United States Patent

Berry

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[54] BEVERAGE DISPENSING KEG

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[52] **U.S. Cl.** **222/400.7**

[51] **Int. Cl.** **B65d 83/00**

[58] **Field of Search** 222/400.7, 481, 529

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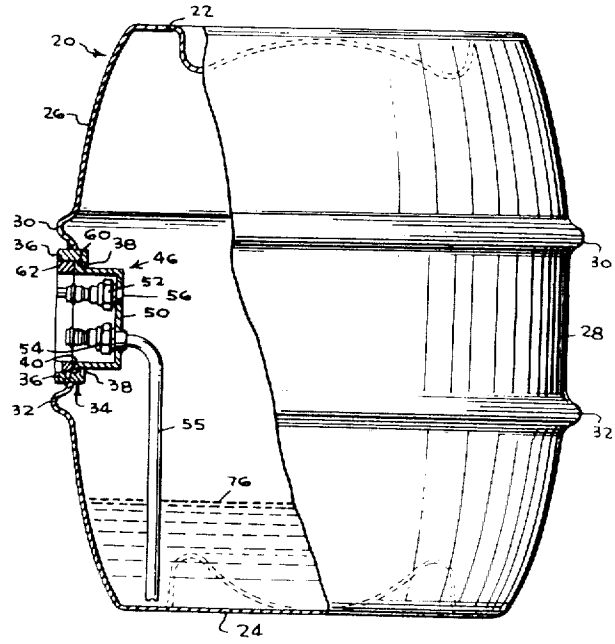
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[57] **ABSTRACT**

A beer keg construction having only a single access aperture opening midway between the top and bottom of the side wall of the keg with first and second male component quick-connect connectors being mounted inwardly of the aperture in the keg on an endwall of a cylindrical cup-like support member which can be removed from the aperture to enable cleaning and filling of the interior of the keg and with two female component quick-connect connectors on a pressure hose and lager hose being connectable to the male component connector members to enable liquid dispensing and keg pressurization with a minimum of difficulty.

