United States Patent

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[54] **QUICK-CONNECT COUPLING CONVERSION MEANS FOR BEER KEGS**
5 Claims, 6 Drawing Figs.

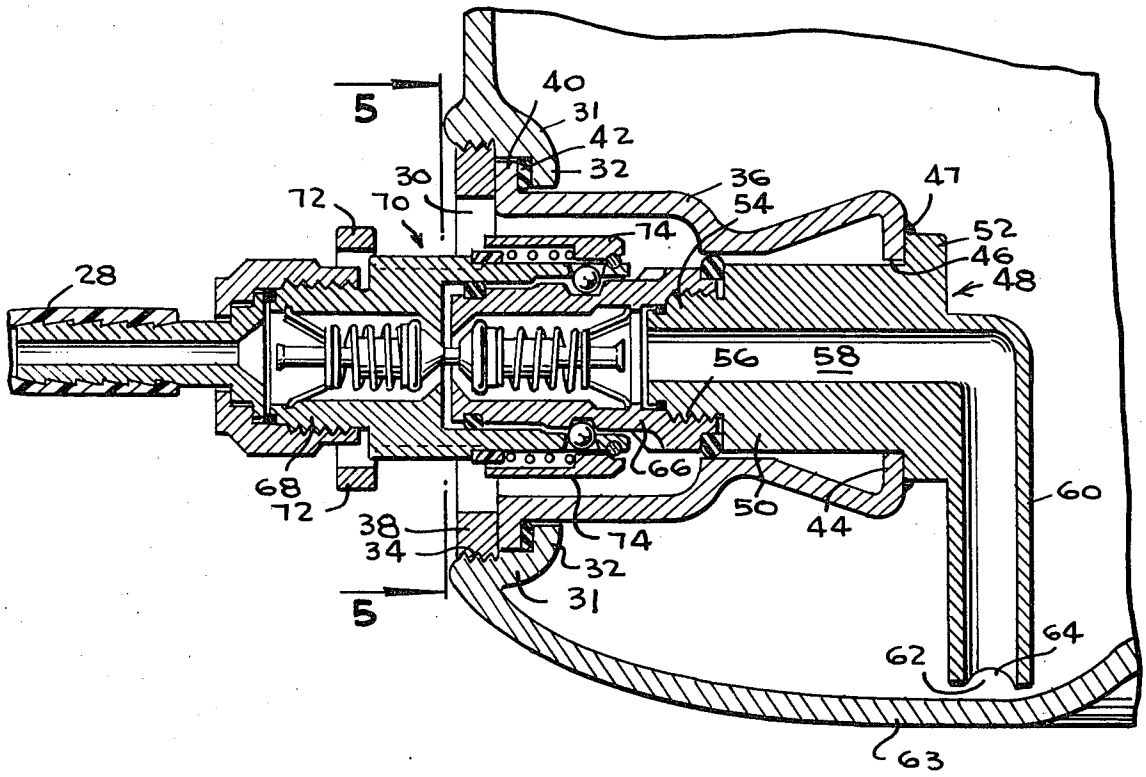
[52] **U.S. Cl.** **222/394,** 222/464
[51] **Int. Cl.** **B65d 83/00**
[50] **Field of Search** ..... 222/464, 400.7, 143, 376, 394 (Inquired)

