.C. FISHER.

To: The Commissioner of Patents, Commonwealth of Australia.

APPLICATION ACCEPTED AND AMENDMENTS

RECEIVED 2-8-90

COMMONWEALTH OF AUSTRALIA  
THE PATENTS ACT 1952

DECLARATION IN SUPPORT OF AN  
APPLICATION FOR A PATENT

In support of the Application made for a patent  
for an invention entitled:  
"IMPROVED TRANSPORTATION DEVICE"

Insert  
Title of Invention

Insert  
Full Name(s) and  
Address(es)

I/~~W~~ Joseph Alexander ROWLAND  
of M.S. 305, The Hammock, BUNDABERG, Queensland, 4670

Insert Full Name(s)  
of applicant(s)

do solemnly and sincerely declare as follows:—  
1. I and my wife Ivy May ROWLAND are the applicants  
~~I am the applicant(s) for the patent -~~  
(or, in the case of an application by a body corporate)

~~I am the applicant(s)~~

~~the applicant(s) for the patent to make this declaration on his/her behalf.~~

2. I am/~~W~~ the actual inventor(s) of the invention referred to in the basic  
application(s)

~~(or, in the case of an application by a body corporate)~~

Full Name(s) and  
Address(es) of  
inventor(s)

~~I~~

State how Applicant(s)  
derive title from inventor(s)  
e.g. The Applicant(s)  
is/are the assignee(s) of the  
invention from the  
inventor(s)

~~I am the actual inventor(s) of the invention and the facts upon which the  
applicant(s) is/are entitled to make the application are as follows:—~~  
Ivy May ROWLAND is entitled to make application are  
as follows:—

I have assigned a part interest in the invention  
to Ivy May ROWLAND.

\*Note: Paragraphs  
3 and 4 need only be  
completed for a  
Convention Application

~~3. The basic application(s) as defined by Section 141 of the Act was/were made~~

Basic Country(ies)  
Priority Date(s)  
Basic Applicant(s)

in ..... On .....  
by .....  
in ..... On .....  
by .....

The basic application(s) referred to in paragraph 2 of this Declaration was/were  
the first application(s) made in a Convention country in respect of the invention(s)  
~~the subject of the application.~~

Declared at Bundaberg Queensland this 21<sup>st</sup> day of October 1986

To: The Commissioner of Patents

..... J. A. Rowland .....

Signature of Declarant(s)  
Joseph Alexander Rowland

CULLEN HALFORD & MAXWELL

---

**(12) PATENT ABRIDGMENT (11) Document No. AU-B-63848/86**  
**(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 602494**

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(54) Title  
PALLET WITH ARTICLE LOCATING RECESSES

International Patent Classification(s)  
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(60) Related to Provisional(s) : PH2858

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(56) Prior Art Documents  
AU 15722/88 B65D  
GB 2175878  
US 3563184

(57) Claim

1. A reversible pallet for supporting containers comprising:

a pair of spaced substantially parallel support planes interconnected by one or more web members.

the spacing between said support planes allowing tynes of a pallet elevating apparatus to pass between said support planes to support the pallet above a ground surface,

each support plane including a plurality of container locating recesses to locate and support containers in an upright position, the recesses on one of said support planes being axially aligned with the recesses on the other of said support planes, and

a plurality of spacing members connected to and extending from each of the support planes to space each

(11) AU-B-63848/86

-2-

(10) 602494

support plane from a respective ground surface to allow tynes of a pallet elevating apparatus to pass between said support planes and the respective ground surface to support the pallet above the ground surface.

602494

This document contains the amendments made under Section 49 and is correct for printing.

LODGED AT SUB-OFFICE

13 OCT 1986

Brisbane

63848/86

COMMONWEALTH OF AUSTRALIA

The Patents Act 1952-1969

Name of Applicant: Joseph Alexander ROWLAND &  
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Australia.

COMPLETE SPECIFICATION FOR THE INVENTION ENTITLED:

"IMPROVED TRANSPORTATION DEVICE"

The following statement is a full description of the invention including the best method of performing it known to us:

This invention is concerned with improvements in transportation of articles and in particular to transportation of articles on pallets or the like.

With rising labour costs and regulatory controls over materials handling procedures considerable effort has been expended in the developments of efficient procedures.

Amongst these, notably, is the use of palletized load handling procedures. By means of palletized loads and fork lift trucks, goods can be loaded and unloaded from vehicles, handled and stored in a safe and efficient manner with a minimum of labour content.

Certain difficulties arise however in handling certain articles such as cylindrical storage drums and light weight bulky articles such as cartons of breakfast cereals etc.

The following discussion will be limited to handling of storage drums for the sake of clarity although it is to be understood that the invention is not limited thereto but in fact is applicable to a wide range of articles.

Storage drums for fluid and particular materials come in a wide variety of shapes and sizes. In consequence only a finite number of drums may be loaded onto the surface of a timber or steel pallet of a standard size.

In the case of large drums such as the conventional "44 gallon" steel drum or drums of similar volume and dimensions, handling transportation and storage of full

drums does not create particular difficulties as when full their weight and size confer sufficient stability for most handling transportation and storage procedures particularly when pallet loads of drums are stacked one upon another.