3 Claims, 5 Drawing Figures



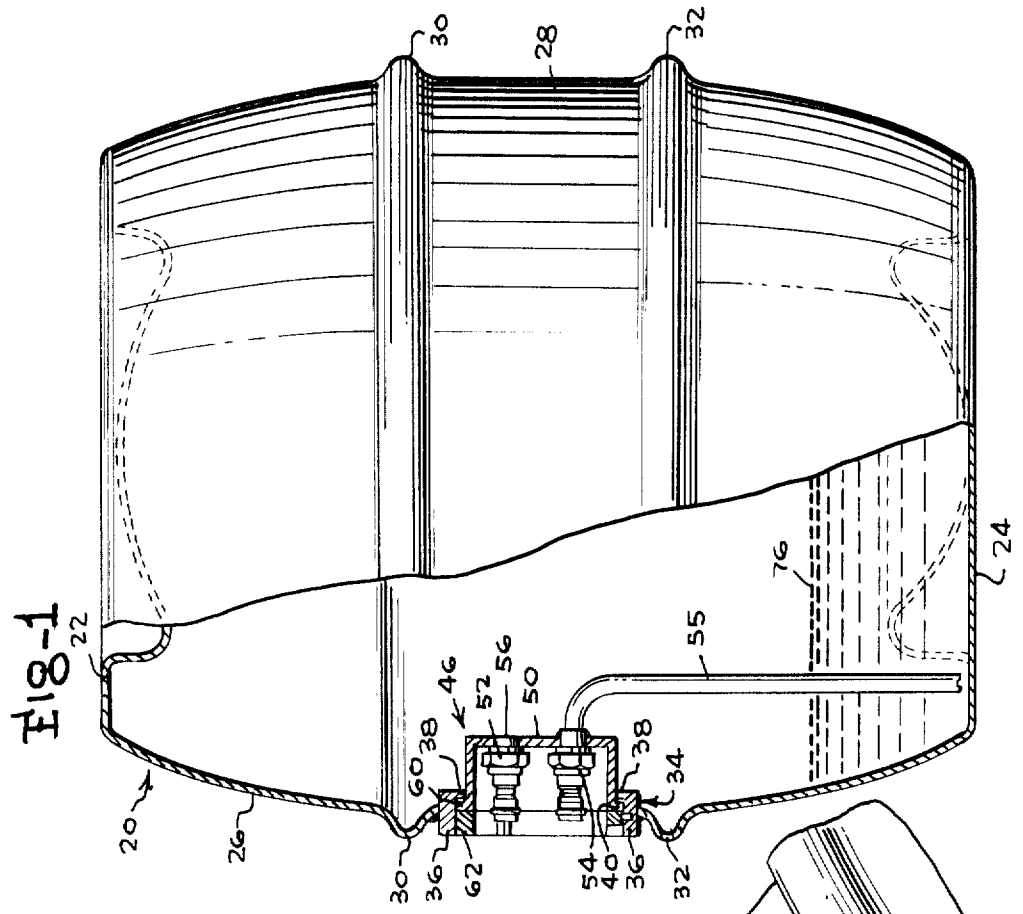


FIG-1

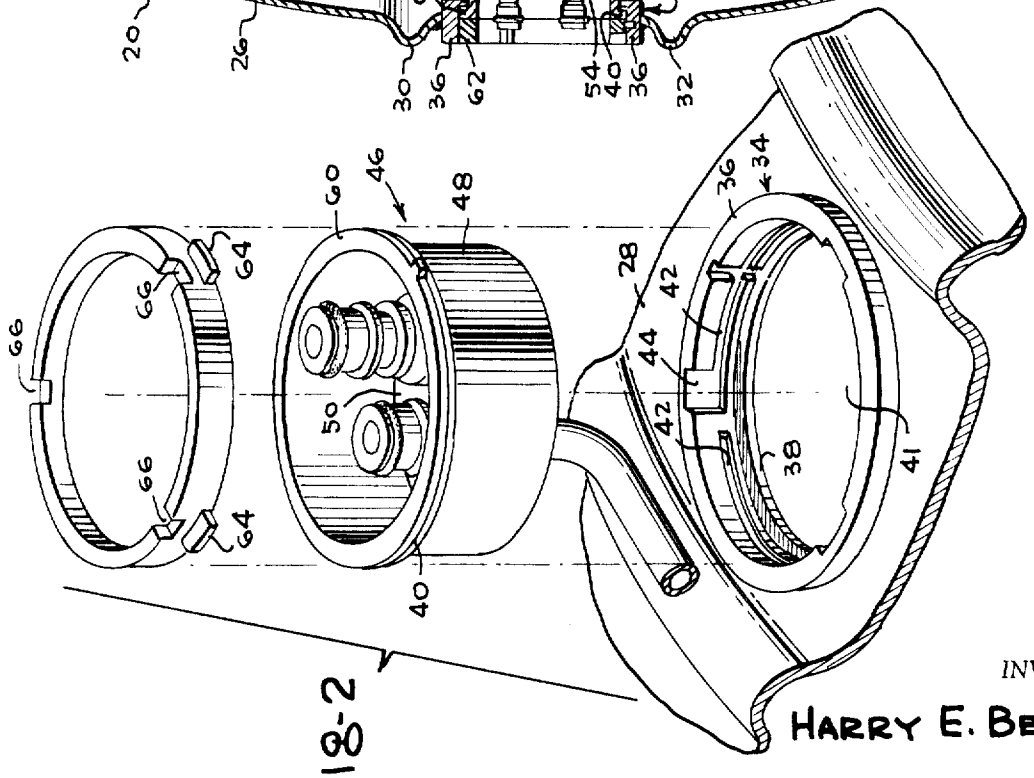


FIG-2

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