United States Patent

[11] 3,610,478

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[45] Patented **Oct. 5, 1971**

[54] **TAPPING DEVICE FOR BEER KEGS AND THE LIKE**
28 Claims, 11 Drawing Figs.

[52] **U.S. Cl.** **222/400.7,** 137/212
[51] **Int. Cl.** **B65d 83/00**
[50] **Field of Search** 137/212; 222/400.7, 400.8, 398, 507; 251/149.8, 149.9

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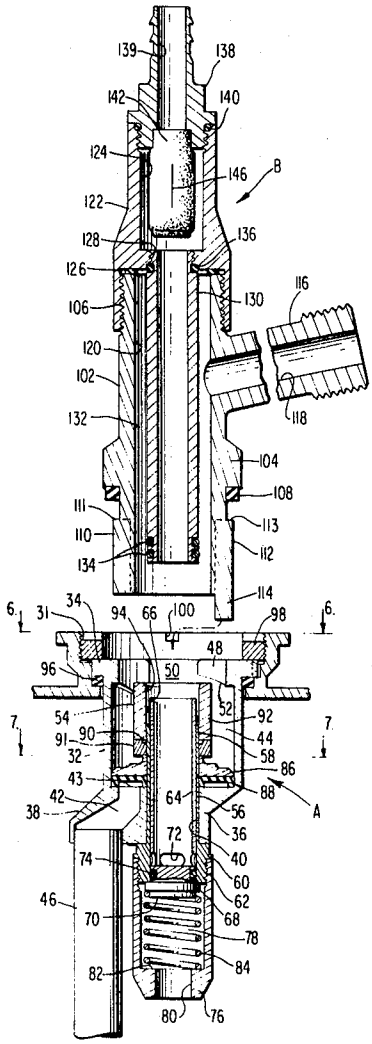
ABSTRACT: Disclosed is a novel tapping device for beer kegs and the like including a keg adapter mounted in the opening of a keg at the brewery and a probe-type coupler secured to the keg adapter at the dispensing establishment to dispense beer. The adapter has an enlarged central gas passage and a laterally offset beer passage terminating in a depending siphon tube, beer and gas valves being disposed in the beer and gas passages respectively. The coupler has a central probe engageable with the gas valve to open the latter whereby gas is transmitted through the coupler and keg adapter into the keg. The coupler also carries a lug engageable with the beer valve in the keg adapter for opening the latter upon securement of the coupler to the adapter whereby beer is dispensed from the keg through the siphon tube, keg adapter and coupler.