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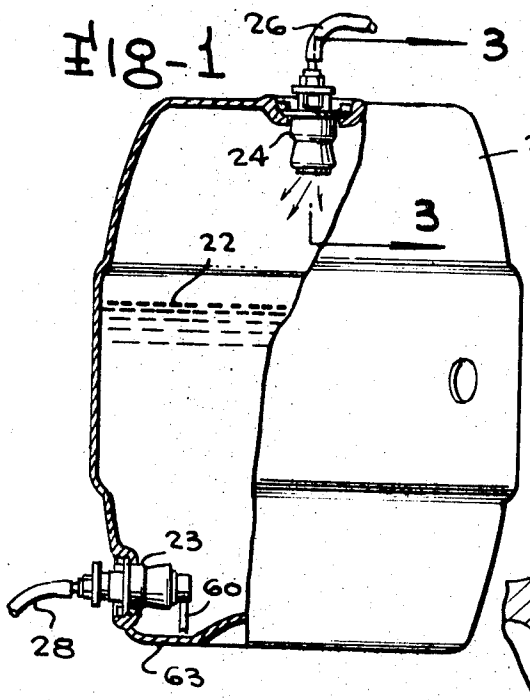
ABSTRACT: A keg having a lower liquid dispensing tapping opening provided with a removable adapter mounted in a valve body cup and having a downwardly extending radial conduit on its innermost end with the conduit having an inlet opening adjacent the bottom of the keg on one end and communicating with a male quick-connect coupling member on its other end for the discharge of liquid through the coupling for enabling a maximum efficiency in the discharge of the keg contents.