FIG-4

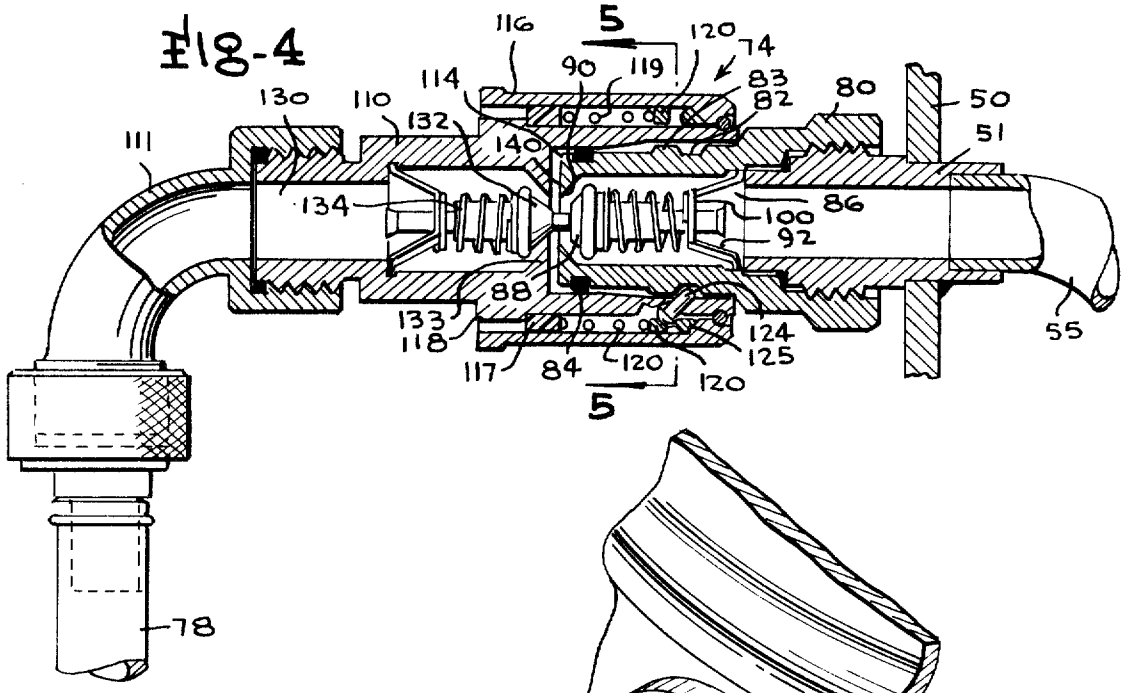


FIG-3

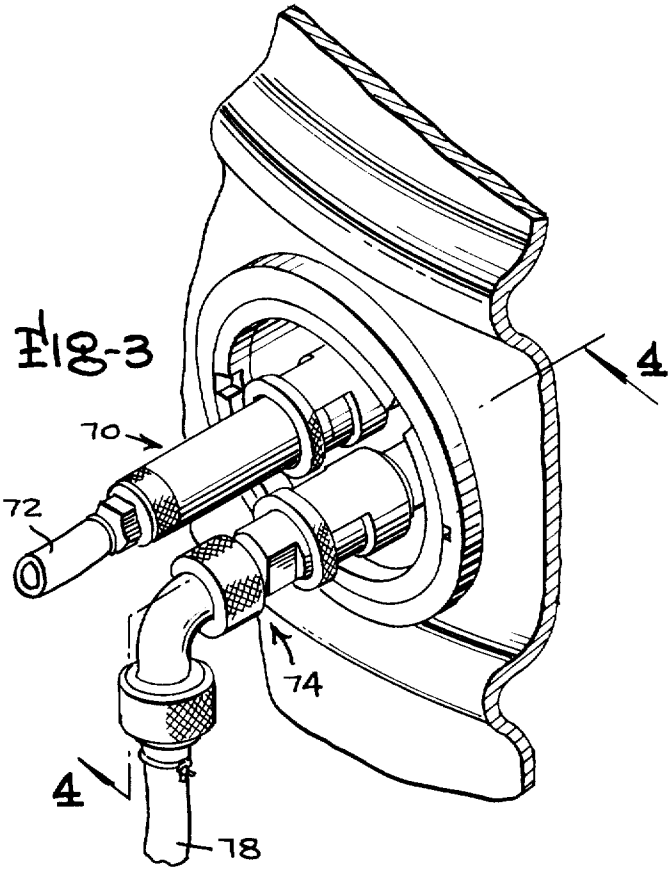
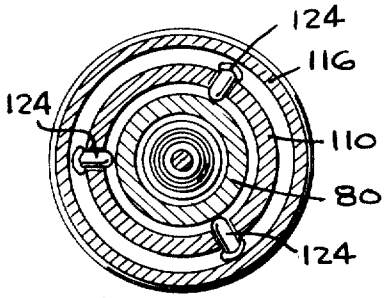


