

[54] APPARATUS FOR REMOVABLY HOLDING A LIQUID BEVERAGE CONTAINER

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[57] ABSTRACT

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[58] Field of Search 248/138, 139, 141, 142, 248/130, 137, 311, 215, 154, 182; 108/44, 45, 46; 206/19.5 R, 19.5 E; 220/23.83; 224/48 E, 48 A; 211/69.6, 74, 81, 121; 312/351

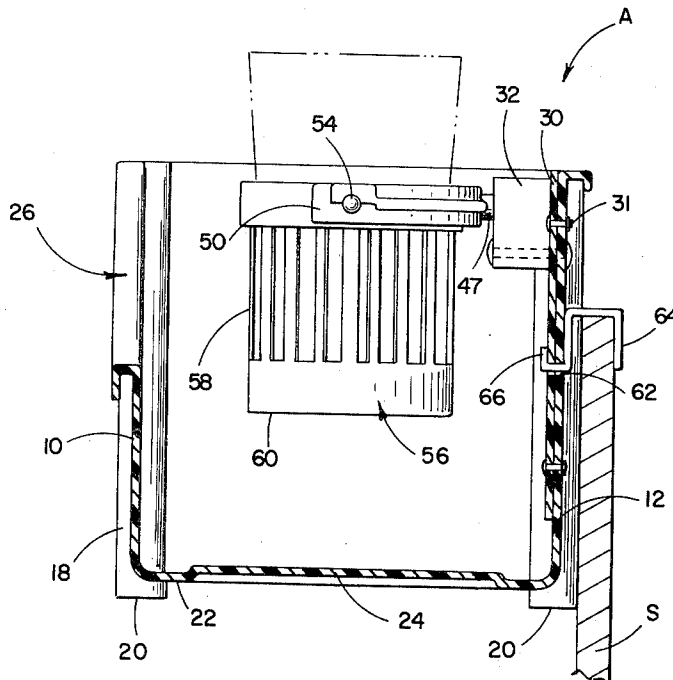
An apparatus and method for removably holding a liquid beverage container in a vibratory environment of the type created by a moving vehicle, such as an automobile, an airplane, or the like. The apparatus includes a housing having a base wall and a partially enclosing side wall forming an interior chamber. Mounted on the enclosing side wall in the interior chamber is a bracket which removably receives a gimbal structure. Mounted on the gimbal structure is a retaining member which has an encircling side wall sized to removably retain the beverage container. The housing is integral in construction and is provided with a trough at its lower end in order to receive and collect any liquid spillage. The gimbal structure will permit the beverage container to automatically shift its position relative to the housing to maintain a relatively vertical position and thereby compensate for any shifting of the attitude of the vehicle and to compensate for vibratory movement imposed on or created by the vehicle.

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10 Claims, 4 Drawing Figures