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2 Sheets-Sheet 1

Fig-1



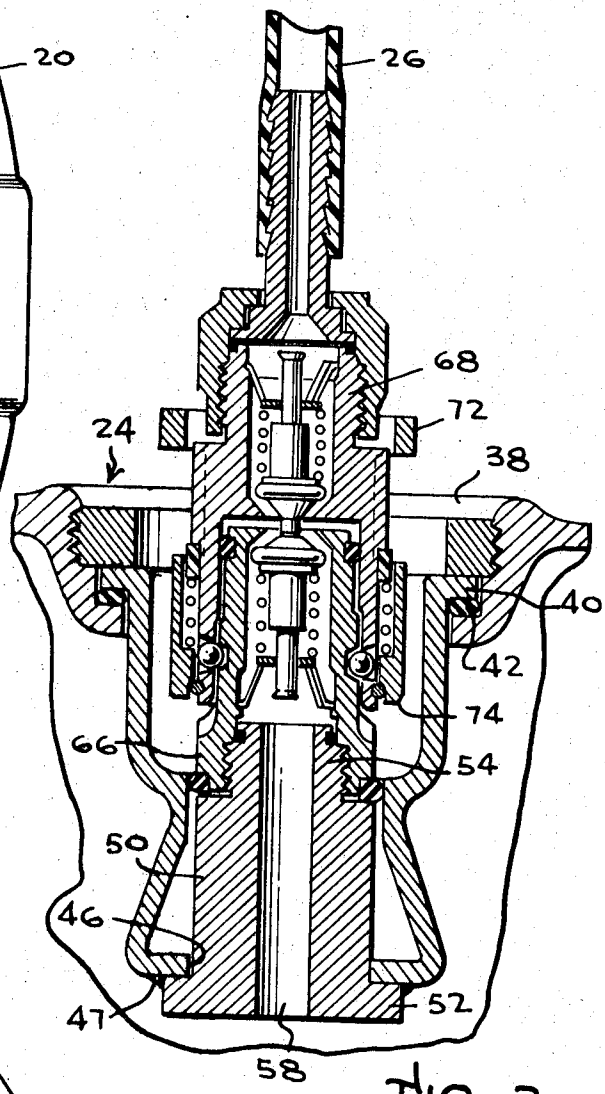


Fig-3

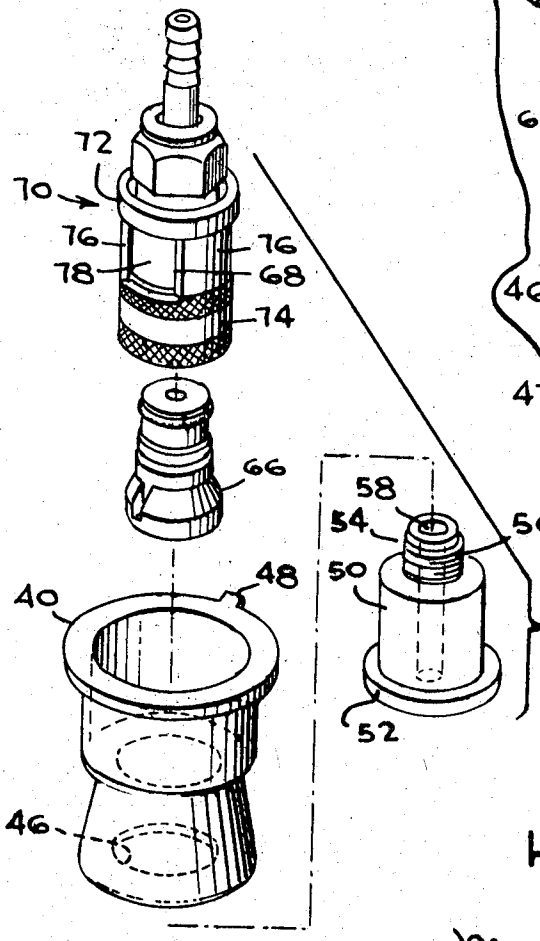


Fig-2

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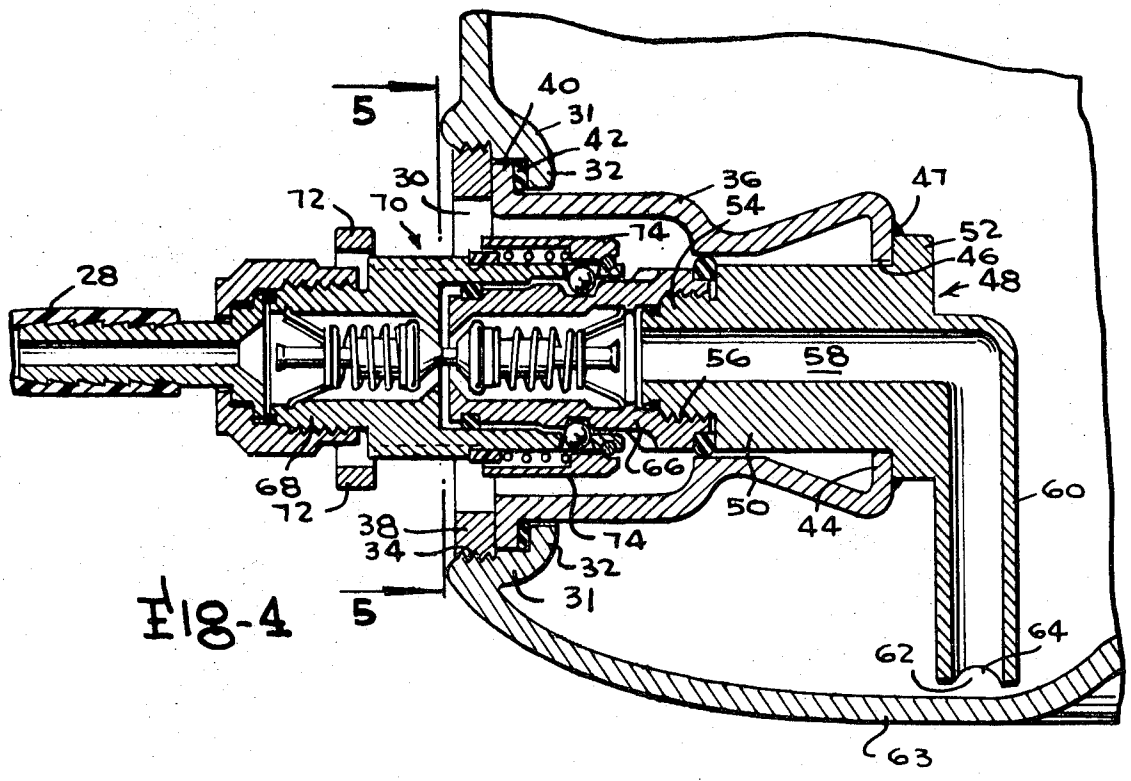