5 The main difficulty arises in handling and transportation of empty drums as it is difficult to prevent load shifting due to vehicular motion when several pallet loads are stacked upon the other. For this reason empty 44 gallon drums are usually transported horizontally on their cylindrical axes  
10 in large caged vehicles to contain the drums. It is not possible to safely stack such drums directly on their respective ends. Accordingly empty drums must be therefore loaded and unloaded manually and usually this causes empty drums to be stored only on ground level which unnecessarily  
15 wastes available storage space. Poor handling techniques also result in considerable damage to drums and kegs thus necessitating high replacement costs.

Smaller drums such as 4 litre paint pails are usually stacked in layers with a sheet of cardboard or  
20 plywood therebetween to provide a stable support surface for successive layers. A fully loaded pallet (usually about 1 tonne in weight) may have from four to six layers of pails and to provide sufficient stability for both handling and transportation as well as the ability to store pallet loads  
25 one upon the other, the palletized transportation modules are shrink-wrapped in a plastics film. Although generally suitable for handling transportation and storage, such

shrink-wrapped modules confer a considerable degree of inflexibility in handling procedures. Accordingly consignments of paint or the like in quantities smaller than a "standard" pallet load must be handled by less efficient and space consuming methods.

A particular problem arises in the handling of non-cylindrical drums such as plastics chemical storage drums and beer kegs having end diameters smaller than their intermediate diameters. The problem is even further exacerbated in the case of beer kegs which have raised intermediate girth band.

It is an aim of the present invention to provide an apparatus which overcomes or alleviates certain of the problems associated with prior art palletized handling transportation and storage systems, particularly in the case of storage drums and most particularly in the case of beer kegs.

According to the present invention there is provided a reversible pallet for supporting containers comprising:

a pair of spaced substantially parallel support planes interconnected by one or more web members.

the spacing between said support planes allowing tynes of a pallet elevating apparatus to pass between said support planes to support the pallet above a ground surface, each support plane including a plurality of





container locating recesses to locate and support containers in an upright position, the recesses on one of said support planes being axially aligned with the recesses on the other of said support planes, and

5 a plurality of spacing members connected to and extending from each of the support planes to space each support plane from a respective ground surface to allow tynes of a pallet elevating apparatus to pass between said support planes and the respective ground surface to support the pallet above the ground surface.

Suitably, the support planes comprise a substantially planar sheet of metal, timber or the like or it could comprise a frame fabricated from metal, timber, plastics or a combination thereof.

15 The container locating recesses may comprise raised projections extending above said support plane, said projections defining container locating recesses or the locating means may comprise recessed regions extending below said support plane of the body member.

20 Preferably the spacing members comprises means to elevate a respective support plane above a ground surface to an extent sufficient to permit the tynes of a fork lift or like device to pass thereunder for elevation of the apparatus. The spacing members may comprise three or more legs, two or more spaced, downwardly projecting ribs or the  
25 spacing members may comprise raised projections defining container locating recesses.



In a preferred embodiment the raised projections defining the container locating recesses are tapered inwardly from their outermost to innermost regions.

5 In a most preferred embodiment the apparatus comprises a first support plane defining a plurality of container locating apertures and a substantially identical second support plane spaced therefrom by web members, the apertures of the respective first and second frameworks being aligned.

10 Preferred embodiments of the invention will now be



described with reference to the accompanying drawings in which:-

FIG 1 illustrates a pallet for beer kegs and the like.

5 FIG 2 shows the apparatus of FIG 1 in a stacked configuration.

FIG 3 shows a cross sectional view of the article locating means.

FIG 4 shows yet a further embodiment.

10 FIG 5 shows an alternative embodiment.

FIG 6 shows a more preferred embodiment.

FIG 7 shows a part cross sectional view through yet a further embodiment of the invention.

FIG 8 shows the embodiment of FIG 7 in use.

15 FIG 9 shows preferred cross sectional shapes for metal members used in pallets for "drum" type kegs.

FIG 10 shows preferred cross sectional shapes for metal members used in pallets for "barrel" type kegs.

FIGS 11-13 show other embodiments of the invention.

20 As used hereinafter the reference to "drum" type kegs means kegs having substantially upright cylindrical walls whereas "barrel" type kegs refers to kegs having tapered ends with a diameter less than the intermediate diameter of the keg body.

25 In FIG 1 the apparatus comprises a planar body 1 formed from a sheet of metal (such as aluminium or the like) timber (such as plywood) or a plastics material or

• composite.

At suitably spaced locations are circular apertures 2, each surrounded by an upstanding peripheral rim or collar 3. The dimensions of the apertures and rims are chosen to accurately locate beer kegs 4 in spaced relationship to permit the tynes of a fork lift truck to pass between adjacent rows of kegs from any side of body 1.

Alternatively the tynes of the fork lift truck may support the body 1 towards its outer edges.

10 The underside (not shown) of the apparatus is substantially identical in appearance with downwardly extending collars 3 providing sufficient ground clearance for the fork life tynes to pass under the body 1 when it rests upon a ground surface.

15 FIG 2 shows one mode of operation of the apparatus. For storage purposes it may be required to have a first layer of kegs resting upon a ground surface 5. The kegs are placed at suitable spaced intervals whereby a loaded pallet according to the invention may be placed  
20 directly on the kegs below. If required successive pallet loads of kegs may be loaded one upon the other.