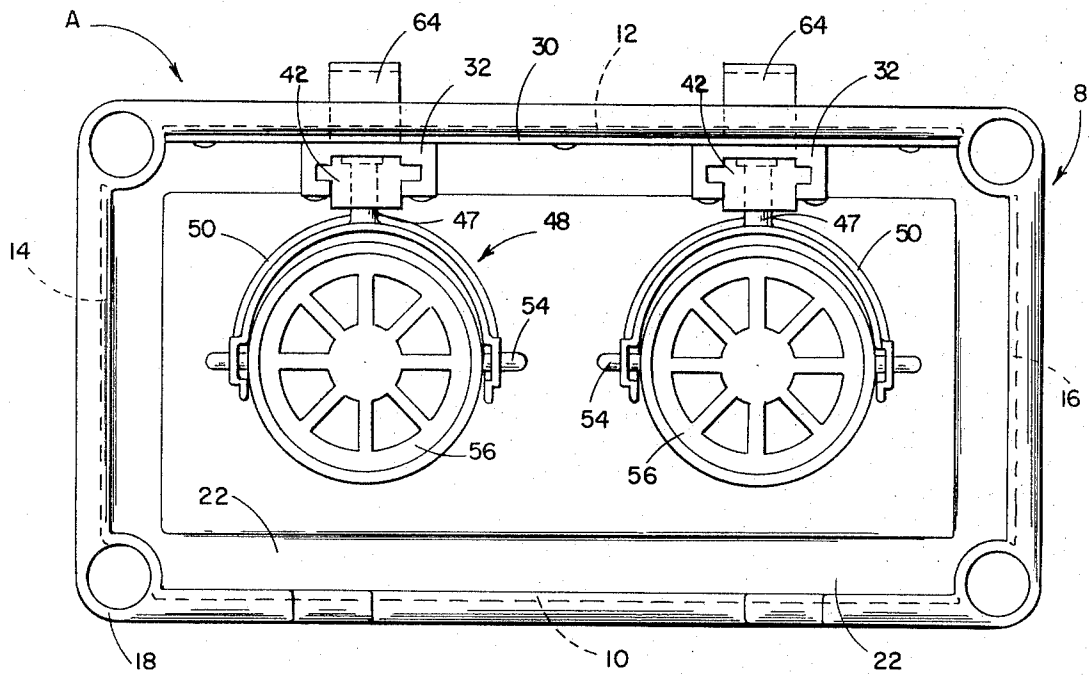


FIG. 1

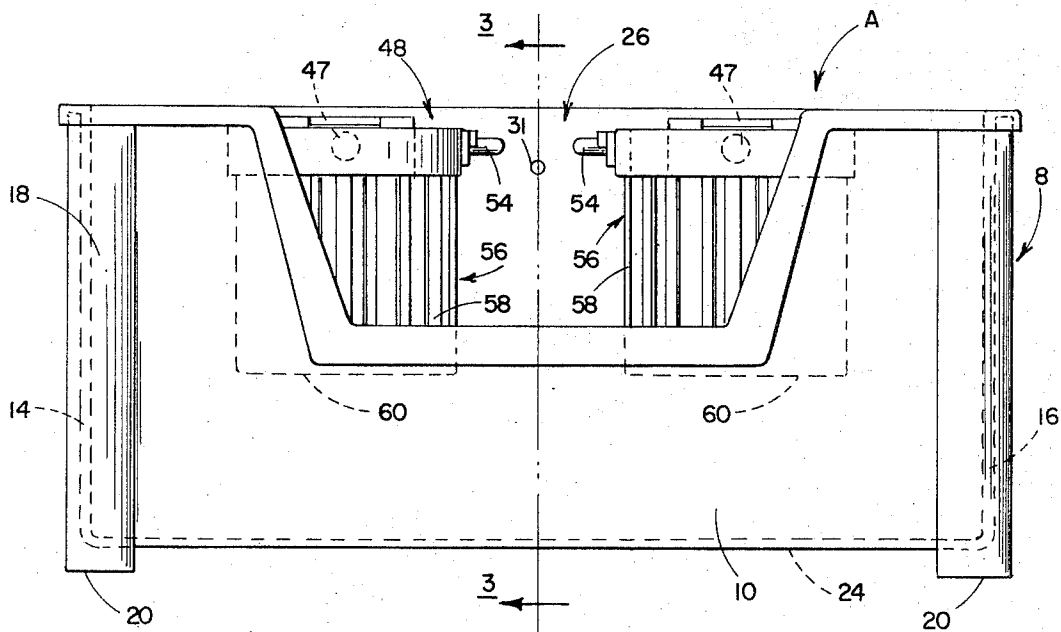
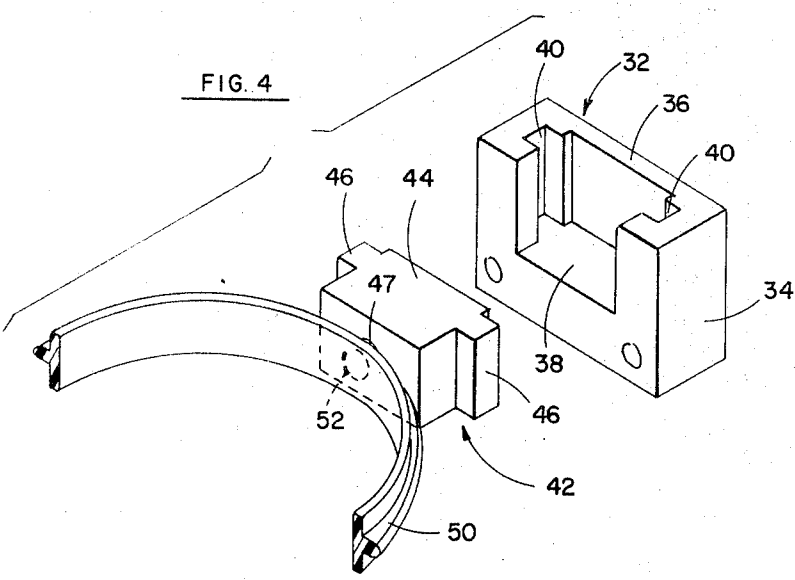
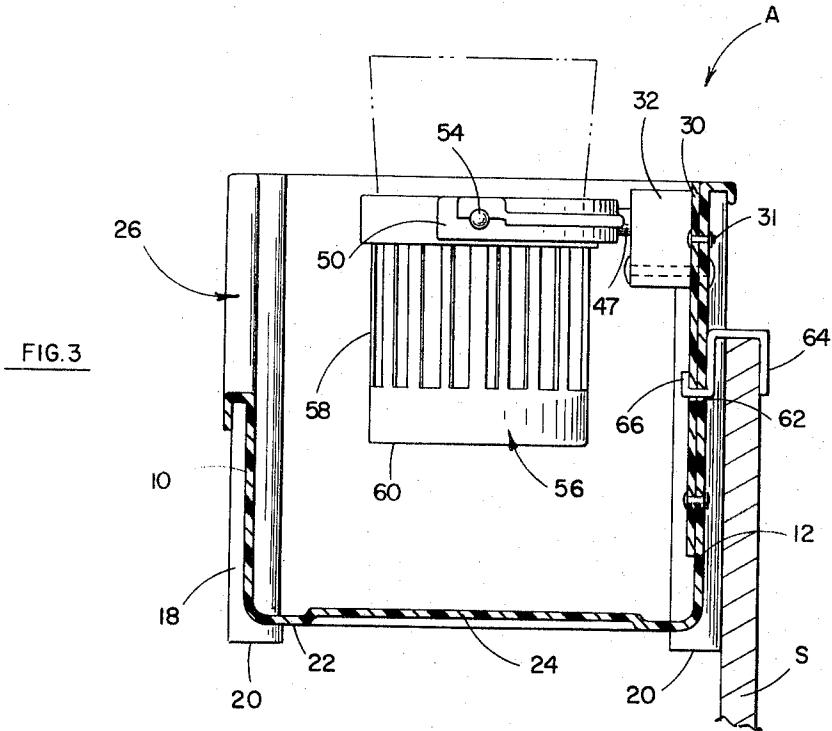


FIG. 2



APPARATUS FOR REMOVABLY HOLDING A LIQUID BEVERAGE CONTAINER

BACKGROUND OF THE INVENTION

This invention relates in general to certain new and useful improvements in apparatus and method for removably holding liquid beverage containers, and more particularly, to apparatus and method for removably holding liquid beverages containers in a vibratory environment created by a moving vehicle.