FIG-5



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BEVERAGE DISPENSING KEG

BACKGROUND OF THE INVENTION

This invention is in the field of containers and is specifically directed to the field of beverage dispensing containers of the type generally employed in dispensing draft beer.

Numerous patents have been granted covering various designs of beer dispensing kegs and their associated tapping valves and the like. The devices shown in these various patents assume a wide variety of forms and are frequently both quite complex in construction and difficult and even dangerous to use.

Most of the prior known conventional beer kegs in use today include two tapping openings, one located on the top of the keg to receive the gas for pressurizing the interior of the keg and the other located on the side of the keg near the bottom for receiving the lager tapping valve through which the beer is discharged from the keg. Additionally, all of the prior known kegs employ a bunghole provided in the side of the keg for filling the keg at the brewery. It is the normal practice following the filling of the keg through the bunghole to drive a wooden bung into the bunghole for retaining the contents within the keg. Since the keg will be pressurized, it is necessary that the wooden bung be driven in with substantial force in order that it will remain in position following pressurization of the interior of the keg. Consequently, the area adjacent the bunghole must be reinforced with a thick reinforcing plate in order to withstand the shock and large amount of force to which it is subjected. An additional problem inherent in the employment of a wooden bung resides in the fact that it is sometimes difficult to remove the bung following emptying of the keg. This difficulty in removal is occasioned by virtue of the force with which the bung is initially inserted plus the swelling of the bung against the wall of the bunghole which is caused by the wetting of the wooden bung by the keg contents.

Another shortcoming of the prior known beer keg systems is that the connections for the lager hose and the air pressure hose are located in the top wall of the keg. Consequently, it is imperative that the top wall be clear of obstructions in order that these hoses may be connected to their respective fittings. Therefore, it is impossible to connect the hose members to intermediate stacked kegs and the hose members can only be connected to the topmost one of a stack of kegs or to an individual keg having no other kegs stacked upon or above it. Another problem with certain of the prior known keg systems is that the tapping device inserted in the keg is of substantial length and a large clear space must be provided above the keg for manipulation of such tapping devices. Consequently, users of such kegs must frequently maintain full kegs in a storage station and consequently remove the kegs from the storage station for dispensing of beer from the kegs. Since the kegs are quite heavy, this movement from the storage station to the dispensing station is quite arduous and frequently results in sprains, hernias or other injuries to the person moving the keg to the dispensing station. For this reason, it would be highly desirable for beer kegs to be so constructed as to enable connection of the pressurizing hose and the lager hose to any one of a plurality of stacked kegs including the intermediate kegs — not just the topmost keg.

Another shortcoming of the prior known beer dispensing systems is that connection of the pressure and lager hose members to the keg requires a great deal of twisting and strain upon the hose members. Consequently, such devices are not satisfactory in that they are difficult to use and frequent rupture of the hose members is prone to occur.