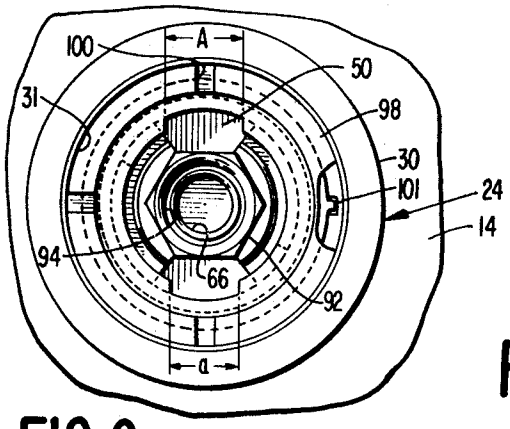


FIG. 6

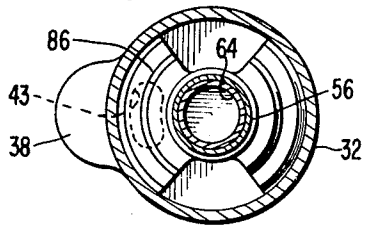


FIG. 7

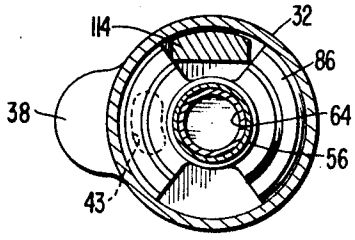


FIG. 8

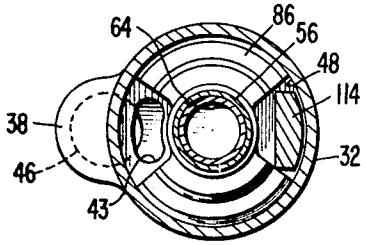


FIG. 9

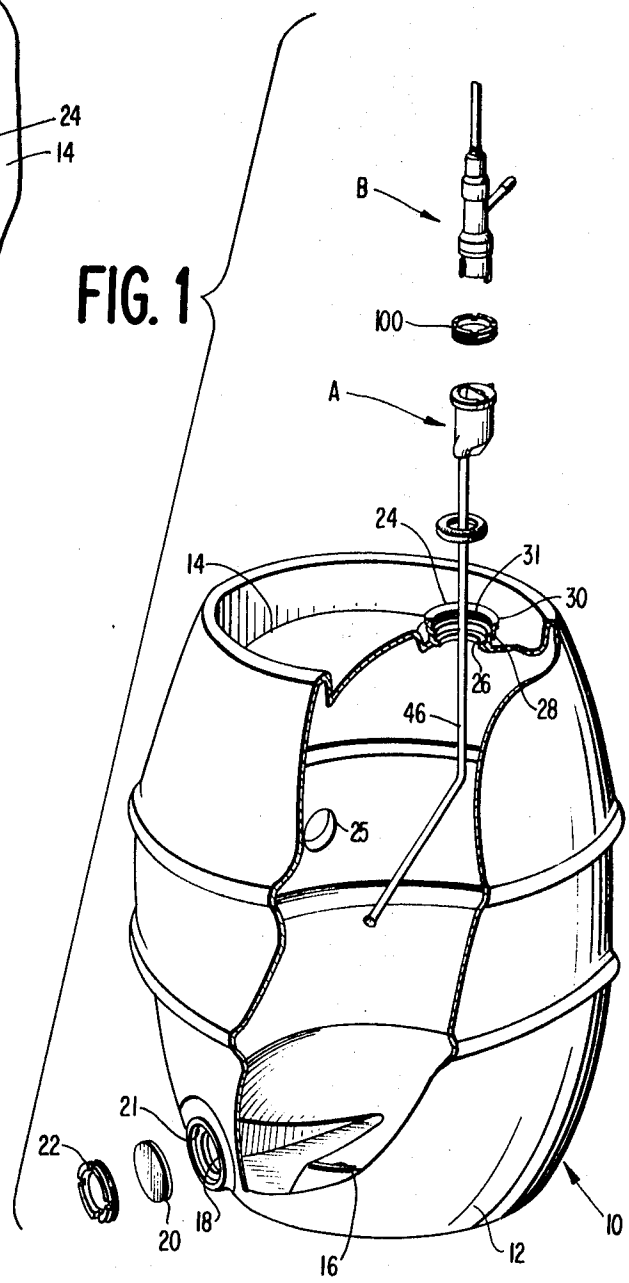


FIG. 1

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FIG. 2

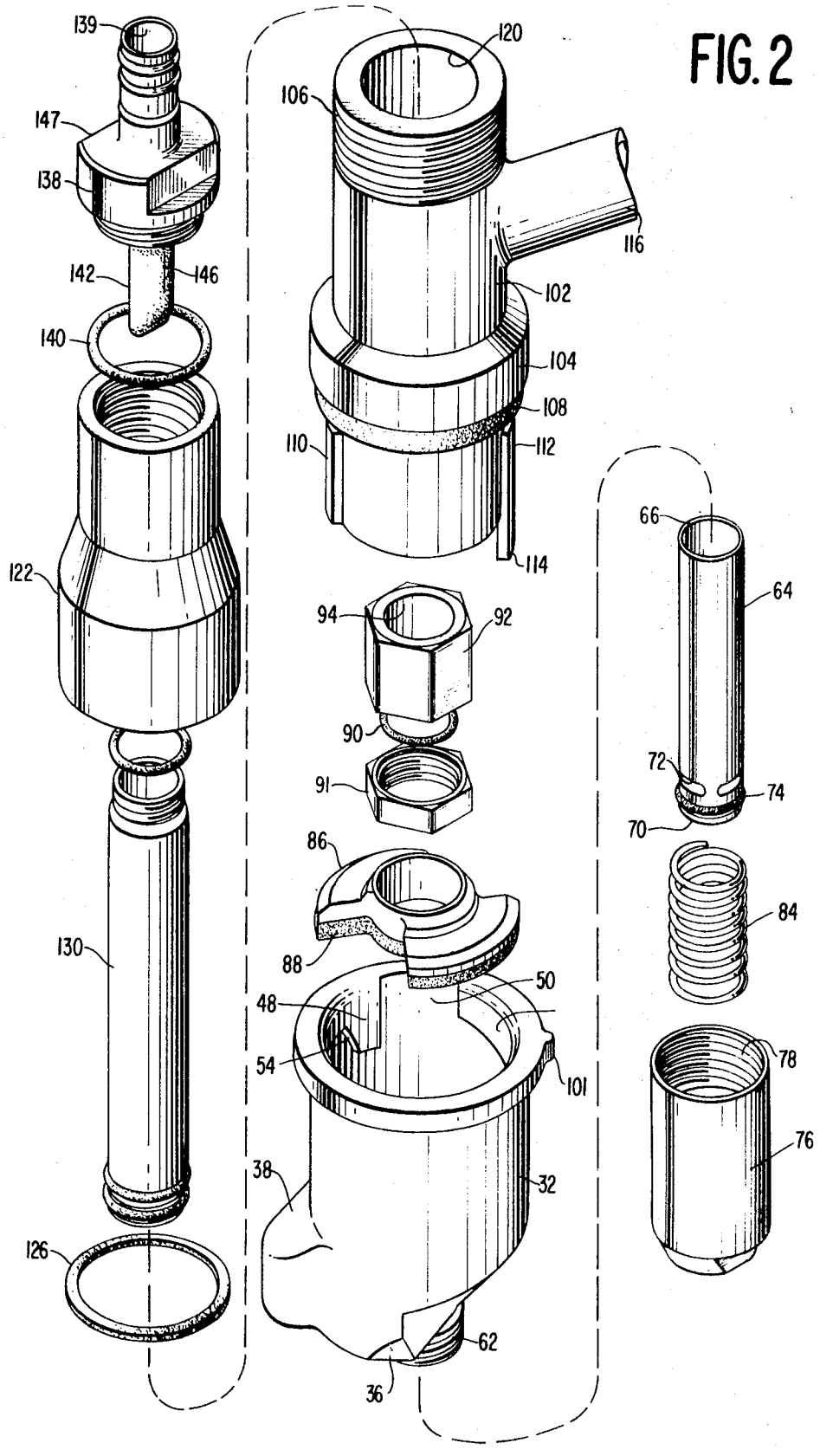
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FIG. 3

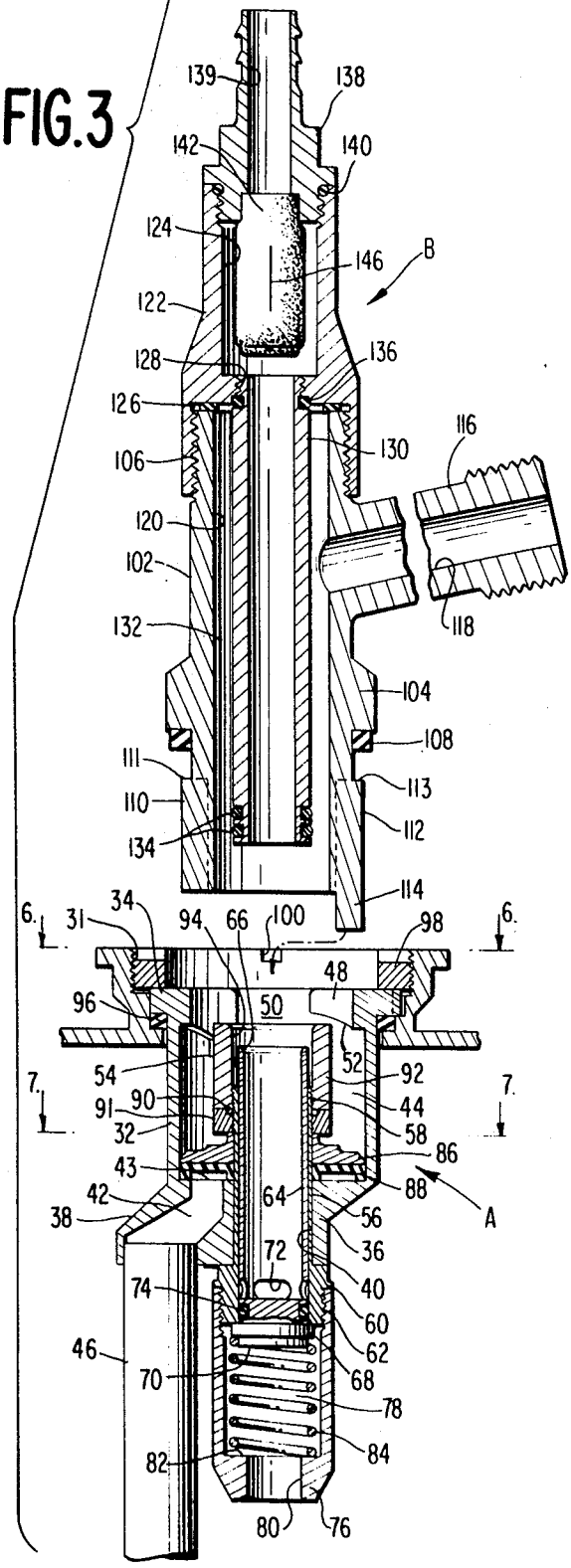


FIG. 4

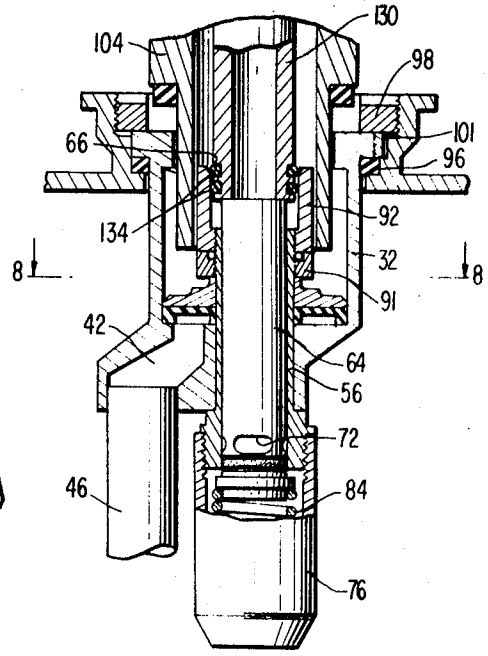
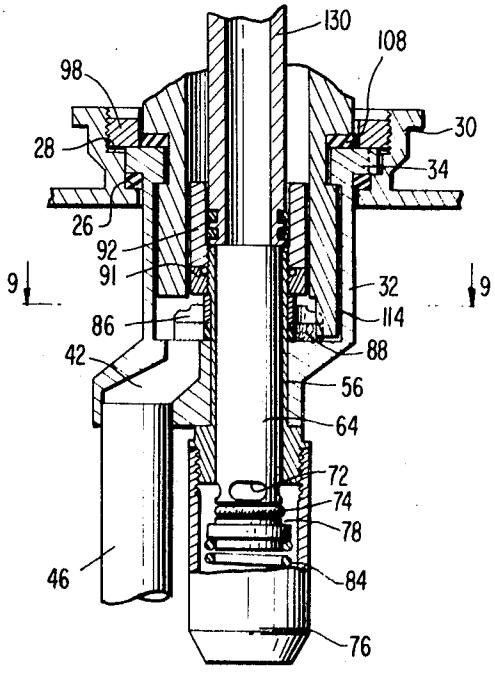