It has long been a practice for passengers in moving vehicles such as boats, airplanes, automobiles, and the like, and even the operators thereof to eat meals and various snacks and consume beverages during the course of travel. The task of holding and manipulating a beverage container, such as a glass which contains a liquid beverage, is one which often requires constant attention of the consumer of the beverage. This task is indeed complicated if the consumer of the beverage is often attempting to consume solid edibles such as a sandwich or other food items during the same period of time, and is even more pronounced if the consumer of the beverage is the operator of the vehicle.

There have been several attempts to alleviate this problem by a provision of a tray or similar retaining member which is provided with a recess or well sized to receive the liquid beverage container. If the container with the liquid beverage or the tray is resting against any fixed portion of the vehicle, it will generally assume the same vibratory conditions generated by or imposed on the vehicle, and hence cause the holder of the glass to spill some of the liquid contents. Consequently, while this form of tray or retaining member does alleviate some of the problems of holding a glass or other container in the users hand, it nevertheless requires the user to hold the tray away from any stationary part of the vehicle. Therefore, the provision of a tray which is designed to removably retain a liquid beverage container still presents many serious disadvantages.

The present invention obviates these and other problems in the provision of an apparatus and a method for removably holding a liquid beverage container in a relatively vertically located position, by compensating for the presence of a vibratory environment created by or imposed on a moving vehicle. This apparatus and method rely upon the utilization of a gimbal structure mounted within a housing having a base wall and at least a partially enclosing side wall. The gimbal structure holds a container retaining member having an encircling side wall which is sized and shaped to receive the beverage container. Thus, upon a shifting of the orientation or attitude of the vehicle, or upon an experience of any vibratory action, the container will also maintain its truly vertical position through the action of the gimbal structure.

It is therefore the primary object of the present invention to provide an apparatus for removably holding a liquid beverage container in a vibratory environment created by a moving vehicle.

It is another object of the present invention to provide an apparatus of the type stated which relies upon a gimbal structure for automatically maintaining a relatively vertically located position of a liquid beverage container in response to any vibratory action sustained by or created by the vehicle.

It is a further object of the present invention to provide an apparatus of the type stated which is light in weight, and which can be constructed on a mass production basis at a relatively low unit cost.

It is an additional object of the present invention to provide a method of removably holding a liquid beverage container in a substantially vertically located position in such manner that it adjustably compensates for vibratory movement created by or imposed on a moving vehicle.

With the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

GENERAL DESCRIPTION

In general terms, the apparatus of the present invention is designed to removably hold a liquid beverage container in a vertically located position in such manner that the apparatus adjustably compensates for any vibratory environment created by or imposed on the moving vehicle. The apparatus will generally comprise a base wall and at least a partially enclosing side wall which projects upwardly from the base wall forming an interior chamber. The partially enclosing side wall, in this case, would form an open access portion permitting introduction into and removal of a liquid beverage container from the interior chamber. At least one retaining member having an encircling wall is sized to removably retain this beverage container. Furthermore, a gimbal structure is attachably connected to the partially enclosing wall and to the retaining member. In this way, the gimbal structure will permit swingable movement of the retaining member in a pair of substantially perpendicular vertically located planes to maintain the beverage container in a relatively vertically disposed position.

The aforesaid apparatus can be further characterized in that this gimbal structure is removably and attachably connected to the partially enclosing side wall. In addition, the base wall and the partially enclosing wall are integral with each other in order to form a liquid impervious seal therebetween. In a preferred aspect of the present invention, a trough-like member is integral with the base wall and the partially enclosing side wall. In this way, any liquid spillage can be accumulated in the trough-like member.

The gimbal structure mentioned above will preferably comprise a shaft which extends from the partially enclosing side wall in a first relatively horizontal plane. A first member is pivotal on this shaft in a first direction, generally about the central axis of the shaft. At least one second member is generally located in a second relatively horizontal plane and is pivotal on the first member in a second direction which is substantially perpendicular to this first named direction. Also in a preferred aspect of the present invention, hook forming means are operatively and removably secured to a side of the partially enclosing side wall which is opposite the side of operative attachment of the gimbal structure. This hook forming means is designed for removable connection to an external structure, such as a portion of the moving vehicle. Also in a preferred aspect of the present invention, a reinforcing member is rigidly secured to the portion of the partially enclosing wall in the region of operative attachment of the gimbal structure.