In the embodiment shown in FIG 2, collars 3 comprise substantially cylindrical members, the diameter of which is chosen to firmly engage the respective upper or  
25 lower tapered regions of the keg in such a manner as to permit the kegs to just come into contact or preferably keep them slightly apart as shown. In this manner the respective

. upper and lower tapered regions of the keg are firmly wedged thereby conferring great stability to a stack comprising a plurality of layers of kegs. In use however it is preferred that even the base layer is supported in a pallet according 5 to the invention as this not only ensures stability but it ensures that the base layer of kegs is accurately aligned to receive the subsequent layer on a pallet.

FIG 3 illustrates in cross section an alternative configuration of collar. The collar comprises an inwardly 10 tapering wall 6 from its upper and lower apertures 7, 8 to a central region 9. The walls may be tapered as shown to complement the tapered walls of specific articles such as beer kegs 10 or they may include tapered walls simply to assist in accurate location of drums on the pallet, with or 15 without a wedging engagement between the drum and the internal wall of the collar.

FIG 4 shows an alternative embodiment wherein a pallet 12 of conventional construction may be adapted in accordance with the present invention.

20 A plurality of article locating collars may be attached to the surface of a conventional pallet or a new support surface 10 may be fabricated from pressed metal or moulded plastics. The support surface 10 includes spaced upstanding peripheal rims 11 formed in the sheet of metal or 25 plastics and the support surface may be permanently or temporarily attached to the underlying pallet by means of nails, screws or like fasteners or glue. Preferably the

• support surface 10 includes a peripheral downturned flange which will permit the device to firmly locate on the pallet surface without fastening means. Where several pallet loads of articles are to be stacked one upon the other, a support  
5 surface 10 is used on both sides of the pallet to enhance stability of the multi-layer stack. According to this aspect of the invention interchangeable support surfaces may be used for handling transportation and storage of a wide range of specific articles by means of an inexpensive pallet  
10 adaptor without the need for specially constructed pallets.

A further advantage of this aspect of the invention is that by appropriate selection of pallet adaptors stacks comprising different palletized layers of articles may be constructed in a stable interlocking fashion.

15 In FIG 5 the base 15 is comprised of a sheet of metal such as aluminium or steel and includes a peripheral flange 16.

Disposed over both the upper and lower surfaces of the base 15 are annular locating rings 17 having outwardly  
20 tapered walls 18. The corners may be rounded as shown or may be square as shown in broken outline. The spacing of the locating rings is chosen to permit the tynes 19 of a fork lift to pass therebetween.

About the periphery of the pallet are apertures 20  
25 in the flange 16. These apertures may be used for attachment of strapping or some other form of tie to secure the articles on the pallet. Apertures 21 may also be

. incorporated in the pallet base to suit handling by a "HYAB" hoist or the like by means of hooks and slings or the like.

FIG 5a is a cross section through B-B in FIG 5.

FIG 6 shows a more preferred embodiment comprising 5 a rectangular upper frame 30 separated from a substantially identical lower frame 31 by means of spacers 32. The frames 30 and 31 each include a peripheral frame 30a and 31a respectively and the area bounded by the peripheral frame is subdivided into article locating apertures 33 by subdividing 10 frame members 34.

Frames 30 and 31 (including subdividing frame members 34) may be fabricated from rectangular or round metal tubing, roll formed sections including channel, C-section channel and the like.

15 The apertures 33 are so dimensioned as to permit engagement between an article and the frame 30 (or 31) whereby the article protrudes only partially into the space 35 between frame members 30 and 31 or the article does not protrude at all into the space 35. In this manner 20 sufficient space is provided between frame members 30 and 31 and articles located therein so as to allow the tynes of a fork lift to pass between the frame members 30, 31 from any side without contacting the articles. If required, alternate means may be provided to enable handling by a fork 25 lift truck. Such means may include a transversely extending flange arranged about the periphery of a frame or it may include a channel section member such as a C-section channel

. extending about the periphery of the frame.

Where the articles to be located in the apertures 33 possess a shouldered abutment or flange which can engage on the upper surface 36 of frame 30 (and similarly a lower surface of frame 31) the inwardly facing sides 37 of the frame members surrounding each aperture 33 may be either upright or tapered. In the absence of such a locating shouldered abutment or flange, the inwardly facing sides 37 are preferably tapered to wedgingly engage the article to be located in apertures 33.

FIGS 7 and 8 show yet another embodiment of the invention. The pallet 40 comprises a pair of spaced frames 41, 42 having a grid like configuration as shown generally in FIG 6. The frames 41, 42 are separated by angled corner members 43 providing raised leg-like supports when resting upon a ground surface as shown in FIG 8. Corner members 43 extend substantially equally beyond the respective upper and lower edges of frames 41, 42 such that each side of the pallet 40 is identical without having normally upper and lower surfaces.

In FIG 7 the frames 41, 42 are constructed of frame members 44 having a right angle cross section. In this manner the lower edges of "drum" type kegs 45 are supported on the horizontal flanges 44a whereas the drums are firmly located in respective apertures by engagement of their side walls 46 with the upright flanges 44b of the frame members 44.



FIG 8 shows a pallet resting upon a ground surface and located therein are "barrel" type kegs. For greater security during transportation a resilient or non-resilient mesh like net 47 may be attached to clips 48 attached to frame members 41, 42 or the clips may be attached to the net 47 and adapted to engage the frame members 41, 42.

In the manufacture of pallets according to the invention durable metal frame members are preferred. Such frame members may comprise roll formed steel or aluminium sections or extruded aluminium and the cross sectional shape may be selected depending upon the nature of the containers to be transported.