FIG. 5



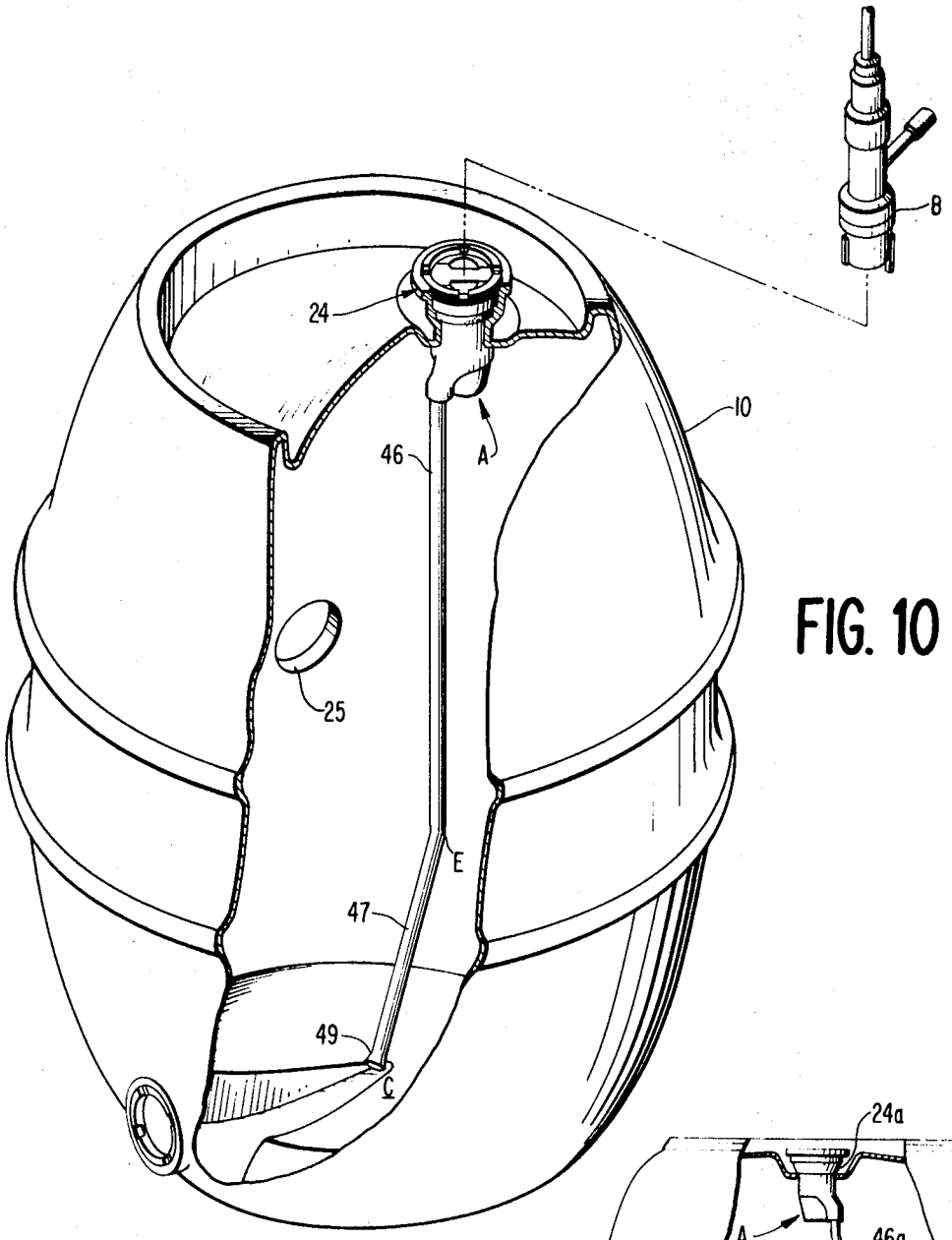


FIG. 10

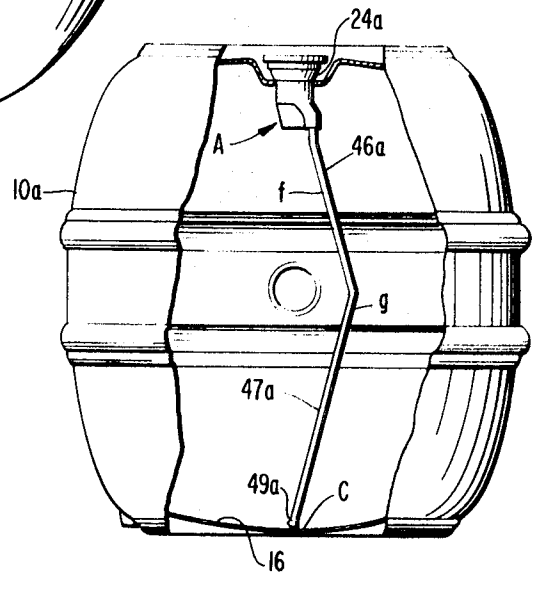


FIG. 11

TAPPING DEVICE FOR BEER KEGS AND THE LIKE

The present invention relates to a new improved tapping device for drawing fluid such as beer from containers such as beer kegs or barrels using a gas to drive the fluid from the container. Particularly, the present invention relates to a new improved tapping device usable with conventional beer kegs of the type having a 1½-inch tapping opening and comprising a novel key adapter for constantly sealing the keg and a unique coupler releasably attachable to the adapter at the dispensing establishment for dispensing beer.

In the fluid-dispensing industry, particularly the beer-dispensing industry, there are currently several types of tapping systems utilizing specially constructed kegs or containers. One such system is the so-called "Golden Gate" type which employs a keg characterized by an enlarged, usually about 1½-inch opening formed in the bottom sidewall of the keg and a similar opening formed in the top wall. Fittings, commonly used with this system, are provided to seal the openings whereby the keg may be filled at the brewery. At the dispensing establishment, two additional and separate fittings for the two different keg openings are applied to the keg fittings, one for introducing gas or air into the keg through the opening in its top wall and the other for withdrawing the beer from the keg through the sidewall opening. This type of arrangement has proven generally unsatisfactory from many standpoints including the high cost of the fittings, difficulties encountered in cleaning the kegs and the considerable labor involved to tap the keg. However, Golden-Gate-type systems have been adapted and are in use by some of the largest U.S. breweries and there is a reluctance to abandon the system due to the substantial capital investment therein, notwithstanding its well-known disadvantages.

The keg tapping unit disclosed in U.S. Pat. No. 3,065,885 has been proposed for use with the Golden-Gate-tapping system and this unit provides beer and gas passages through a barrel unit secured in the upper keg opening. A tavern unit having beer and gas passages, is coupled to the barrel unit and a probe opens the centrally disposed beer valve to permit beer to be withdrawn from the keg under pressure, the beer and gas passages being provided through the single keg opening. However, this adapter is a relatively complex structure and does not admit of successful utilization in a series tapping system, successful industry penetration of this unit being precluded by its high cost, the foregoing and other factors.