The partially enclosing wall mentioned above will generally include a plurality of angularly located up-standing side walls which form an interior chamber with the base wall. The gimbal structure is removably attached to one of these walls, which is generally the back wall, by means of a bracket which is fixedly mounted on the back wall and is located in the interior chamber. The gimbal structure will contain a mounting element which is removably attachable to the bracket.

The method of the present invention can be described in general terms as a method for removably holding a liquid beverage container in a substantially vertical position in such manner that the method compensates for vibratory movement created by or imposed on a moving vehicle. This method would comprise the disposing of the container in a retaining member which is pivotally mounted on a fixed wall. The method also includes a permitting of the retaining member to shift on a fixed shaft in a pair of substantially perpendicular substantially vertically located planes in response to this vibratory movement created by or imposed on the vehicle. In addition, the method would include the establishing the coefficient friction between the retaining member and the fixed shaft such that the downward force vector of the container and the retaining member is greater than and horizontal force vectors created by the vibratory movement of the vehicle or imposed on the vehicle, so that the downward force vector overcomes the horizontal force vectors. In this way, the container is maintained in a substantially vertically disposed position.

FIGURES

Having thus described the invention in general terms, reference will now be made to the accompanying drawings in which:

FIG. 1 is a top plan view of an apparatus constructed in accordance with and embodying the present invention;

FIG. 2 is a front elevational view of the apparatus of FIG. 1;

FIG. 3 is a transverse sectional view taken along line 3—3 of FIG. 2 and showing the apparatus mounted to a fixed structural member of a vehicle; and

FIG. 4 is an exploded schematic perspective view of a bracket which forms part of the apparatus of FIG. 1, for removably receiving a gimbal structure.

DETAILED DESCRIPTION

Referring now in more detail and by reference characters to the drawings which illustrate a preferred embodiment of the present invention, A designated an apparatus for removably holding a liquid beverage container in a relatively vertically disposed position when subjected to a vibratory environment created by a vehicle. The apparatus A generally comprises an outer housing 8 having upstanding front and back walls 10 and 12 and a pair of upstanding opposed transverse side walls 14 and 16, and each of which are integrally connected through upstanding legs 18, in the manner as illustrated in FIG. 1. The legs 18 each have integrally formed leg stubs 20 which extend downwardly below the lowermost margin of each of the front and back walls 10 and 12, and the side walls 14 and 16 in order to provide means for supporting the apparatus A on a relatively flat supporting surface in the vehicle. Each of

the upstanding front and back walls 10 and 12, and the side walls 14 and 16 integrally merge at their lower margins into a somewhat U-shaped trough 22 which, in turn, integrally merges into a relatively flat base wall 24, in the manner as illustrated in FIGS. 1 and 3.

Generally, the housing 8 would be formed of a moldable plastic, such as polyethylene, polystyrene, any of a number of vinylidene copolymers, such as vinylidene flouride or the like. The housing 8 could be integrally formed as a plastic unitary structure by any of a number of plastic forming techniques, such as blow molding or the like. In addition, the housing 8 could also be conveniently formed of sheet metal and could be formed of sheet metal and could be stamped and welded or otherwise formed of a plurality of sections which are rigidly secured together as a unitary structure.

The front wall 10 is cut away in the provision of an access aperture 26 in order to introduce beverage containers into and remove these containers from an interior chamber formed by the base wall and the four upstanding walls. In this respect, it should be observed that while the upper portion of the housing 8 is open, a top wall could be provided for attachment to the housing, thereby enabling access to be maintained through the aperture 26.