FIG 9 shows a variety of cross sections which may be utilized in the manufacture of pallets for handling "drum" type kegs.

FIG 9a shows a composite roll formed member which may be used for the intermediate frame members whereas FIG 9b shows a frame member suitable as the outer or peripheral frame member. The composite member of FIG 9a is suitably formed by a pair of frame members shown in FIG 9b. If required the composite members may be attached by welding or the like at abutting surfaces.

FIGS 9c and 9d show respectively equivalent intermediate and peripheral frame members formed from extruded aluminium.

FIG 10 shows alternative cross sectional frame shapes suitable for "barrel" type kegs. Kegs 10a, 10b show

• respectively extruded aluminium intermediate and peripheral frame members whereas FIG 10c and 10d show respectively intermediate and peripheral frame members roll formed from metal.

5            Each of the sections 10a, 10b, 10c, 10d have tapered normally inwardly facing surfaces comprising an upper tapered surface 50 and a lower surface 51 having an increased taper angle to at least partially support the keg on its radiussed lower edge.

10           The tapered faces 50, 51 serve to wedgingly engage the substantially correspondingly tapered walls of "barrel" type kegs although with suitable modification such sections could be adapted to engage upright cylindrical walls of "drum" type kegs.

15           To enhance the wedging effect the lower edge 52 of the intermediate members may be non-continuous enabling a resilient deformation of faces 50, 51 when kegs are located in a pallet.

20           FIG 11 shows another embodiment of the invention formed from pressed metal.

            Upper and lower frame members 60, 61 are formed from sheet metal by a pressing operation. Each frame member 60, 61 comprises an upper generally planar surface 62 in which are formed spaced depressions 63 to locate an article  
25 or container such as a keg. About the periphery of the upper surface 62 is a downwardly depending skirt 64 having at its lower edge an outwardly extending flange 65. The

pallet is assembled by placing the respective flanges 65 of a pair of pressed metal frame members 60, 61 into abutting relationship and joining them by welding or other mechanical means.

5 Support legs 66 may then be attached on each corner or alternatively the support legs may be integrally formed during the pressing operation as shown at 67.

10 The structure of FIG 11 can thus use a relatively light gauge sheet metal in the pressing operation but once assembled gives rise to a lightweight and sturdy, rigid construction. If required deformation under load may be reduced or substantially alleviated by introducing a lightweight rigid plastics foam such as polyurethane into the interior of the pallet. If required the pallet of FIG 15 11 may be moulded or fabricated from plastics materials.

When constructed of lightweight high strength steel or aluminium the article handling pallets according to this more preferred embodiment will be found no heavier but certainly more durable than conventional timber pallets. 20 The pallets when loaded with articles may be safely and securely stacked one upon the other to provide a very stable structure with the articles firmly and positively located at their upper and lower regions.

FIG 12 shows a pressed metal pallet 70 suitable for 25 non-stacking or single layer handling.

FIG 13 shows a pressed metal pallet 71 for stackable operation enabling handling of several layers of

drums, pegs or the like. This embodiment may be  
conveniently manufactured by joining together a pair of  
pressed metal pallets 70 as shown in FIG 12. The pallet  
halves 70 are suitable joined at their corners by upstanding  
5 leg members 72 and if required intermediate webs 73.

It will be clear to a skilled addressee that many  
modifications and variations may be made to the invention  
without departing from the spirit or scope thereof.

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THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A reversible pallet for supporting containers comprising:

a pair of spaced substantially parallel support planes interconnected by one or more web members.

the spacing between said support planes allowing tynes of a pallet elevating apparatus to pass between said support planes to support the pallet above a ground surface,

each support plane including a plurality of container locating recesses to locate and support containers in an upright position, the recesses on one of said support planes being axially aligned with the recesses on the other of said support planes, and

a plurality of spacing members connected to and extending from each of the support planes to space each support plane from a respective ground surface to allow tynes of a pallet elevating apparatus to pass between said support planes and the respective ground surface to support the pallet above the ground surface.

2. The pallet as claimed in claim 1, wherein said support planes are formed from a sheet or plate like material.

3. The pallet as claimed in claim 1 or 2, wherein said one or more web members comprise struts spaced about the periphery of the support planes.

4. The pallet as claimed in any one of the preceding claims, wherein said container locating recesses comprise



recessed regions extending below the respective support plane.

5. The pallet as claimed in claim 4, wherein said recessed regions include a substantially planar floor portion and a peripheral side wall.

6. The pallet as claimed in claim 5, wherein said recessed regions are integrally formed with the respective support plane.

7. The pallet as claimed in any one of claims 4 to 6, wherein said recessed regions are substantially circular when viewed in plan.

8. The pallet as claimed in any one of the preceding claims, wherein said plurality of spacing members are spaced about the periphery of said support planes.

9. The pallet as claimed in any one of the preceding claims, wherein said plurality of spacing members extend at right angles from each respective support plane.

10. The pallet as claimed in any one of the preceding claims, wherein each said support plane is substantially rectangular when viewed in plan and the plurality of spacing members are located adjacent the corners of the support planes.

11. The pallet as claimed in any one of the preceding claims, wherein the tynes of an pallet elevating apparatus can pass between said pair of support planes along a plurality of axis.



12. The pallet as claimed in any one of the preceding claims, wherein the tynes of a pallet elevating apparatus can pass between the spacing members along a plurality of axis.