FIG-4

FIG-5

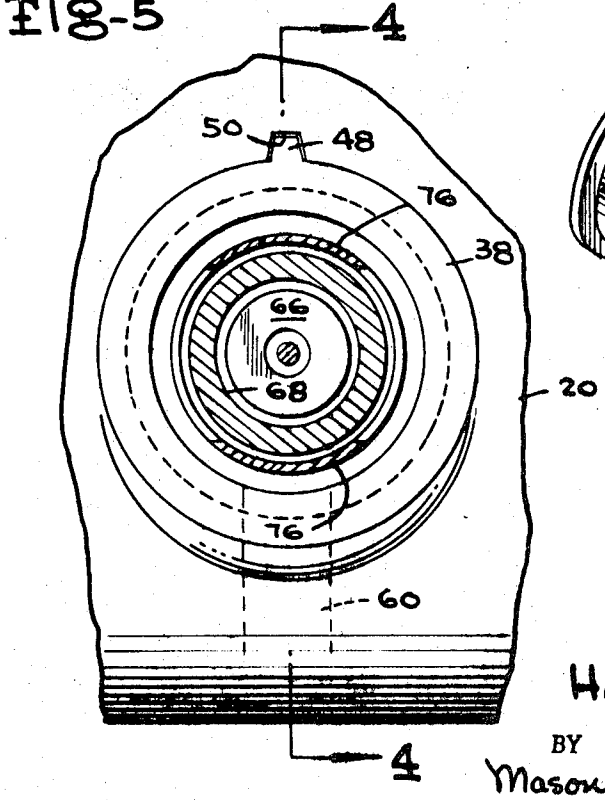
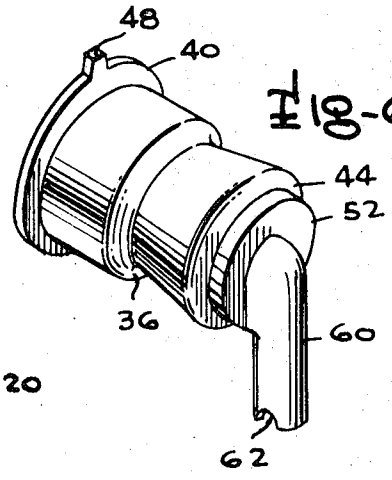


FIG-6



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QUICK-CONNECT COUPLING CONVERSION MEANS FOR BEER KEGS

BACKGROUND OF THE INVENTION

This invention relates to the field of fluid dispensing and is more particularly related to a highly efficient adapter means for use in association with conventional beer kegs for enabling the use of modern quick-connect hose couplings with such kegs in place of the previously known twist couplings which have suffered numerous deficiencies. The particular keg with which the instant invention is associated is known in the trade as a "golden gate" type keg and has been in use for many years.

The "golden gate" keg is provided with a lower lager opening to which a hose for receiving beer from within the keg is connected and another opening in its top to which a gas hose is connected for pressurizing the keg to enable the flow of beer therefrom.

The prior art fluid delivery systems employed for dispensing beer have been difficult to connect and have been prone to rupture and breakdown at inopportune times. Consequently, the undesirable result of having a flooded draft box or an inoperative dispensing system has been a very serious problem for those of the beverage dispensing trade.

The defects of the prior devices are due largely because of the manner in which the lager and gas hoses are attached to the connecting components of such conventional kegs; it has been frequently found that the twisting necessary for making or breaking the hose connections to the keg frequently results in breakage and rupture of the hose.