Still another disadvantage of many of the prior known systems resides in the complexity of the valve members which frequently contain many parts, passageways and the like which are subjected to considerable wear and tear and are prone to breakage. Moreover, the large number of parts of many of the valves are difficult to maintain in a sterile condition since the major portion of the assembly must be cleaned from inside the beer container. The problem of sterilizing and completely cleaning an empty beer keg has never been fully solved and is particularly acute in many of the prior systems in which the various valving members on the interior of the keg are not accessible for sterilization. Additional problems in regard to sterilization are created by virtue of the fact that all prior known keg systems incorporate at least two openings in the keg and many of the prior known systems incorporate three openings in the keg with all of the openings providing possible access for contamination by bacteria. Therefore, it is highly desirable to reduce the number of keg openings to a minimum in order to reduce the possibility of contamination of the interior of the keg.

The instant invention provides a keg construction in which the pressurizing hose and the lager hose are easily connected to the keg by quick-connect coupling members and in which sterilization of the keg is easily enabled by virtue of a large central opening in the keg wall. Moreover, the instant invention enables connection of the pressure hose and the lager hose to any one of a plurality of stacked kegs including intermediate kegs and does not require any access space above the keg.

Additionally, the instant invention provides a substantial reduction in the cost of manufacturing a beer keg in that it completely eliminates many of the complex parts previously employed and also eliminates the need for the employment of a reinforcing plate in the area surrounding the bunghole in the keg wall.

SUMMARY OF THE INVENTION

Therefore, it is the primary object of this invention to provide a new and improved beer keg construction.

Obtainment of the object of this invention is enabled through the provision of a beer keg formed of top and bottom end walls connected by a generally cylindrical side wall with the sole opening in the keg being provided by an access opening or aperture oriented in the side wall of the keg approximately midway between the upper wall and the lower wall. This aperture receives a support member in the form of a cup-like cylindrical element insertable in the aperture and having a pair of quick-connect male coupling members attached to one wall. The quick-connect coupling members can be connected easily to a mating female connector on the end of the pressure and lager dispensing lines respectively. The support member is easily removed from the aperture within the side wall to enable separate cleaning of the valve members of the quick-connect coupling elements while the keg is being filled through the aperture. The support member is then reinserted in the aperture for shipment of the keg. This construction completely eliminates the employment of a wooden bung and consequently eliminates the need for the high strength construction necessitated by virtue of the use of a bung as previously discussed.

Additionally, the central location of the quick-connect coupling elements in the cylindrical side wall enables the connection of the pressure and lager lines to any one of a stacked array of kegs without the necessity of moving the particular keg to a position in which its top wall is accessible. This presents a substantial function advantage over any of the prior known devices.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of the preferred embodiment of this invention with a portion of the side wall removed for clarity;

FIG. 2 is an exploded perspective view of the various components of the preferred embodiment;

FIG. 3 is a perspective view illustrating the manner in which a pressure hose and a lager hose are connected to the preferred embodiment;

FIG. 4 is a sectional view taken along lines 4—4 of FIG. 3; and

FIG. 5 is a sectional view taken along lines 5—5 of FIG. 4.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Turning first to FIG. 1, it will be seen that the preferred embodiment comprises a keg member generally designated 20 formed of an upper wall 22 and a lower wall 24 which are connected by a generally cylindrical side wall 26. The side wall 26 includes a central portion 28 located between a pair of radial protrusions 30 and 32. The central portion 28 is provided with an aperture in which a mounting ring 34 is welded in position. Mounting ring 34 is formed of a cylindrical sleeve 36 extending inwardly through the central wall portion 28 and terminating inwardly in a radially inwardly extending abutment flange 38. An annular seal 40 is positionable against the abutment flange 38. The circular interior opening 41 of the mounting ring 34 provides an aperture enabling access to the interior of the keg.

Mounting ring 34 also includes camming means in the form of an inclined cam slot 42 formed in the inner wall of the sleeve 36. Axially parallel access slots 44 extend from the cam slot 42 outward to the outer termination of the sleeve 36 for a purpose to be discussed hereinafter.