13. A pallet substantially as hereinbefore described with reference to figure 13.

DATED this twenty-fifth day of July 1990.

JOSEPH ALEXANDER ROWLAND & IVY MAY ROWLAND

By Their Patent Attorneys

CULLEN & CO



FIG. 1

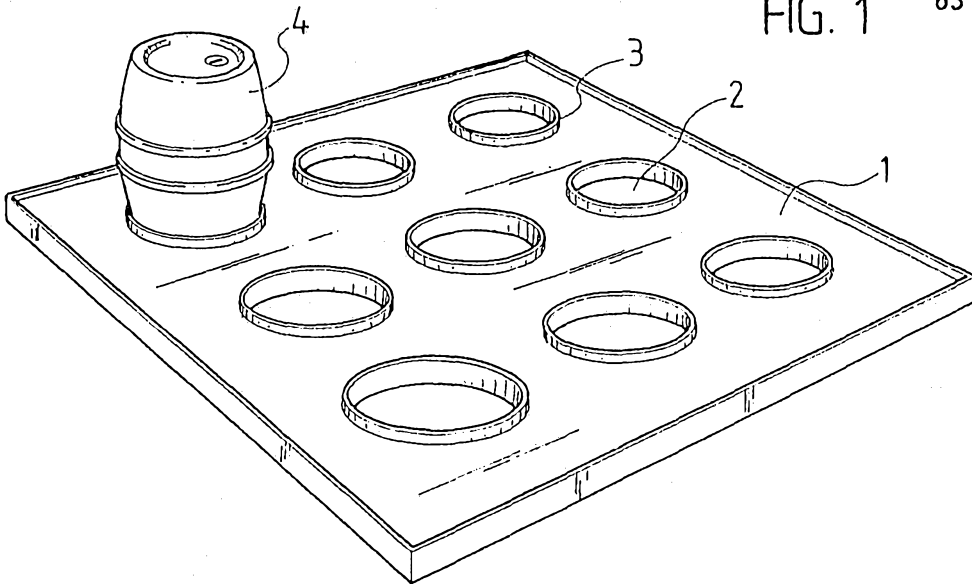
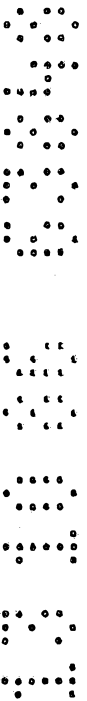
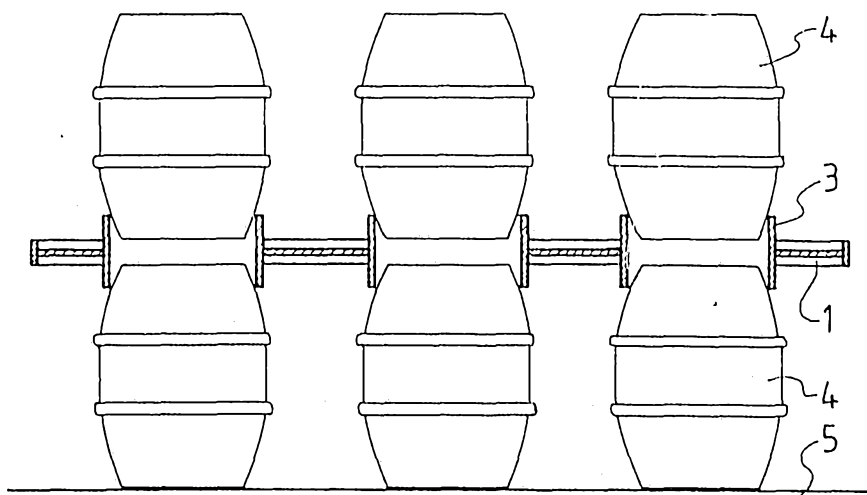