One of the principal objects of the present invention is to provide a novel improved beer-tapping unit specifically adapted for use with the Golden-Gate-type tapping system and wherein only the one opening through the upper wall of the keg is utilized to provide gas or air under pressure to the keg and with draw beer or the like from the keg, thereby eliminating the necessity of a second pair of tapping and keg fittings for the other opening as is the current practice in tapping kegs of the Golden-Gate-type.

Another object of the present invention is to provide an improved tapping device for a Golden-Gate-tapping system wherein the fitting for the opening through the lower sidewall of each Golden-Gate-type keg is entirely eliminated and is replaced by a permanent seal.

Still another object is to provide enlarged beer and gas passages through both the coupler and keg adapter of the present tapping unit whereby the unit is useful in series installations. The foregoing is accomplished without retarding the normal rate of liquid or beer flow is in no way detrimental to the quality of the liquid or beer dispensed.

A further object of the present invention is to provide a novel keg adapter for releasable securement in the enlarged opening of the Golden-Gate-type keg at the brewery and having uniquely formed liquid and gas passages as well as novel liquid and gas valves in the respective liquid and gas passages.

A still further object of the present invention is to provide a novel coupler for use at the dispensing establishment and having a gas check valve precluding backflow or surge of liquid or beer into the gas lines.

A related object of the present invention is to provide an improved coupler and keg adapter wherein the former can be readily and easily releasably secured to the latter in a manner to substantially simultaneously open the liquid and gas valves in the keg adapter whereby communication between the respective fluid and gas passages in the coupler and keg adapter is immediately established.

A related object of the present invention is to provide a rugged, strong, readily constructed, inexpensive and substantially all metal tapping unit specifically adapted for tapping beer or the like in Golden-Gate-type tapping systems.

These and further objects and advantages of the present invention will become more apparent upon reference to the following specification, appended claims and drawings wherein:

FIG. 1 is a perspective view with parts broken out for ease of illustration of a typical Golden-Gate-type keg and in which the improved tapping unit of the present invention is installed, the latter unit being illustrated in exploded juxtaposition;

FIG. 2 is an enlarged exploded perspective view of the parts forming the new improved keg adapter and coupler of the present invention;

FIG. 3 is a vertical cross-sectional view of the keg adapter as assembled in the keg opening and the coupler prior to its securement to the keg adapter;

FIGS. 4 and 5 are fragmentary vertical cross section views of the tapping unit hereof with the coupler being illustrated in initial and finally secured positions within the keg adapter; cross-sectional

FIGS. 6 and 7 are horizontal cross-sectional views of the keg adapter and taken generally about on line 6—6 and 7—7 respectively in FIG. 3;

FIGS. 8 and 9 are horizontal cross-sectonal views thereof taken about on lines 8—8 and 9—9 in FIGS. 4 and 5 respectively;

FIG. 10 is a perspective view of one form of a Golden Gate keg with parts broken out to illustrate the keg adapter semipermanently secured within the upper keg opening; and

FIG. 11 is a side elevation view of another form of Golden Gate keg with parts broken out to illustrate the keg adapter hereof semipermanently secured within the upper keg opening.

Referring now to the drawings, particularly to FIG. 1, there is illustrated one form of a conventional keg, generally indicated at 10, of the type commonly in use with the so-called Golden-Gate-type tapping system. This conventional keg includes a cylindrical keg body comprising sidewalls 12 and upper and lower walls 14 and 16 respectively. A keg opening 18 is provided through the sidewall 12 adjacent the bottom of the keg and, conventionally, receives a fitting for withdrawing beer from the keg.

In utilizing the present invention, however, this conventional sidewall fitting is not needed as both gas and beer are respectively supplied to and withdrawn from the keg through the other keg opening as will be described. Thus, in accordance with the present invention, opening 18 is sealed by the application of a plug 20 clamped against a shoulder 21 in opening 18 by a ring 22 threadably received within opening 18. The threaded opening 18 is standard for all Golden-Gate-type kegs and the sealing plug 20 and ring 22 are formed compatible with this type of opening whereby modification of the standard keg and keg opening are not necessary.

The conventional Golden-Gate-type keg also includes an opening 24 through the upper keg wall 14. The opening 24 in this form of keg is offset from the axis of the keg and lies in a common diametrical plane with lower opening 18. A filler opening 25 is also formed through the sidewall of keg 10 to receive a filler rod, not shown, for transmitting beer into the keg at the brewery when the keg is being filled in a manner as will be described. Typically, the upper opening 24 is about 1½ inches in diameter and comprise stepped shoulders 26 and 28 forming a portion of an outwardly projecting annular flange 30, the flange 30 being internally threaded outwardly of shoulder 28 as at 31. The new improved tapping unit of the

present invention is adapted to be received within keg opening 24 for transmitting gas or air from a pressurized source, not shown, through opening 24 into the keg and for withdrawing beer from the keg through the same opening 24. The improved keg-tapping unit of the present invention comprises a keg adapter, generally indicated at A, which is releasably secured within the keg opening 24 at the brewery and which, in cooperation with plug 20, seals the beer within the keg after filling at the brewery, and a coupler, generally indicated at B, which is releasably secured to keg adapter A at the dispensing establishment and cooperates therewith to provide gas into the keg and withdraw beer under pressure from the keg.

Referring now specifically to FIGS. 2 and 3, the keg adapter A comprises a cylindrical housing or body having radially outwardly directed annular flange 34 at its upper end, a downwardly projecting nipple 36 adjacent its upper end, a downwardly projecting nipple 36 adjacent its lower end and laterally offset portion 38 adjacent nipple 36. The housing 32 is preferably an all metal construction and a central bore 40 is provided through nipple 36. An upwardly and inwardly angled passage 42 is provided through offset portion 38 opening at its upper end as at 43 into the cup-shaped chamber 44 defined by body 32 and opening through the lower end of body 32 at an axially offset position. The upper end of a siphon tube 46, formed preferably of metal, is suitable secured as by brazing or the like within the lower end of offset passage 42 to extend vertically within the keg when adapter A is secured within opening 24. The lower end portion 47 of siphon tube 46 is bent at about a 15° angle and extends to the lower wall 16 of keg 10 when keg adapter A is finally secured within keg opening 24 for reasons described hereinafter. Body 32 also includes a pair of diametrically opposed inwardly directed arcuate flanges or lugs 48 about its upper end. Flanges 48 define a pair of diametrically opposed slots 50 opening through the top of body 32. As best seen in FIGS. 2 and 3, the undersurfaces of flanges 48 are arcuate as at 52 to provide downwardly curving circumferentially extending cam surfaces for reason as will presently become clear. Cam surfaces 52 terminate in diametrically opposed downwardly extending stop shoulders 54.

A sleeve 56 is suitably secured as by brazing or the like within central bore 40 of nipple 36 and is externally threaded about its upper end as at 58. Sleeve 56 includes a diametrically enlarged portion 60 which is externally threaded as at 62. A gas valve is provided in keg adapter A and comprises a tube 64 slidably receivable within sleeve 56. Tube 64 terminates at its upper end above sleeve 56 in an annular outwardly leveled surface 66 for reasons noted hereinafter. The lower end of tube 64 includes a diametrically enlarged portion 68 which, when tube 64 is received within sleeve 56 butts the lower end of sleeve 56. A reduced cylindrical projection 70 is formed on the lower end of enlarged portion 68. A plurality of openings 72 are spaced circumferentially about the lower end of tube 64 above enlarged portion 68. An O-ring seal 74 is carried by tube 64 above enlarged portion 68. An O-ring seal 74 is carried by tube 64 between openings 72 and portion 68 and is, as shown in FIG. 3, normally in sealing engagement about the lower end of sleeve 56. To retain tube 64 within sleeve 56, the upper end of a tubular retainer 76 is threaded about the lower end of sleeve 56. Retainer 76 includes a central chamber 78 and has a reduced central bore 80 through its lower end forming an internal annular shoulder 82 about 80. Opposite ends of a coil spring 84 engage against shoulder 82 and about reduced-diameter portion 70 of tube 64. Spring 84 biases tube 64 upwardly to normally maintain enlarged portion 68 against the lower end of sleeve 56 and O-ring 74 in sealing engagement about sleeve 56.