A removable support member generally designated 46 is insertable in the mounting ring 34 to extend into the interior of the keg and to sealingly block opening 41. Support member 46 includes a cylindrical cup formed of a cylindrical sleeve 48 and an end wall 50 defining its innermost extent. End wall 50 is provided with two apertures into which a pair of nipples 51 are fitted and retained by welding with a pair of quick-connect male coupling members 52 and 54 being fixedly threaded onto the nipples. A lager discharge pipe 55 extends downwardly from the lower nipple 51 to a position adjacent the bottom wall 24 as shown in FIG. 1 and an opening 56 in the upper nipple communicates with the coupling 52 to enable pressurized air to be injected to the interior of the keg through the coupling 52. The outermost end of the removable support member 46 is provided with an outwardly extending positioning flange 60.

The diameter of the positioning flange is slightly less than the diameter of the inner diameter of sleeve 36 and the removable support member is positioned in the mounting ring in the position shown in FIG. 1. The seal member 40 is positioned between the positioning flange 60 and the abutment flange 38. The support member is clamped in position by a locking ring 62 having radial lugs 62 receivable within the cam slots 42. The lugs 64 are positioned to be alignable with the access slots 44 for insertion in the mounting ring. Drive slots 66 in locking ring 62 receive a special wrench type tool for rotating the locking ring to force the removable support member 46 to the right or inwardly as viewed in FIG. 1 so that seal 40 provides a pressure tight connection and the aperture 41 is fully sealed.

It should be understood that the cup 46 and the parts attached thereto are completely removed to enable sterilization and filling of an empty keg. However, upon filling of the keg, the cup member is reinserted and clamped in position for shipment of the keg. Upon reaching the destination, a female quick-connect connector member 70 attached to an air pressure line 72 is easily connectable to the male connector 52 for pressurizing the keg contents. Moreover, a second female connector 74 is similarly connected to the lager discharge line 78 to enable discharge of beer or other liquid 76 through a discharge line 78 connected to the connector 74. The construction of each of the quick-connect connector members is identical and FIG. 4, which illustrates the connector member associated with the lager line, also illustrates the mechanical features of the connector member associated with the pressure line 72. These details of construction will now be discussed with reference being made to FIGS. 4 and 5.

The male connector comprises a base sleeve 80 which is threaded on nipple 51 and which includes a peripheral circumferential locking groove 82 extending about its entire periphery in a plane perpendicular to the axis of the sleeve 80 and immediately adjacent a circumferential flange 83. The peripheral locking groove 82 provides means by which the female connector is connected to the sleeve 80 in a manner to be discussed in detail hereinafter.

The outermost end of the base sleeve 80 is provided with an annular rubber seal member 84 affixed in a circular groove adjacent the outermost end of the sleeve. An axial passageway 86 extends the length of the sleeve 80 and a conical valve member 88 is biased to the left as viewed in FIG. 4 toward a conical valve seat 90 adjacent the outermost end of the axial passageway 86. Conical valve member 88 is biased to the left by a coil compression spring 92 which engages a three-legged spider 100 on its innermost end. The details of construction of the sleeve 80 are such that the conical valve member 88 is biased against the conical valve seat 90 when the female portion of the quick-connect connector is removed so that the interior of the keg will be sealed in an obvious manner.