The back wall 12 may be further reinforced by means of a relatively rigid liner or so-called "doubler" 30 which may also be formed of any of the materials used in the formation of the housing 8, and may be secured to the back wall 12 by means of rivets 31. The reinforcing member 30 may also be secured to the back wall 12 by means of screws or other known fasteners or otherwise by any of a number of conventional adhesives. In this case, the reinforcing liner 30 essentially covers the entire inwardly presented surface area of the back wall 12, in the manner as illustrated in FIG. 1.

Rigidly secured to the interior surface of the reinforcing liner 30 are a pair of longitudinally spaced brackets 32. The brackets 34 are illustrated as being riveted to the liner 30 and the back wall 12, although it should be recognized that the brackets 32 may be adhesively or otherwise secured to the lines 30. The two brackets 32 are substantially identical in construction and therefore one of the brackets 32 is described in detail herein and is more fully illustrated in FIG. 4 of the drawings. The brackets 32 may be integrally formed of a moldable plastic material, such as any of the plastic materials mentioned above, and each generally includes a pair of spaced apart end walls 34 connected along their rearward margins by means of an upstanding back wall 36 and a bottom wall 38. Each of the two end walls 34 are provided with opposed longitudinally aligned grooves 40 for reasons which will presently more fully appear.

A mounting plug 42, which is more fully illustrated in FIG. 4 of the drawings, generally comprises a plug body 44 which is sized to be accommodated by each of the brackets 32. The plugs 42 are each provided with a pair of outwardly extending flanges 46 which are located and sized to snugly, but nevertheless slidably, fit within the opposed grooves 40. When the plug 42 is inserted within the bracket 32, the bottom portion of the plug body 44 will rest upon and bear against the upwardly presented surface of the bottom wall 38.

Extending outwardly from each of the mounting plugs 44, in the manner as illustrated in FIGS. 1, 3 and 4, is a shaft 47 which forms part of a gimbal structure

48. The gimbal structure 48 also includes a C-shaped element 50 which is rotatable at its mid point 52 about the horizontal central axis of the shaft 47. The C-shaped element 50 is provided at its outer ends with a pair of opposed inwardly struck pivot pins 54, which pivotally carry a container retaining member 56, in the manner as illustrated in FIG. 2 and 3. The retaining member 56 is provided with an encircling side wall 58 and a bottom wall 60, which are sized to retain the beverage container. The side wall 58 is preferably of open ribbed construction and the bottom wall 60 is preferably apertured to permit liquid drainage from the retaining member 60. In this respect, it should be observed that the pins 54 are easily removably for substitution of a different sized retaining member 56.

By further reference to FIGS. 1 and 2, it can be observed that the central axis of the shafts 47 are perpendicularly located with respect to the central axis and hence the pivotal axis of the pivot pins 54. Furthermore, the shafts 47 and the pivot pins 54 are all located in substantially the same horizontal plane when the retaining members are vertically disposed. In this way, the C-shaped element 50 will permit the outer ends thereof and hence the pins 54 to pivot about the shafts 47 in a first vertical plane. The container retaining member 56 can also pivot in a second vertical plane about the central axis of the pins 54.

Formed in the back wall 12 are a pair of longitudinally spaced hook receiving apertures or slots 62. Provided for removable insertion into each of the apertures 62 are inverted U-shaped hooks 64, each having an L-shaped bracket section 66 integrally formed therewith which fits within the hook receiving slots 62. The inverted U-shaped portion of each of the hooks 64 are sized to fit over some structure in the vehicle, designated as S, such as a margin of the window, or the like. Retaining brackets (not shown) similar to the retaining brackets 62 may be used in place of the apertures and adhesively attached or otherwise rigidly secured to the outwardly presented surface of the back wall 12. Thus, the hook 64 may be merely inserted into the brackets for retention of the housing 8 on some structure of the vehicle.