When tube 64 is displaced downwardly against the bias of spring 84 in a manner to be described, there is provided a gas passage (FIG. 5) through keg adapter A including tube 64, openings 72, chamber 78 and bore 80. It will be appreciated that the gas passage is maintained sealed prior to tapping of the keg by the O-ring seal 74.

Keg adapter A includes a liquid or beer passage comprising siphon tube 46, passage 42 and chamber 44 for transferring liquid or beer from the keg. To normally seal the liquid or beer passage through adapter A, a butterfly valve 86 having a central bore is received about sleeve 56 within chamber 44. The lower surface of the valve 86 carries a similarly shaped sealing element 88 which may be formed, for example, of Teflon, rubber or the like. As seen particularly in FIG. 7, the butterfly valve 86, in its normal position and with the keg untapped has a leg portion overlying in sealing engagement about the opening 43 of passage 42. With reference to FIGS. 2 and 3, butterfly valve 86 is retained against the bottom face of housing 32 by a nut 91 threaded about the upper end of sleeve 56. An O-ring seal is provided in a groove along the upper face of nut 91. A cup-shaped locknut 92 is also threadedly received about the upper end of sleeve 56 and locks against nut 91 with ring 90 forming a seal therebetween. As seen particularly in FIG. 3, the upper inner cylindrical wall 94 of locknut 92 is spaced outwardly from the upper end of tube 64 for reasons as will become apparent from the ensuing description.

To secure keg adapter A within the keg opening 24, the siphon tube 46 and body 32 are inserted through opening 24 with an O-ring 96 being provided between shoulder 26 about keg opening 24 and the underside of flange 34 on keg adapter A. An externally threaded locking ring 98 having suitable notches 100 cooperable with a spanner wrench is then threaded down on flange 34 to secure keg adapter A within opening 24 with ring 96 forming a seal between body 32 and keg flange 30. The foregoing installation of keg adapter A in the keg opening 24 is accomplished at the brewery. The keg opening is completely sealed as the liquid passage 42 and gas passage through tube 64 are respectively sealed by butterfly valve 86 and O-ring 74 against sleeve 56 with O-ring 96 sealing the adapter body 32 about keg flange 30. The spring 84 maintains the openings 72 in tube 64 above the seal 74 precluding egress of liquid or gas from within to without the keg. Rotation of keg adapter A within opening 24 is prevented by the engagement of a lug 101 with a suitable recess, not shown, formed on keg flange 30. Lug 101 also serves to locate the siphon tube in proper position with the keg 10 illustrated in FIGS. 2 and 10 in a manner to be described.

Referring now particularly to FIGS. 2 and 3, the new improved coupler B of the present invention includes a main cylindrical body or housing 102 having an annular flange 104 intermediate its ends and an externally threaded upper end as at 106. An O-ring seal 108 is provided about body 102 adjacent the lower face of flange 104 for reasons which will become apparent. The lower end of body 102 carries a pair of diametrically opposed outwardly projecting lugs 110 and 112 having a circumferential extent as to be slideably receivable within the spaces 50 between the opposing ends of flanges 48 on keg adapter A. Lug 112 extends below the lower end of cylindrical body 102 to provide a projection 114 for rotating butterfly valve 86 of keg adapter A as will be described. An arm 116 projects laterally from one side of body 102 and includes a bore 118 communicating with the central bore 120 within body 102. Arm 116 is externally threaded at its distal end for connection with a hose for transmitting beer from the keg to a faucet or to another keg when the kegs are connected in series.

Coupler B also includes a cylindrical head 122 having a central bore 124. The lower end of head 122 is recessed and internally threaded for threaded connection about the upper end of body 102, a suitable annular seal 126 being disposed between head 122 and body 102. A reduced-diameter bore 128 is tapped at the lower end of head 122 and threadedly receives the upper externally threaded end of probe 130. Probe 130 extends downwardly from head 122 within the central bore 120 of body 102 to adjacent the lower end of body 102. Probe 130 defines with bore 120 an annular liquid passage 132 in communication with bore 118 through arm 116. The lower end of probe 130 carries a pair of axially spaced O-ring seals 134. An O-ring seal 136 is provided between probe 130 and head 122

to preclude communication between bore **124** and annular passage **132**.

The upper end of head **122** is internally threaded to threadedly receive the lower end of a nipple **138** having a central bore **139**. An O-ring **140** is provided between nipple **138** and head **122** to seal bore **124** at its upper end. The upper open end of a flexible gas check valve **142** is secured within the central bore **139** of nipple **138**. Gas valve **142** comprises an elongated sleeve or envelope closed at its lower end and preferably formed of a silicone rubber, such as Silastic S–2000 Silicone Rubber manufactured by Dow Corning Corp., Midland, Michigan. The upper end is suitably secured within bore **144** by a metal ring, not shown, extending about the upper inner walls of the gas valve within bore **139** clamping the same against the bore walls. Suitable adhesive is also applied about the upper end of the valve. One or more slits **146** are formed through the sides of valve **142** whereby gas or air communicating through bore **139** passes through slits **146** into bore **124** while reverse flow of beer from chamber **124** into bore **139** is precluded as will become clear from the ensuring description. The gas check valve **142** may be of the type disclosed in my copending application, Ser. No. 676,291, filed Oct. 18, 1967 now abandoned in favor of continuing application Ser. No. 814,883 filed Mar. 26, 1969, the disclosure of which is incorporated herein by reference to that application. The upper end of retainer **138** terminates in a tubular portion adapted to receive a flexible hose for conducting gas or air from a pressure source, not shown, to the coupler B. Suitable flats **147** are also formed on nipple **138** to facilitate the threaded connection between nipple **138** and head **122**.

To employ the tapping unit of the present invention, the keg adapter is installed at the brewery in the opening **24** and the seal **20** is applied to opening **18**, all as previously described. When the keg **10** is to be tapped at the dispensing establishment, the arm **116** is coupled by suitable hosing not shown, to a beer-dispensing faucet (or to another keg wherein a series installation is desired) and the nipple **138** is coupled to a gas pressure source through suitable hosing, not shown (or to a preceding keg wherein a series installation is required). The coupler B is then aligned above keg adapter A so that lugs **110** and **112** are receivable through the slots **50** between the spaced flanges **48** on adapter A. When coupler B is displaced downwardly as seen particularly in FIG. **4** with lugs **110** and **112** being received through slots **50**, the lower end of probe **130** is received within the locknut **92** and O-rings **134** engage against the inner wall **94** of locknut **92** to form a seal. The beveled edges **66** of locknut **92** facilitate centering of the probe and locknut **92**. Further downward movement of coupler B onto adapter A causes the lower end of probe **130** to engage the upper end of tube **64** and continued downward movement of coupler B displaces tube **64** downwardly against the bias of spring **84**. This continued downward movement of coupler B also locates the projection **114** on lug **112** between the legs of butterfly valve **86** as seen in FIG. **8**. When coupler B is moved downwardly sufficiently to locate the shoulders **111** and **113** of lugs **110** and **112** respectively below the cam surfaces **52** on flanges **48** in adapter A, the coupler is rotated in the clockwise direction as seen in FIG. **8**, to engage the shoulders with cam surfaces **52** below flanges **48**. Clockwise rotation of coupler B relative to the keg adapter A thus cams coupler B downwardly. Clockwise rotation of coupler B also causes PROJECTION **114** to engage and rotate the butterfly valve **86** in the clockwise direction to uncover opening **43** and thereby provide communication between passage **42** and chamber **44**, Continued rotation of coupler B for about a quarter of a turn engages lugs **110** and **112** against the stop shoulders **54** depending from flanges **48** at which time opening **43** is fully uncovered (FIG. **9**) and O-ring **108** seals against the upper face of flange **34** inwardly of clamp ring **98**.