FIG. 2





63 848/86

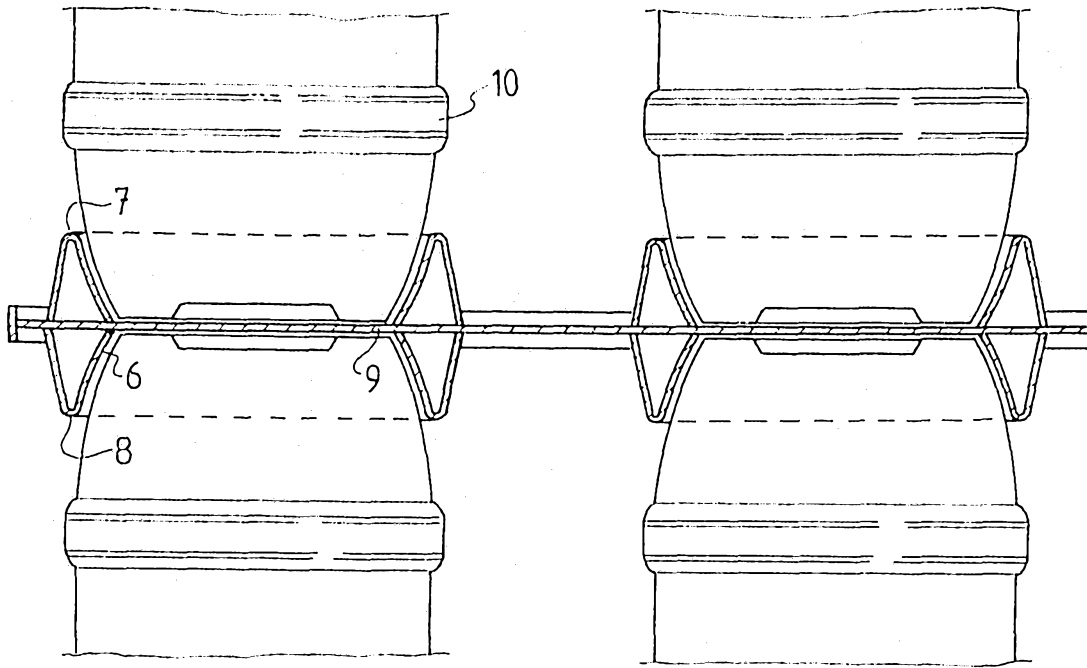


FIG. 3

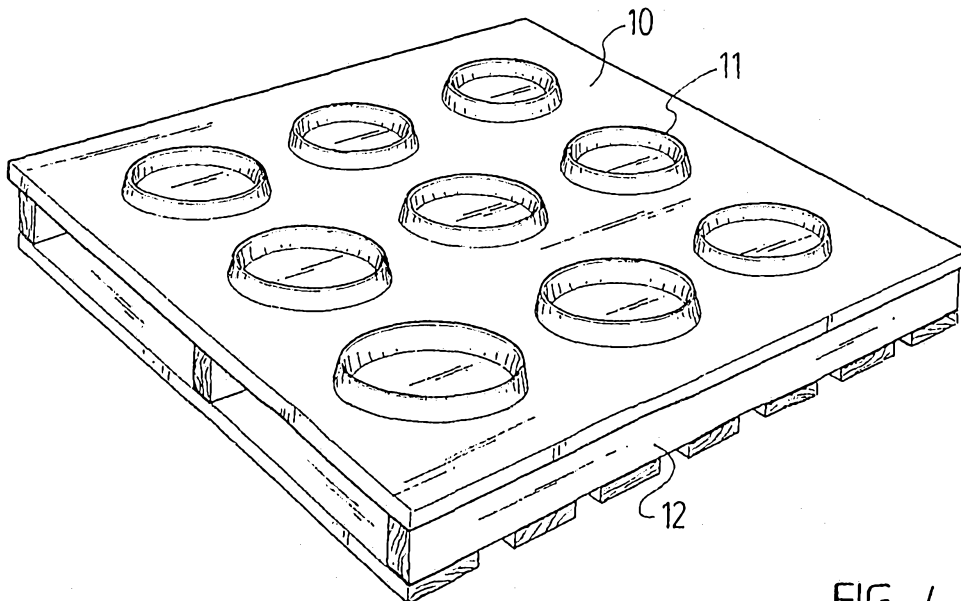
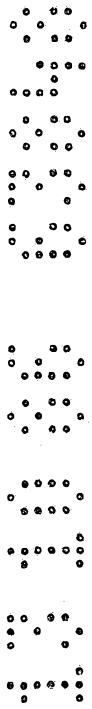