The female portion of the connector comprises a primary sleeve 110 threaded to an L-shaped pipe on its outer end to which the line 78 is connected in a conventional manner. Primary sleeve 110 includes a sealing surface 114 which abuts against the seal 84 when the primary sleeve is inserted over the base sleeve 80 in the position shown in FIG. 4. Moreover, the primary sleeve 110 is surrounded by an axially reciprocal release sleeve 116 which is mounted for reciprocation exteriorly of primary sleeve 110. An annular ring 117 extends about the outer periphery of sleeve 110 and engages a shoulder 118 extending outwardly from the primary sleeve 110 so that the annular ring 117 cannot move to the left as viewed in FIG. 4. Moreover, a floating ring 120 is mounted on the interior of the release sleeve 116 externally of primary sleeve 110 and is biased to the right by spring 119 in an obvious manner. Three movable lock pins 124 extend through respective openings in the wall of the primary sleeve 110 and are biased in an inward direction by the urging of the floating ring 120. However, the pins 124 can be pushed outwardly by the engagement of the end of the pin with flange 83 as sleeve 110 is inserted over the base sleeve 80 during connection of the two members. The pins 124 then slip over the outer edge of flange 83 into the locking groove 82. Therefore, upon completion of the connection of the female connector to the male connector, pins 124 extend inwardly into the locking groove 82 and normal force exerted to the left on the primary sleeve 110 will not disconnect the connected elements since such force would merely tend to rotate pins 124 in a clockwise direction and there would be no component of force for moving the pins out of groove 82. However, movement of the release sleeve 116 to the left causes a pin head engaging rib 125 on the inner surface of sleeve 116 to pull the pin 124 outwardly with a slight clockwise rotation to enable disconnection of the female coupling from the male coupling.

Primary sleeve 110 includes an axial passageway 130 in which a conical valve member 132 analogous to the valve member 88 is mounted and which is urged to the right by a compression spring 134. Consequently, disconnection of the female coupling from the male coupling results in valve member 132 being biased against the valve seat 133 to immediately seal the passageway 130 so that liquid in the line 78 etc. will not be drained out of the line and consequently lost. However, an extension 140 on the forward end of valve member 132 engages valve member 88 when the parts are coupled together so that both valves are consequently open as shown in FIG. 4.

One very distinct advantage of the employment of the pivotable lock pin 124 is that the connection of the two connectors can be made by merely inserting the female connector over the male connector and pushing same inwardly. Other previously known similar quick-connect couplers have employed spherical steel balls for retaining the female connector in position and it has been necessary that a member corresponding to the sleeve 116 be reciprocated to the left before the female connector can be inserted over the male connector. However, the device of the instant invention does not require any such movement of sleeve 116 to the left to retract the pins since engagement of the pins 124 with the rib 83 provides the required retracting movement of the pins.

We claim:

1. A hollow beverage dispensing container formed of top and bottom walls connected to a side wall of generally cylindrical shape, an aperture in said side wall of the container equidistantly positioned between said top and bottom walls, removable support member positionable in blocking relationship in said aperture for sealing said aperture but being removable from said aperture for permitting access to the interior of the container for enabling the cleaning thereof, said removable support member comprising a cylindrical cup formed of a cylindrical sleeve extending into said container and an end wall positioned inwardly of the side wall of the container, first and second male quick-connect coupling members fixedly mounted on said end wall in side-by-side relationship and extending outwardly from the end wall entirely within the confines of the cylindrical sleeve so that said quick-connect coupling members are spaced inwardly with respect to the exterior of the side wall of the container and a hollow drain pipe extending on the interior of said keg from said first quick-connect coupling member mounted on said support member to terminate in an open end positioned adjacent said bottom wall, said first and second quick-connect coupling members mounted on said end wall being respectively connectable to mating hose mounted quick-connect connectors on liquid dispensing and air pressure hoses for enabling said container to be pressurized to permit a beverage within the container to be dispensed via said drain pipe and liquid dispensing hose.

2. The invention of claim 1 wherein said support member is provided with a radially outwardly extending positioning flange extending radially from said cylindrical sleeve and said aperture is formed in a mounting ring extending inwardly from the cylindrical side wall of the container with said mounting ring terminating inwardly with a radially inwardly extending abutment flange with sealing means between said radially inwardly extending abutment flange and said radially outwardly extending positioning flange.

3. The invention of claim 2 additionally including a locking ring receivable within and cooperating with camming means on the interior of said mounting ring to be moved axially in said support member in response to rotation of said locking ring, said locking ring being engageable with said positioning flange for urging said support member downwardly upon rotation of the locking ring for locking said support member in sealed relationship in said mounting ring.

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