The previously employed means used with the "golden gate" type keg has employed an identical connection for both the gas inlet and the lager inlet of the keg. This construction includes a recessed valve body cup connected to the wall of the keg and extending into the interior of the keg. The innermost endwall of the valve body cup includes a butterfly valve which is rotatable to open and close a passageway in the interior of the valve body cup from the interior of the keg. A valve actuator in the form of an axially oriented rod is provided on the innermost wall of the end of the valve cup. Connection of the hose to the valve cup of the previously known system is enabled by a right angle pipe having its outer end connected to the hose and its inner end provided with an aperture which matingly fits over the valve actuator so that the pipe is axially inserted to a position in which the opening in the end thereof fits over the valve actuator and is then subsequently twisted to open the butterfly valve. The twisting movement also causes the pipe to form a sealed fit in the valve cup and allow the flow of fluid or gas to the pipe and valve cup to or from the interior of the keg.

A great shortcoming of these previously known aforementioned devices resides in the fact that the twisting movement required for connecting the pipe and hose to the keg in the valve cup places stresses on the hose connected to the pipe and eventually results in wear and tear on the hose so as to result in rupture of same. The consequence of such rupture can be most disastrous such as, for example, a flooded draft box, loss of many gallons of beer, etc.

Moreover, another disadvantage of the known system is derivative from the fact that the butterfly valve employed in the valve cup requires considerable force for opening and/or closing movement and the person attaching or removing the pipe connector must have and necessarily employ a considerable amount of strength. Consequently, couplings of this type cannot be used by barmaids or others not possessing the required strength for turning same as is required in order to open the butterfly valve and seal the connector pipe in the valve cup.

Still another disadvantage of the previously known devices of this sort is that the connector pipe must be rotated to a given angular position with respect to the valve cup before it can be inserted into the valve cup connection thereto. Consequently, this positioning rotation also twists the hose and it is often difficult to connect the pipe to the valve cup when there is insufficient length of hose or when the positioning of the relative parts is awkward with respect to each other and the person attempting to make the connection.

Yet another very serious shortcoming of the prior art devices resides in the fact that each connection and disconnection of the prior known devices requires that the butterfly valve on the end of the valve cup be either opened or closed. Eventually, the frequent opening and closing of the butterfly valve results in consequent leakage therefrom and repair or replacement of the valve member must be accomplished.

Still another serious shortcoming of the previously known prior art devices of the aforementioned type resides in the fact that the pipe coupling to which the hose is connected employs a pair of lugs engageable with the inclined surface on the interior of the valve cup for forcing the pipe connector inwardly in the valve cup for sealing and connecting the pipe connector to the cup. Since these lugs are subjected to high frictional forces and abrasion, they eventually wear to such an extent that they do not provide adequate force for sealingly connecting the pipe with the valve cup. Consequently, the coupling must be replaced. This wear and tear is achieved by virtue of the fact that the couplings must be twisted for each insertion and removal from the valve cup so as to consequently wear and remove metal from the surface of the lug.

An additional disadvantage of the known prior art devices of this type resides in the fact that each hose connecting operation of the keg requires that the resilient sealing means on the pipe member be compressed and forced into sealing relationship with the valve cup. This fact consequently results in the resilient sealing members eventually wearing so as to require replacement.

Yet another disadvantage of the known prior art devices of this type resides in the fact that the inlet to the butterfly valve is spaced a considerable distance above the lowermost portion of the interior of the keg so that there is a large quantity of beer beneath the inlet which cannot be dispensed and is consequently wasted. It has been estimated that this wastage amounts to countless thousands of dollars each year.

Although the aforediscussed deficiencies of the currently employed kegs are well known, no adequate solutions to such problems have been found prior to the instant invention. Obtainment of solutions to the foregoing problems have been hindered by virtue of the fact that there are many thousands of kegs of the aforementioned type currently in use in breweries in this country with this country's largest brewer being one of such users. Therefore, it is imperative that any solutions to the problems would have to enable the continued use of the keg being currently employed without requiring replacement of the kegs as the solution is being adopted. Moreover, since the conversion of a beverage dispensing system from one form to another requires considerable time, it is highly desirable that the kegs retain capability for usage both in the old system and the new system while the conversion is taking place since it would obviously be impossible to provide an instantaneous changeover for all bars and other places in which draft beer is dispensed. Moreover, the various breweries have large sums invested in keg cleaning equipment and other handling means which would require expensive conversion if a new type keg or radically different connector system should be employed.