During the downward camming action provided by the shoulders **52** and lugs **110** and **112**, the lower end of probe **130** continues to displace tube **64** downwardly to locate openings **72** below the lower end of sleeve **56** in communication with chamber **78** as best seen in FIG. **5**. Thus, when coupler B is fully rotated about one-quarter of a turn, to its finally secured position, there is provided a through gas passage communicating through the coupler B and keg adapter A. Particularly, the gas passage comprises the bore **139**, the slit **146** in gas check valve **142**, bore **124**, the bores through the probe **130** and tube **64** which lie in open communication one with the other (FIG. **5**), openings **72**, the chamber **78** within retainer **76** and the bore **80** in retainer **78**.

When coupler B is finally secured to adapter A as previously described, there is also provided a liquid passage through adapter A and coupler B for delivery of beer under pressure from within the keg to a faucet (or another keg when utilized in a series installation) coupled to arm **116** on coupler B. Specifically, the liquid passage through the tapping unit comprises siphon tube **46**, passage **42**, chamber **44** about locknut **92**, annular passage **132** in coupler B and bore **118** through arm **116**. Accordingly, gas under pressure applied through the foregoing-described gas passage drives the beer through the liquid passage for delivery to a faucet or an additional keg as the case may be.

It is a particular feature hereof that entry of the liquid or beer from the keg into the gasline or hose leading to the gas pressure source is precluded. When the keg pressure exceeds the gas pressure, for example when the keg is being initially tapped, beer from the keg may flow through the gas passage in adapter A, i.e., through bore **80** and openings **72**, through the probe **130** and into bore about gas valve **142**. The pressure within bore **124** on one side of valve **142** will accordingly exceed the pressure on the opposite side of the valve **142** within bore **139** whereby the flexible valve will collapse causing the edges of slit **146** to seal against one another. Thus backflow or surge of beer into the gaslines is precluded.

It will be seen that enlarged beer and gas passages are formed when the coupler B is secured to adapter A. This is particularly important in series installations wherein liquid will flow into a series-connected keg through the foregoing described gas passages through the coupler and adapter. As an example of a series installation, the keg connected directly to the pressure source will be provided with the gas check valve **142** to prevent backflow of beer into the gaslines as previously described. Additional kegs connected in series to the first keg will be provided identical tapping units with the exception that the gas check valve **142** will be omitted from their coupler units. Accordingly, the gas under pressure from the gas source drives the beer from the first keg through its arm **116** and through suitable hosing not shown connected to the nipple **138** on the second keg. Thus, the beer from the first keg will flow through the bore **139** directly into chamber **124**, through probe **130** and into the second keg through the openings **72** and bore **80** of its keg adapter A. The beer will flow out of the series connected kegs in the usual fashion in each instance. The foregoing tapping unit thus provides enlarged beer and gas passageways particularly adapting the tapping unit hereof for use in serially connected kegs. Moreover, this is accomplished without retarding the flow rate or diminishing the quality of the beer.

Moreover, the keg-tapping device hereof is completely compatible with the racking (filling) apparatus utilized at the breweries to fill the kegs with beer. After the kegs are cleaned and the keg adapter A is semipermanently installed within keg opening **24** in the manner previously described (the seal **20** may be left permanently installed in keg opening **18** or may be removed during washing an reinstalled prior to filling), the keg is placed on the racker, not shown, in a horizontal position with the side hung or filling opening **25** opening upwardly to receive a beer filling rod, not shown. Referring to FIGS. **10** and **11**, there is schematically illustrated two standard forms of Golden-Gate-type kegs. In FIG. **10**, the opening **24** through the upper wall of the keg is offset from the axis of the keg and lies in a common diametrical plane with the lower semipermanently sealed opening **18**. In FIG. **11**, a further form of Golden-Gate-type keg **10***a* has a central or coaxial opening **24***a*

through the upper wall of the keg. In both keg forms, the filler opening **25** is located through the sidewall of the keg about 90° from the lower opening **18**. In both forms of kegs, the lower wall **16** is dished downwardly. When the keg lies in the usual upright tapped position, the last few glasses of beer will collect in the central lowermost portion of the dished wall **16** as at C. Accordingly, it is necessary to locate the inlet end of the siphon rod **46** adjacent the lowermost portion C of the keg such that the keg can be completely drained of beer. Additionally, the siphon rod must extend the length of the keg in a manner as not to interfere with the filling rod which will be inserted through the filling opening **25** to extend laterally across the keg when the keg is at the brewery being filled.

Accordingly, the siphon tube **46** utilized in connection with the form of keg **10** illustrated in FIG. **10**, extends vertically downwardly from keg adapter A past the vertical position of the filler opening **25** at a position radially offset from the axis of keg **10**. At a point below the filler opening and preferably about 6 inches from the bottom of the keg, the siphon tube **46** is bent at about an angle 15°, indicated at *e*, such that its lower outwardly flared inlet end **49** terminates adjacent the lowermost portion C of the keg, i.e., on the vertical axis of the keg in the lowermost portion of the dished lower wall **16**. When siphon tube **46** is assembled with keg adapter A, the lower end portion **47** is bent in a lateral direction such that, when the lug **101** is received in the corresponding recess in the keg wall opening **24**, the lower end portion **47** will extend from its vertically extending axially offset position to a position-locating inlet end **49** coaxially of the keg. In this manner, lug **101** serves to locate and position the siphon tube **46** in the proper position within the keg.

In order to locate the inlet end **49***a* of the siphon tube **46***a* when adapter A is employed with a Golden-Gate keg **10***a* of the type having a central upper opening **24***a* as illustrated in FIG. **11**, the siphon tube **46***a* is bent outwardly at an angle indicated at *f* in FIG. **11**, immediately below the body portion of adapter A. Siphon tube **46***a* thus extends to a position offset from the axis of the keg at a location medially between the upper and lower walls of the keg. Thus tube **46***a* is offset from the filler opening **25** such that the filler rod can be inserted without contacting tube **46***a*. At a point medially of the length of siphon tube **46***a*, the tube is reversely bent through an angle *g* such that the lower flared end **49***a* terminates coaxially of the keg **10***a*. In this manner, the adapter A is also usable with the central opening Golden-Gate-type keg and the siphon tube **46***a* does not interfere with the filler rod when the keg is being filled at the brewery. Moreover, in both forms of Golden-Gate kegs, the siphon tube is located adjacent the lowermost portions C of the keg whereby the kegs may be completely drained of the remaining few glasses of beer.

What is claimed and desired to be secured by U.S. Letters Patent is:

1. A liquid-dispensing apparatus for use with a keg or like container having top, bottom and sidewalls with an opening in at least one of said walls comprising a keg adapter having a generally cylindrical body adapted to be secured within the keg wall opening and including a central gas passage extending coaxially through said body for the transfer of gas from the outside to the inside of the keg, normally closed gas valve means in said gas passage, a liquid passage through said body bypassing said gas passage and terminating adjacent the inner end of said body in a laterally offset opening, and normally closed liquid valve means in said liquid passage, said liquid valve means including a valve member movable between first and second positions in a plane extending substantially normal to the axis of said body, said member in said first position sealing said liquid passage and in said second position opening said liquid passage to permit transfer of liquid from the inside to the outside of the keg.