FIG. 4



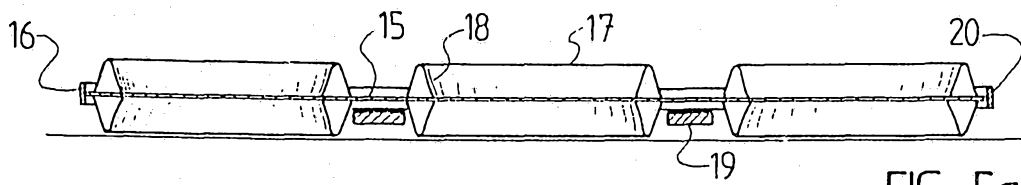


FIG. 5a

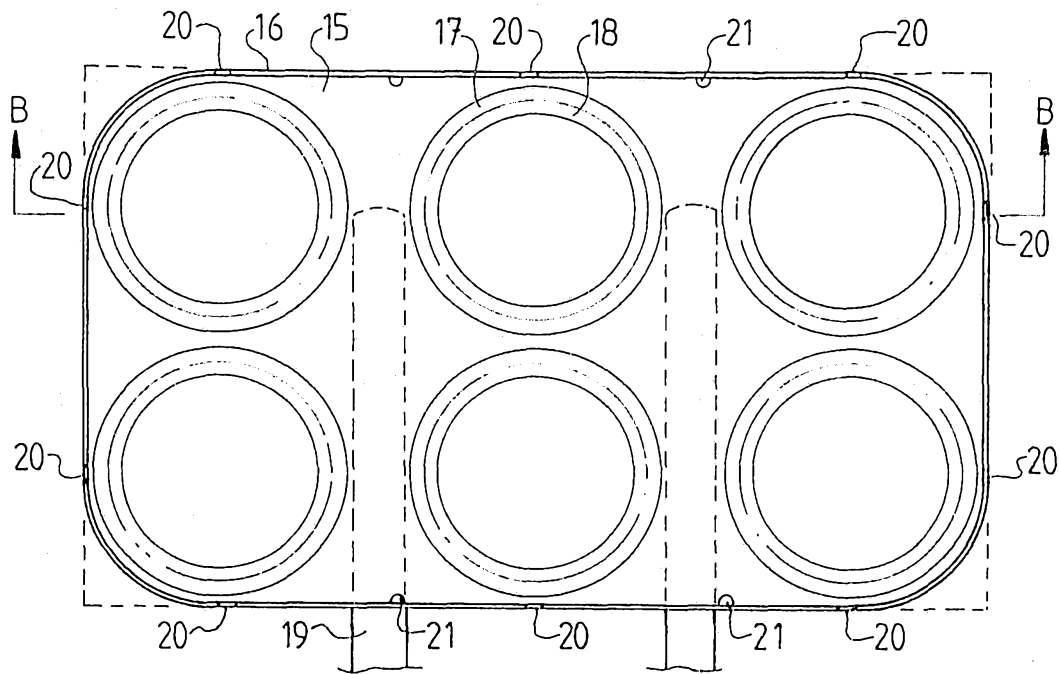


FIG. 5

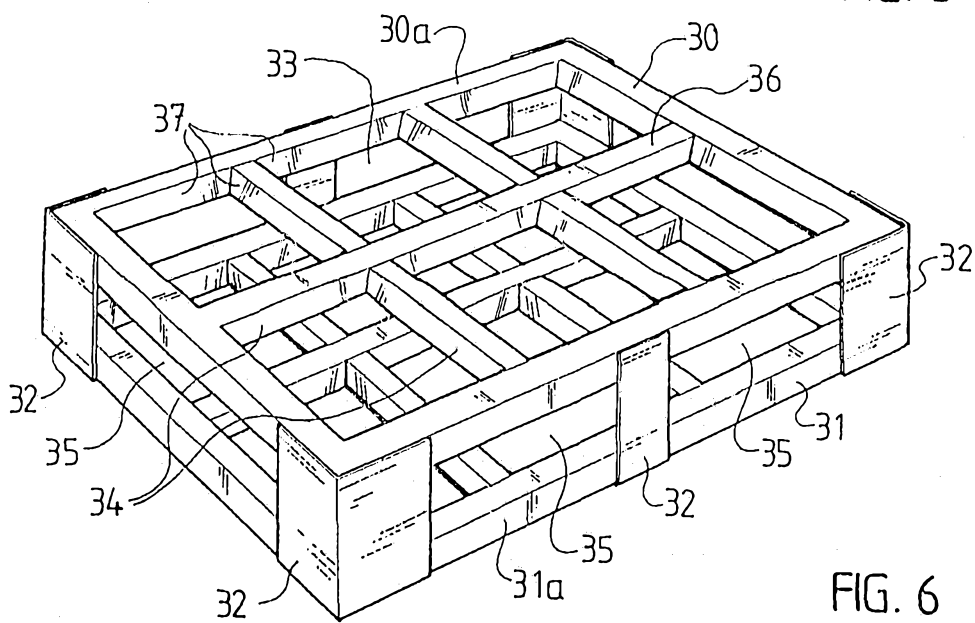
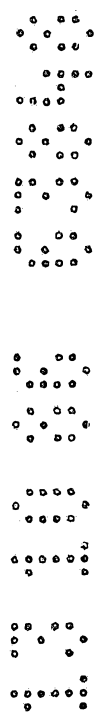