Therefore, the brewing industry has long sought a solution to the problem of providing each quick-connect couplings to a conventional keg which could be effected with a minimum of effort with no necessity for twisting or turning the hose attached to the coupling. Moreover, the brewing industry has long sought adequate means for avoiding loss of that portion of the beverage below the inlet to the outlet or lager valve connection of a keg.

Along these lines, it should be noted that the desirability of being able to use quick-connect couplings is all the more apparent when one considers the fact that such couplings do not require any fixed relative rotation with respect to each other prior to connection to each other. Therefore, use of such

couplings would eliminate all twisting of the hose prior to making such a connection.

The instant invention solves the problems of the prior devices in an extremely efficient manner. Specifically, the instant invention comprises a connector attachment connected to the valve cup of the known keg designs in place of the butterfly valve on the cup. This connector provides a substantially permanent installation and has a male portion of a quick-connect coupling connected to its outer end to which a female portion of such a coupling can be connected by merely axially moving the female connector over the male coupling portion. This connection does not require any twisting or turning of the hose connected to the female connector member. Moreover, the female connector can be fitted over the male connector in any relative rotative position with respect thereto. Additionally, the interior end of the connector means is provided with a radially and downwardly extending conduit having an inlet opening positioned adjacent the bottom of the keg. Consequently, practically all of the beer contained within the keg is drainable therefrom and there is little or no wastage of such.

Moreover, since the connector remains in the valve cup in a permanent manner, there is no wear and tear of the parts requiring replacement as is the case where butterfly valves are employed. Additionally, there is absolutely no requirement that the keg per se be modified in any manner in order to use the coupling system of this invention.

The instant invention, on the other hand, can be easily removed in order to allow the keg to be used with the previously employed devices in bars which have not been converted to quick-connect coupling equipment. This is true because the coupling of this invention requires absolutely no modification or alteration of the previously known valve cups and keg means and consequently provides a tremendous advantage in savings when a brewery is making the changeover from the old system to the new system.

SUMMARY OF THE INVENTION

Therefore, it is the primary object of this invention to provide a new and improved conversion means for liquid dispensing apparatus.

Even more specifically, it is the primary object of this invention to provide a new and improved adapter means for enabling the use of modern quick-connect couplings with conventional older style beer kegs without requiring modification of such kegs.

A still further object of this invention is the provision of a new and improved adapter means for enabling the use of modern quick-connect couplings with conventional older style beer kegs and having improved efficiency in draining a greater percentage of the contents of the keg.

Obtainment of the objects of this invention is obtained through the provision of an adapter receivable in the valve body cup of the conventional "golden gate" type keg and in the form of an elongated connector member having a threaded nipple means on one end for receiving the male portion of a modern quick-connect coupling.

The adapter is formed of a cylindrical tubular body portion having an axial passageway extending throughout its axial length. The inner end of the body portion spaced innermost within the keg is dimensioned to matingly fit in an aperture in the innermost endwall of the valve body cup and is provided with a peripheral retaining flange for accurately positioning same in the valve body cup. A downwardly extending radial conduit on the inner end of the adapter communicates with the axial conduit and has its lowermost end adjacent the bottom of the keg. The lowermost end is provided with inlet openings through which beer or other liquid enters to be dispensed from the keg. The positioning of the lowermost opening is such that it is immediately adjacent the bottom of the keg so that practically all of the liquid contents of the keg can be dispensed therefrom.

One primary advantage of the subject invention is that it enables the use of modern quick-connect couplings which can be connected to the keg in a manner much more easy than the previously known hose connector means employed with kegs of this type. Moreover, the female coupling which is connected to the hose being connected to the keg requires no specific rotary alignment with respect to the male coupling member and can be connected thereto by merely pushing the female coupling over the male coupling regardless of the relative rotary positions of the coupling members. No great skill or strength is required for coupling the elements together and practically any person either male or female can consequently easily connect or disconnect the keg for beverage dispensing purposes.

DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front elevational view of a beer keg employing the subject invention having a portion removed for clarity of illustration of the interior thereof;

FIG. **2** is an exploded perspective view of the parts forming the gas inlet valve connection of the keg;

FIG. **3** is a sectional view taken along lines **3–3** of FIG. **1**;

FIG. **4** is a bisecting sectional view taken along lines **4–4** of FIG. **5**;

FIG. **5** is a sectional view taken along lines **5–5** of FIG. **4**; and

FIG. **6** is a perspective view of the lager drain element portion of the preferred embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

The preferred embodiment of this invention is illustrated in conjunction with a beer dispensing apparatus including a container or keg **20** having a quantity of beer **22** on its interior. Keg **20** is provided with a first tapping opening **23** in the side near the bottom of the keg and a second tapping opening **24** in the top of the keg. A valve member connection means is inserted in the first and second tapping openings for enabling connection of lager and gas hoses to the tapping openings. A gas line hose **26** is connected to communicate through the second tapping opening **24** and a lager or liquid line **28** is connected to communicate with the first tapping opening **23**. The instant invention enables the use of quick-connect couplings for making the connections.

FIG. **4** illustrates the lower or lager flow means which includes an inwardly extending opening **30** into which valving and connector components are mounted. Opening **30** is defined by a generally annular flange **31** extending in from the outer wall of the keg and terminating in an annular sealing flange **32**. Threads **34** are formed adjacent the outer end of opening **30** for a purpose to be explained hereinafter.

A valve body cup **36** (FIG. **6**) is received within opening **30** and is biased toward the annular flange **32** by means of a threaded retainer ring **38** threadably engaged with the threads **34** as illustrated in FIG. **4**. The outermost end of valve body cup **36** is provided with a radially extending flange **40** which engages a sealing ring **42** which is clamped between flange **40** and the annular sealing flange **40**. Valve body cup **36** is provided with an endwall **44** forming its innermost extent and having a passageway or aperture **46** extending therethrough.

The valve body cup **36** is retained in a fixed rotative position by virtue of a positioning lug **48** extending outwardly from the flange **40** of the body cup and received in a slot **50** in the keg wall as shown in FIG. **5**.

The above-discussed construction is conventional, and a butterfly valve has, in the past, been mounted in the aperture **46** for enabling the dispensing of beer from the keg. However, this invention eliminates the need for the butterfly valve by the provision of other improved valving connector means which will now be discussed.

An elongated connector means **48** comprising a main cylindrical body portion having a retaining flange **52** of greater diameter than aperture **46** on its innermost end is received

within aperture **46** as best illustrated in FIG. **4**. The outermost end of the elongated connector member **48** is provided with a nipple portion **54** having threads **56** about its outer periphery. Threads **56** receive the male connector member portion of a quick-connect coupling to be described in detail hereinafter.

The male coupling portion **66** of a conventional quick-connect coupling of the type manufactured by the Hansen Manufacturing Company of Cleveland, Ohio, or the Cornelius Company of Anoka, Minnesota, is threaded onto threads **56** for retention thereon. The male coupling member **66** includes a check valve for preventing the discharge of fluid from within the keg when the hose and female coupling are disconnected. However, the check valve is opened when the female connection is attached to the male connection. The female connection member **68** also includes a check valve for preventing the discharge of liquid or gas from the hose connected to the female connection member when such is disconnected from the male member. Connection of the male and female coupling members results in opening of both of the check valves to allow the passage of liquid or gas therethrough. The details of construction of the male and female portions of the quick-connect connection members are discussed in detail in application Ser. No. 563,278, now abandoned. Moreover, the details of construction of the quick-connect coupling are discussed in even greater detail in U.S. Pat. No. 2,823,048. In any event, connection between the male and female elements **66** and **68** respectively of the quick-connect coupling is easily enabled merely by an axial movement of the female connector member **68** over the male connector member **66** with axially adjustable sleeve **70** on the female member being movable to the left as illustrated in FIG. **1** to enable connection and disconnection of the coupling elements with a very minimum of effort. Sleeve member **70** is formed with an exterior hand-engageable ring portion **72** and an interior portion in the form of a sleeve **74**. The portions **72** and **74** are connected by sleeve sector portions **76** between which a slot **78** is located, as shown in FIG. **2**.