2. A liquid-dispensing apparatus for use with a keg or like container having top, bottom and sidewalls with an opening in at least one of said walls comprising a keg adapter having a generally cylindrical body adapted to be secured within the keg wall opening and including a central gas passage extending coaxially through said body for the transfer of gas from the outside to the inside of the keg, normally closed gas valve means in said gas passage, a liquid passage through said body bypassing said gas passage and terminating adjacent the inner end of said body in a laterally offset opening, and normally closed liquid valve means in said liquid passage, said body including an inner end wall, a sleeve in said end wall in generally coaxial relation to said body, at least a portion of said gas passage communicating through said sleeve, said sleeve being spaced from the sidewalls of said body to define therewith an annular portion of said liquid passage, said offset opening in communication with said annular liquid passage portion, said liquid valve means including a valve member rotatable about said sleeve between first and second positions in a plane extending substantially normal to the axis of said body, said valve member sealing about said opening when in said first position and permitting transfer of liquid from the inside to the outside of the keg when in said second position.

3. Dispensing apparatus according to claim **2** wherein said offset opening communicates through said end wall, and a siphon tube carried by said body in communication with said offset opening.

4. A liquid-dispensing apparatus for use with a keg or like container having top, bottom and sidewalls with an opening in at least one of said walls comprising a keg adapter having a generally cylindrical body adapted to be secured within the keg wall opening and including a central gas passage extending coaxially through said body for the transfer of gas from the outside to the inside of the keg, normally closed gas valve means in said gas passage, a liquid passage through said body bypassing said gas passage and terminating adjacent the inner end of said body in a laterally offset opening, and normally closed liquid valve means in said liquid passage, a substantially coaxially extending tubular element carried by said body for axial movement between two positions, at least a portion of said gas passage communicating through said element, said gas valve means carried at least in part by said element for sealing said gas passage when in said first axial position and for permitting transfer of gas from the outside to the inside of said keg when in said second position, and means biasing element into said first position.

5. Dispensing apparatus according to claim **4** wherein said tubular element is closed at its inner end and has a plurality of circumferentially spaced openings thereabout spaced axially from said closed end, a sealing ring carried by said tubular element between said closed end and said openings for sealing against said body when said element lies in said first position, said element in said second position locating said openings inwardly of said body to permit gas communication through said tubular element and openings into the keg.

6. Dispensing apparatus according to claim **4** wherein said body includes an inner end wall having an axially extending opening, said tubular element being slideably received through said end wall opening, said tubular element being spaced from the sidewalls of said body with the annular space between said element and said body defining a portion of said liquid passage, said offset opening extending through said end wall in communication with said annular liquid passage portion, said liquid valve means including a valve member rotatable about said element between first and and second positions in a plane extending substantially normal to the axis of said body, said valve member sealing about said offset opening when in said first position and permitting transfer of liquid from the inside to the outside of the keg when in said second position.

7. A liquid-dispensing apparatus for use with a keg or like container having top, bottom and sidewalls with an opening in at least one of said walls comprising a keg adapter having a generally cylindrical body adapted to be secured within the keg wall opening and including a central gas passage extending coaxially through said body for the transfer of gas from the outside to the inside of the keg, normally closed gas valve

means in said gas passage, a liquid passage through said body bypassing said gas passage and terminating adjacent the inner end of said body in a laterally offset opening, and normally closed liquid valve means in said liquid passage, said body including an inner end wall having a coaxial opening, a sleeve extending through said coaxial opening, said sleeve being spaced from the sidewalls of said body to define therewith an annular portion of said liquid passage, said offset opening extending through said end wall in communication with said annular liquid passage portion, said liquid valve means including a member rotatable about said sleeve between first and second positions in a plane extending substantially normal to the axis of said body, means for retaining said valve member and sleeve on said body, said valve member sealing about said offset opening when in said first position and permitting transfer of liquid from the inside to the outside of the keg when in said second position, a tubular element having a closed inner end slideably received in said sleeve for axial movement between two positions, at least a portion of said gas passage communicating through said element, said gas valve means including a resilient ring carried about said element adjacent the closed end thereof for sealing about said sleeve when said element lies in said first position, a plurality of openings spaced circumferentially about said element and spaced axially outwardly from said sealing ring, said element in said second position locating said openings inwardly of said sleeve to permit gas communication through said tubular element and openings into the keg, and means carried by said body biasing said element into said first position.

8. Dispensing apparatus according to claim 7 wherein said biasing means includes a generally cylindrical housing secured to the inner end of said sleeve and defining a chamber with said tubular element through said circumferential openings when said element lies in said second position, said housing having an aperture providing communication between said chamber and the keg, and a spring carried within said housing chamber and engaging said element to bias the latter outwardly into said first position.

9. A liquid-dispensing apparatus for use with a keg or like container having top, bottom and sidewalls with an opening in at least one of said walls comprising a keg adapter having a generally cylindrical body adapted to be secured within the keg wall opening and including a central gas passage extending coaxially through said body for the transfer of gas from the outside to the inside of the keg, normally closed gas valve means in said gas passage, a liquid passage through said body bypassing said gas passage and terminating adjacent the inner end of said body in a laterally offset opening, normally closed liquid valve means in said liquid passage, a keg having an enlarged opening, said keg opening including a threaded portion, an unthreaded portion of smaller diameter than said threaded portion, and an annular shoulder extending inwardly from said unthreaded portion, said body including an outwardly directed flange, a seal between said body flange and said keg shoulder and an externally threaded locking ring threaded about said threaded portion of said keg opening for clamping said body flange and seal against said shoulder.

10. A liquid-dispensing apparatus for use with a keg or like container top, bottom and sidewalls with an opening in at least one of said wall s comprising a keg adapter having a generally cylindrical body adapted to be secured within the keg wall opening and including a central gas passage extending coaxially through said body for the transfer of gas from the outside to the inside of the keg, normally closed gas valve means in said gas passage, a liquid passage through said body bypassing said gas passage and terminating adjacent the inner end of said body in a laterally offset opening, normally closed liquid valve means in said liquid passage, means carried by said body for releasably securing a dispensing coupler unit, said securing means including a pair of inwardly directed circumferentially extending lugs spaced about the outer end portion of said body, said lugs including cam surfaces on their underfaces.

11. Dispensing apparatus according to claim 10 wherein said cam surfaces are arcuate, said lugs including depending shoulders forming stops along said cam surfaces.

12. A liquid-dispensing apparatus for use with a keg or like container having top, bottom and sidewalls with an opening in at least one of said walls comprising a keg adapter having a generally cylindrical body adapted to be secured within the keg wall opening and including a central gas passage extending coaxially through said body for the transfer of gas from the outside to the inside of the keg, normally closed gas valve means in said gas passage, a liquid passage through said body bypassing said gas passage and terminating adjacent the inner end of said body in a laterally offset opening, normally closed liquid valve means in said liquid passage, a dispensing coupler unit having a generally cylindrical head member and a probe extending coaxially therefrom with a gas passage extending through said head member and probe, a liquid passage in said head member bypassing said gas passage therein, means for releasably securing said coupler unit to said keg adapter with the liquid and gas passages in said coupler unit and said keg adapter lying in respective communication with one another, and means carried by said coupler unit for opening said liquid valve and said gas valve.

13. Dispensing apparatus according to claim 12 wherein said liquid valve means in said keg adapter includes a valve member movable between first and second positions in a plane extending substantially normal to the axis of said body, said member in said first position sealing said liquid passage and in said second position opening said liquid passage to permit transfer of liquid from the inside to the outside of the keg, said securing means including means carried by said coupler unit and said keg adapter cooperable to secure said coupler unit to said keg adapter in response to relative rotation therebetween, said liquid valve opening means being engageable with said valve member to move the latter from said first position to said second position in response to said relative rotation.