FIG. 6



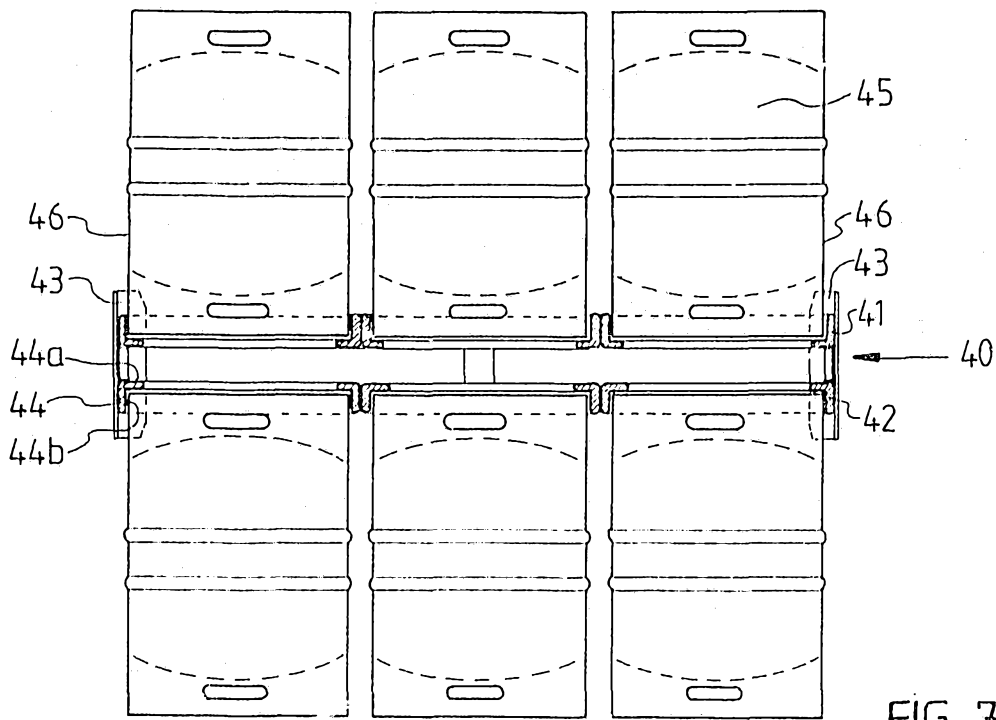


FIG. 7

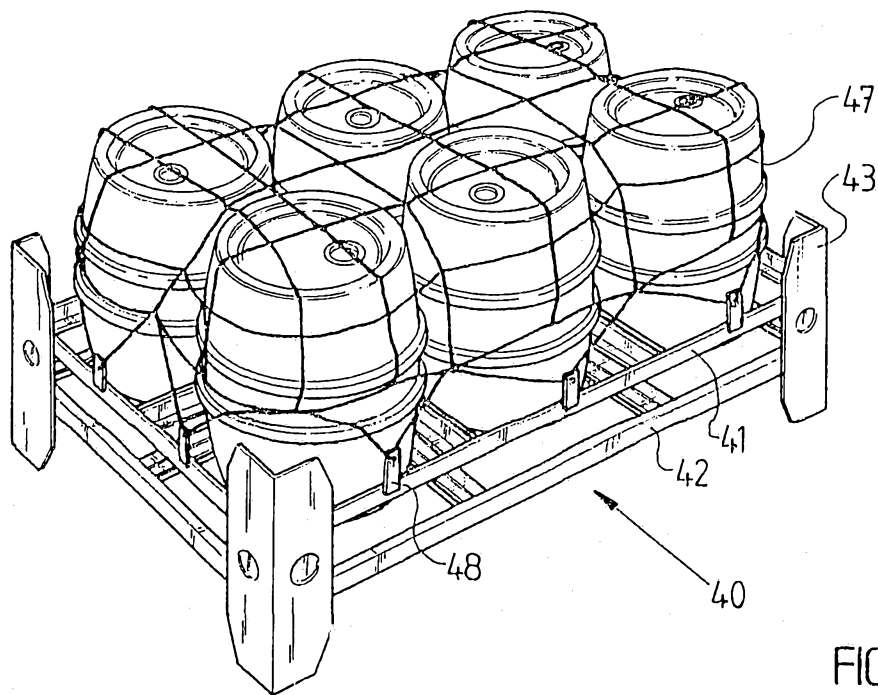


FIG. 8



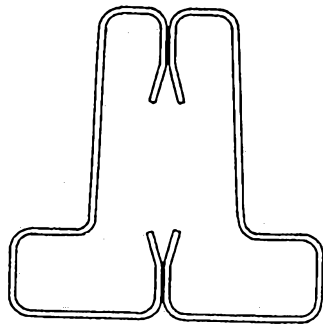


FIG. 9a

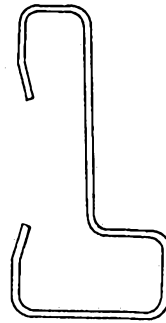


FIG. 9b

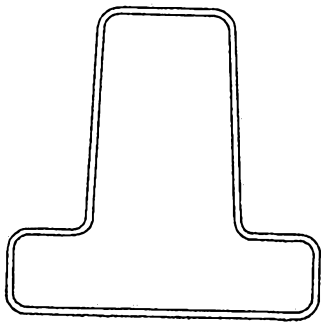


FIG. 9c

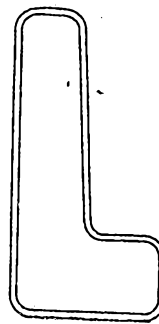
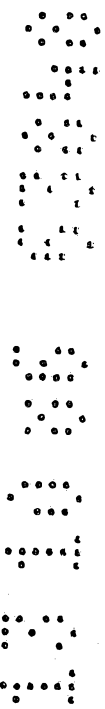


FIG. 9d



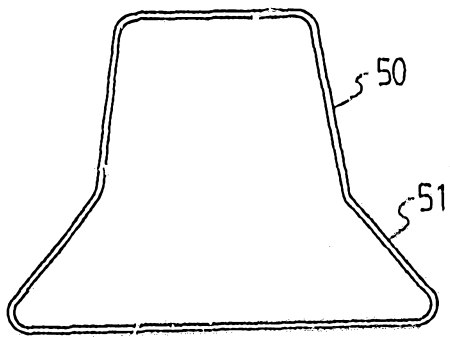


FIG. 10a

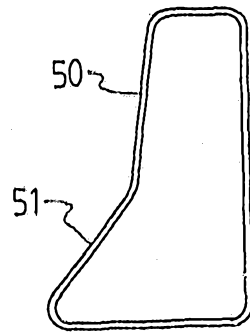


FIG. 10b

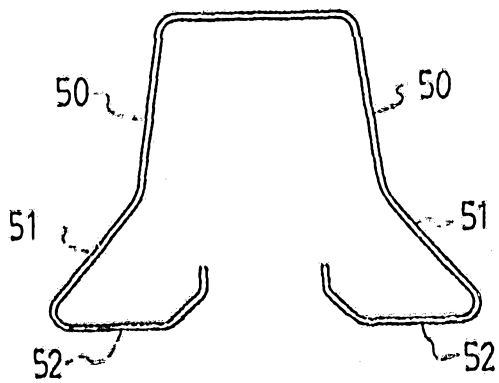


FIG. 10c

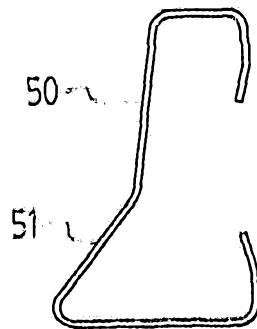


FIG. 10d



63848/86