In accordance with the above outlined construction, the entire housing 8 can be retentively held on the vehicle. Notwithstanding, the beverage container retaining member 56 will also permit pivotal movement in each of the aforesaid vertical planes, thereby retaining the vertically disposed axis of the retaining member 56 in a relatively vertically located position. In this way, even though the vehicle may be subjected to or create a vibratory condition, no liquid spillage will occur.

It should be recognized that while the apparatus A has been described as being provided with two gimbal structures and hence two container retaining members, that either one or more of such gimbal structures and retaining members can be provided in the apparatus. Furthermore, the apparatus A has been described for use in vehicles which are subjected to a vibratory movement or which otherwise create a vibratory movement. In this respect, and in this specification and the accompanying claims, a vehicle which creates a vibratory movement is one which is also subjected to a vibratory movement, as used in the context of this invention. Hence the term "create" encompasses both those vibratory movements created by the vehicle and those vibratory movements to which the vehicle is subjected.

In addition, the term "vehicle" is used in its generic sense to encompass any form of moving vehicle, such as airplanes, boats, automotive vehicles and the like.

Thus, there has been illustrated and described a novel apparatus and method for removably holding a liquid beverage container in a vibratory environment created by a moving vehicle, and which fulfills all of the objects and advantages sought therefore. It should be understood that many changes, modifications, and other uses and applications will become apparent to one skilled in the art after reviewing this specification and the accompanying drawings. Therefore, all such changes, modifications, variations, and other uses and applications which do not depart from the nature and principle of the invention are deemed to be covered by the invention which is limited only by the following claims.

Having thus described my invention, what I desire to claim and secure by letters patent is:

1. A portable apparatus for removably holding a liquid beverage container in a vibratory environment created by a moving vehicle, said apparatus comprising:

- a. a base wall,
- b. a plurality of enclosing side wall sections integrally connected to each other forming an enclosing side wall projecting from said base wall and forming a chamber with an open top portion,
- c. a first of said side wall sections in said partially enclosing side wall being cut away thereby forming an open access portion permitting introduction into and removal of a liquid beverage container from said chamber,
- d. a reinforcing wall member located in said chamber in juxtaposition to a second of said side wall sections of said partially enclosing side wall and being rigidly secured thereto to reinforce said last named side wall section,
- e. at least one retaining member having an encircling wall sized to removably retain said beverage container,
- f. at least one gimbal structure operatively attachably connected to said reinforcing wall member and the second side wall section of said partially enclosing side wall and said retaining member, said gimbal structure permitting swingable movement of said retaining member in a pair of substantially perpendicular vertically located planes to maintain said container in a relatively vertically disposed position, whereby the retaining member and the liquid beverage container retained therein adjustably compensates for vibratory movement of said vehicle,
- g. a plurality of spaced apart legs integral with and extending downwardly from said base wall so that said apparatus may be disposed on a supporting structure,
- h. and means forming a plurality of apertures extending through the reinforcing wall member and the second of said side wall sections to receive hooks, whereby said apparatus may be suspended on a different supporting structure through said hooks.

2. The apparatus of claim 1 further characterized in that said gimbal structure is removably attachably connected to said partially enclosing wall.

3. The apparatus of claim 1 further characterized in that said base wall and said partially enclosing side wall

are integral with each other and form a liquid impervious seal therebetween.

4. The apparatus of claim 1 further characterized in that said partially enclosing side wall is a vertically disposed enclosing side wall which is integral with said base wall through a trough-like member and which is

5. The apparatus of claim 1 further characterized in that said gimbal structure comprises a shaft extending from said partially enclosing side wall and being located in a first relatively horizontal plane, a first member pivoted on said shaft in a first direction, at least one second member being located in a second relatively horizontal plane and being pivotal on said member in a second direction substantially perpendicular to said first direction.

6. The apparatus of claim 1 further characterized in that hook forming means is operatively and removably secured to said partially enclosing side wall on a side thereof opposite to the side of operative attachment of said gimbal structure for removable connection to an external structure.

7. The apparatus of claim 2 further characterized in that said reinforcing wall member substantially covers the interior presented surface of the wall section to which it is rigidly secured.