14. Dispensing apparatus according to claim 13 wherein said keg adapter body includes an inner end wall, a sleeve in said end wall in generally coaxial relation to said body, said probe being receivable about said sleeve with said sleeve and probe forming portions of the gas passage through said keg adapter and coupler unit respectively, said sleeve being spaced from the sidewalls of said body to define therewith an annular portion of said liquid passage in communication with the liquid passage through said coupler unit, said coupler unit including a projection engageable with said valve member to rotate the latter from said first to said second position.

15. Dispensing according to claim 13 wherein said keg adapter includes a pair of inwardly directed circumferentially extending flanges spaced about the outer end portion of said body, said flanges including cam surfaces on their undersurfaces, said coupler unit having a pair of outwardly directed circumferentially extending lugs spaced about the lower end of said head, the coupler unit lugs being receivable through the spaces between the keg adapter flanges and engageable against the undersurfaces of said keg adapter flanges to secure said coupler unit to said keg adapter in response to rotation of said coupler unit relative to said keg adapter.

16. Dispensing apparatus according to claim 15 wherein said keg adapter body includes an inner end wall, a sleeve in said end wall, said probe being receivable about said sleeve with said sleeve and said probe forming portions of the gas passage through said keg adapter and coupler unit respectively, said sleeve being spaced from the sidewalls of said body to define therewith an annular portion of said liquid passage in communication with the liquid passage through said coupler unit, said liquid valve member being rotatable about said sleeve, said coupler unit including a projection carried by one of said lugs and engageable with said valve member to rotate the latter from said first to said second position.

17. Dispensing apparatus according to claim 16 including a gas check valve in said gas passage in said coupler.

18. Dispensing apparatus according to claim 9 wherein said keg includes top, bottom and sidewalls with said enlarged opening extending through said top wall, said sidewall including an opening therethrough adjacent said bottom wall and means for sealing said sidewall opening.

19. Dispensing apparatus according to claim 18 wherein said sidewall includes a filling opening, said top wall opening being offset from the axis of said keg, a siphon tube carried by said body in communication with said offset opening in said body, said siphon tube extending from said adapter past said sidewall opening at a location offset from the keg axis and being bent to terminate at its lower end adjacent said bottom wall at a position substantially coaxially of said keg.

20. Dispensing apparatus according to claim 19 wherein said siphon tube extends from said adapter parallel to the keg axis to a point below said sidewall opening, said siphon tube being bent at said point to terminate at its lower end substantially coaxially of the keg.

21. Dispensing apparatus according to claim 18 wherein said sidewall includes a filling opening said enlarged top wall opening extending coaxially of said keg, a siphon tube carried by said body in communication with said offset opening in said body, said siphon tube extending from said adapter past said sidewall opening at a location offset from the keg axis and being formed to terminate at its lower end adjacent said bottom wall at a position substantially coaxially of said keg.

22. Liquid-dispensing apparatus for use in tapping a keg or like container having a keg adapter sealing about the keg opening, the keg adapter having gas and liquid passages and valves therefor for respectively admitting gas under pressure into the keg and withdrawing liquid from the keg, the apparatus comprising a coupler unit having a cylindrical body and a liquid passage therethrough, a reduced-diameter probe carried coaxially within said body and defining an annular portion of said liquid passage between said body and said probe, a gas passage through said body including the central passage through said probe, a pair of outwardly projecting circumferentially extending lugs carried about the lower end portion of said body for releasably securing said coupler unit to the keg adapter, one of the lugs having a depending projection for engaging the liquid valve in the keg adapter, said body having a diametrically enlarged portion above said lugs and a seal between said lugs and said enlarged portion for sealing against the keg adapter.

23. Dispensing apparatus according to claim 22 wherein said body includes a gas check valve in said gas passage to permit gas flow in one direction toward the lower end of said head.

24. Liquid-dispensing apparatus according to claim 23 wherein said body includes a portion defining a chamber and a reduced-diameter bore for introducing gas into said chamber, said bore and chamber forming a portion of said gas passage in communication with the gas passage through said probe, said gas check valve comprising a flexible envelope in said chamber and having side walls, an open end and a closed end wall, the upper end of said envelope being sealingly secured within said bore with said envelope projecting within said chamber in spaced relation to the walls of said chamber, said envelope having a slit through one of said walls to permit flow of gas in one direction through said bore into said envelope and through said slit into said chamber.

25. A liquid-dispensing apparatus for use with a keg or like container having top, bottom and sidewalls with an opening in at least one of said walls comprising a keg adapter having a generally cylindrical body adapted to be secured within the one keg wall opening and having gas and liquid passageways extending therethrough for the respective transfer of gas into the keg and of liquid out of the keg, and normally closed valve means in said gas and liquid passageways, said valve means including a valve element movable in a substantially axial direction between a first position sealing one of said passageways and a second position opening said one passageway, said valve means including a valve body rotatable in a plane extending substantially normal to the axis of said body between a first position sealing the second of said passageways and a second position opening said second passageway, a dispensing coupler unit having a generally cylindrical head member and a probe extending therefrom with a first passageway through said head member and said probe, a second passageway in said head member bypassing said first passageway therein means for releasably securing said coupler unit to said keg adapter with the first and second passageways in said coupler unit and said keg adapter lying in respective communication one with the other, said probe being engageable with said valve element to move the latter from said first position to said second position when the coupler unit is secured to said keg adapter.

26. A liquid-dispensing apparatus according to claim 25 including sealing means between said coupler unit and said keg adapter to maintain said first and second passageways therethrough segregated one from the other when said coupler unit is secured to said keg adapter.

27. A liquid-dispensing apparatus according to claim 25 wherein said element and said probe extend substantially coaxially of said body and said head member respectively.

28. A liquid-dispensing apparatus for use with a keg or like container having top, bottom and sidewalls with an opening in at least one of said walls comprising a keg adapter having a generally cylindrical body adapted to be secured within the keg wall opening and including a first passage extending coaxially through said body, normally closed valve means in said first passage, a second passage through said body bypassing said first passage and terminating adjacent the inner end of said body in a laterally offset opening, normally closed valve means in said second passage, said body including a sleeve in generally coaxial relation therewith, at least a portion of said one passage communicating through said sleeve, said sleeve being spaced from the sidewalls of said body to define therewith an annular portion of said second passage, said offset opening lying in communication with said annular second passage portion, said valve means in said second passage including a valve member rotatable between first and second positions in a plane extending substantially normal to the axis of said body, said valve member sealing said second passage about said opening in said first position and opening said second passage in said second position.

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,610,478 Dated October 5, 1971

Inventor(s) Mack S. Johnston

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Column 1, line 65, "flow is" should read --flow and is--.
Column 2, line 29, "cross-sectional" should be deleted.
Column 2, line 72, "comprise" should read --comprises--.
Column 3, line 15, "having radially" should read --having a radially--; line 19, "laterally" should read --a laterally--; line 26, "suitable" should read --suitably--.
Column 5, line 20, "ensuring" should read --ensuing--; line 64, "PROJECTION" should read --projection--; line 67, "44," should read --44.--.
Column 6, line 66, "an" should read --and--; line 68, "hung" should read --bung--.
Column 8, line 43, Claim 4, "element" should read --said element--.
Column 9, line 61, Claim 10, "container top" should read --container having top--.
Column 10, line 50, Claim 15, "Dispensing" should read --Dispensing apparatus--.

Signed and sealed this 31st day of October 1972.

(SEAL)
Attest:

EDWARD M.FLETCHER,JR.
Attesting Officer

ROBERT GOTTSCHALK
Commissioner of Patents

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