The body cup and connector assembly associated with the gas inlet is identical to the afore-discussed means associated with the lager outlet connection with one exception. However, the connector member does not employ any means analogous to the conduit **60** since there's obviously no need for such with the intro gas inlet. However, such a conduit element of the type illustrated in FIG. **6** could be employed with the gas inlet if such were desired and the type inlet shown in FIG. **2** was unavailable. Therefore, it will be seen that the discussion of the coupling elements forming the lager valving outlet is equally applicable to the structure illustrated in FIGS. **2** and **3** of the patent for providing a gas inlet connection. Consequently, the gas inlet construction will not be discussed in detail since such discussion would merely be repetitive of what has been stated previously.

Therefore, it will be seen that this invention provides a uniquely efficient means for providing a connection of the gas and longer lines to a beer keg. Moreover, the invention provides the additional desirable feature of enabling a most thorough and complete drainage of the keg. Various modifications will occur to those skilled in the art, and it should be understood that the spirit and scope of this invention are limited solely by the limitations of the appended claims.

I claim:

1. A system for dispensing fluids comprising a keg having a first tapping opening in the side near the bottom of the keg and a second tapping opening in the top of the keg, each tapping opening having a fixed valve member mounted therein, the valve member comprising a hollow cylindrical valve body cup located entirely within the confines of the outer wall of the keg and having its outer end connected to the outer wall of the keg, a fixed endwall forming the innermost portions of said hollow cylindrical valve body cup, an aperture formed in the central portion of said fixed endwall and extending through said fixed endwall, an elongated connector means having one end fixedly connected to and extending through the aperture in said fixed endwall of said hollow cylindrical cuplike body, said elongated connector means having an axially-extending aperture extending throughout its length to provide communication with the interior of the keg, said elongated connector means having its other end positioned within the confines of the hollow cylindrical valve body cup, a male coupling fitting having an exterior end fixedly attached to the said other end of the elongated connector means and having an outermost end located within the confines of the outer wall of the keg for receiving a female coupling adapted for selective longitudinal coupled association with said male coupling fitting and a radially downward extending conduit communicating with the axially-extending aperture extending throughout the length of said elongated connector means of the valve member in the first tapping opening and having an inlet opening at its extreme end formed in the valve member mounted adjacent the bottom of the keg with the inlet opening being adjacent the lowermost part of the interior of the keg so as to enable a substantially complete draining of liquid from the keg through said first tapping opening.

2. The system of claim **1** wherein said tapping opening adjacent the bottom of said keg is provided with a positioning slot adjacent one wall thereof and said valve body cup has an external lug receivable in said slot for positioning said valve body cup so that said radially downwardly extending conduit is always oriented vertically with its open end being positioned adjacent the bottom of the keg.

3. The system of claim **2** wherein said elongated connector means has a threaded portion on its external end for receiving said male connector member.

4. The system of claim **3** wherein said elongated connector means additionally includes a retaining flange having a diameter greater than the diameter of said aperture formed in the central portion of said fixed endwall and forming the innermost end of said elongated connector means.

5. The system of claim **4** wherein the outer end of said radially downward extending conduit is provided with upward extending notches extending upward from its lowermost extent for enabling drainage of liquid within the keg to occur in the event that the lower edge of said member is in an actual engagement with the bottom of the keg.