8. A portable apparatus for removably holding a liquid beverage container in a relatively vertically disposed position when in a vibrating environment created by a moving vehicle, said apparatus comprising:

- a. a base wall,
- b. a plurality of rectangularly shaped upstanding side walls integrally connected to each other and projecting upwardly from said base wall thereby forming an interior chamber with said base wall and an open top portion,
- c. a trough-like member located along the periphery of said base wall and being integral with said side walls and said base wall for receiving any liquid spillage
- d. a reinforcing liner located in said interior chamber in juxtaposition to a first side wall of said plurality of upstanding side walls and being rigidly secured thereto to reinforce said last named side wall,
- e. a second of said upstanding side walls which is spaced and opposed to said first side wall being cut away along its upper margin to form an open access portion permitting introduction into and removal of a liquid beverage container from said interior chamber,
- f. a bracket fixedly mounted on said reinforcing liner and being secured thereto and to said first side wall and being located in said interior chamber and said bracket having a central recess therein
- g. a rectangularly shaped mounting element having opposed extended flanges thereon removably disposable within the recess of said bracket,
- h. shaft forming means projecting from said mounting element,
- i. an arcuately shaped member carried by said shaft forming means and being pivotal through a relatively vertically disposed plane in a first direction,
- j. a pair of opposed pivot members carried by said arcuately shaped member and being pivoted about their central axis in a second direction substantially perpendicular to said first direction,

k. a beverage container retaining member attached to and carried by said pivot members permitting swingable movement in said first mentioned vertically disposed plane and a second relatively vertically disposed plane in response to vibratory action to thereby maintain said container in a relatively vertically disposed position,

l. and said beverage container retaining member having an encircling wall sized to removably retain said beverage container.

9. The apparatus of claim 8 further characterized in that an aperture is formed in the first side wall in which said first named bracket is fixedly mounted and on the opposite side thereof, and a hook-like member is provided for removable insertion into said aperture, said hook-like member having an element for removable attachment to a portion of said vehicle.

10. A portable apparatus for removably holding a liquid beverage container in a relatively vertically disposed position when in a vibrating environment created by a moving vehicle, said apparatus comprising:

- a. a base wall,
- b. a plurality of rectangularly shaped upstanding side walls integrally connected to each other and projecting upwardly from said base wall thereby forming an interior chamber with said base wall and an open top portion,
- c. a trough-like member located along the periphery of said base wall and being integral with said side walls and said base wall for receiving any liquid spillage,
- d. a reinforcing liner located in said interior chamber in juxtaposition to a first side wall of said plurality of upstanding side walls and being rigidly secured thereto to reinforce said last named side wall,
- e. a second of said upstanding side walls which is spaced and opposed to said first side wall being cut away along its upper margin to form an open access portion permitting introduction into and removal of a liquid beverage container from said interior chamber,
- f. a bracket fixedly mounted on said reinforcing liner and being secured thereto and to said first side wall and being located in said interior chamber,
- g. a mounting element removably attachable to said bracket,
- h. a shaft projecting from said mounting element toward the interior chamber,
- i. a C-shaped member having a pair of terminal ends and a center point intermediate its terminal ends, said C-shaped member being carried by said shaft and being pivotal about its center point through a relatively vertically disposed plane in a first direction perpendicular to said first and second side walls,
- j. a pair of opposed pivot pins carried by said C-shaped member proximate the terminal ends thereof and being pivoted about their central axis in a second direction substantially perpendicular to said first direction,
- k. a beverage container retaining member attached to and carried by said pivot pins permitting swingable movement in said first mentioned vertically disposed plane in response to vibratory action to thereby maintain said container in a relatively vertically disposed position,
- l. said pivot pins being removable to enable substitution of a different sized beverage container retaining member,
- m. and said beverage container retaining member having an encircling wall sized to removably retain said beverage container.