United States Patent

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[54] **KEG-TAPPING SYSTEM**
5 Claims, 7 Drawing Figs.

[52] **U.S. Cl.** **222/400.7,** 137/212
[51] **Int. Cl.** **B65d 83/00**
[50] **Field of Search** 137/322, 212; 222/400.7

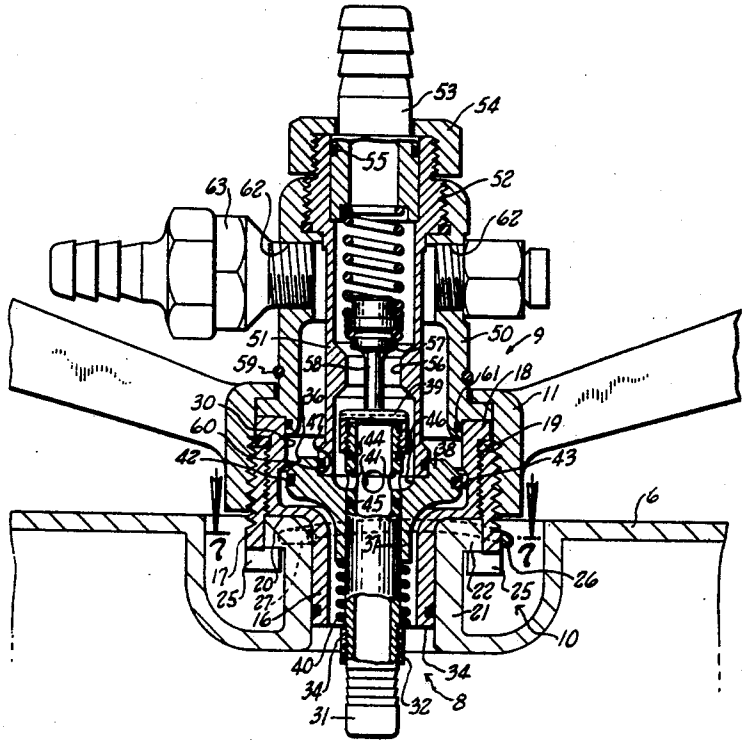
[56] **References Cited**

UNITED STATES PATENTS

2,638,914	5/1953	Flaith et al.	137/212
2,749,930	6/1956	Whitnall	137/212
3,065,885	11/1962	Chatten	222/400.7
3,353,724	11/1967	Johnston	222/400.7
3,422,448	1/1969	Johnston	137/212 X

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ABSTRACT: A beer keg-tapping device which consists of a keg unit that is permanently attached to the keg and a coupler unit detachably connected to the keg unit. Both units have liquid and gas passages which communicate when the units are coupled; a single valve element automatically closes both passages of the keg unit when units are not coupled. During coupling the passages of the two units are connected before the valve element is unseated, so that coupling is accomplished without spraying of beer.



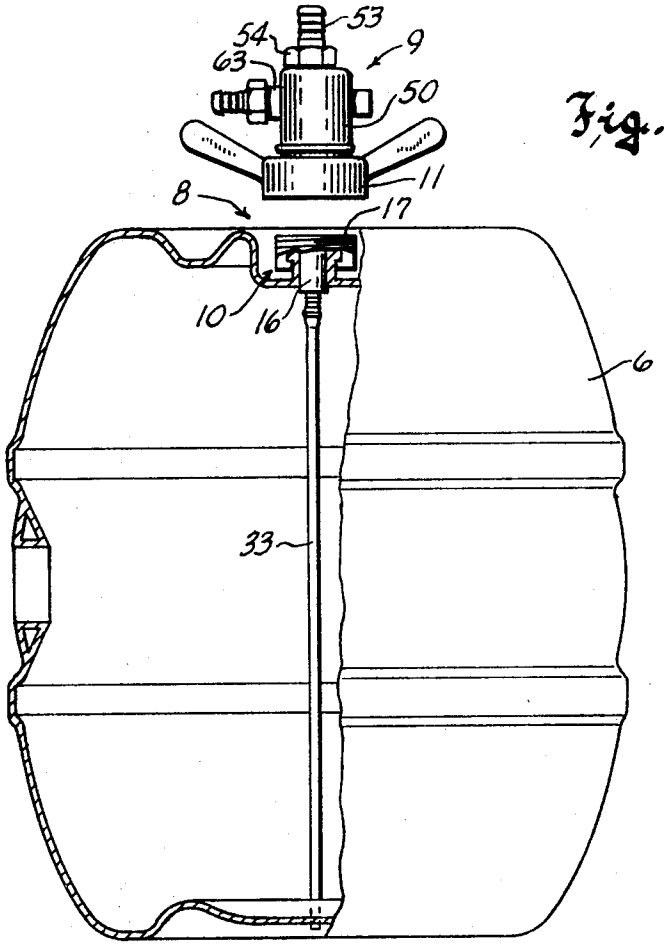


Fig. 1.

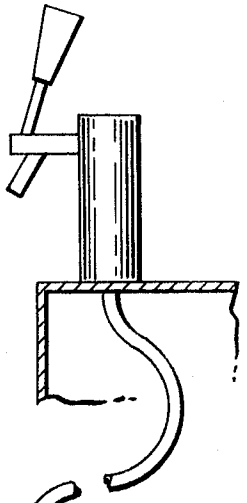
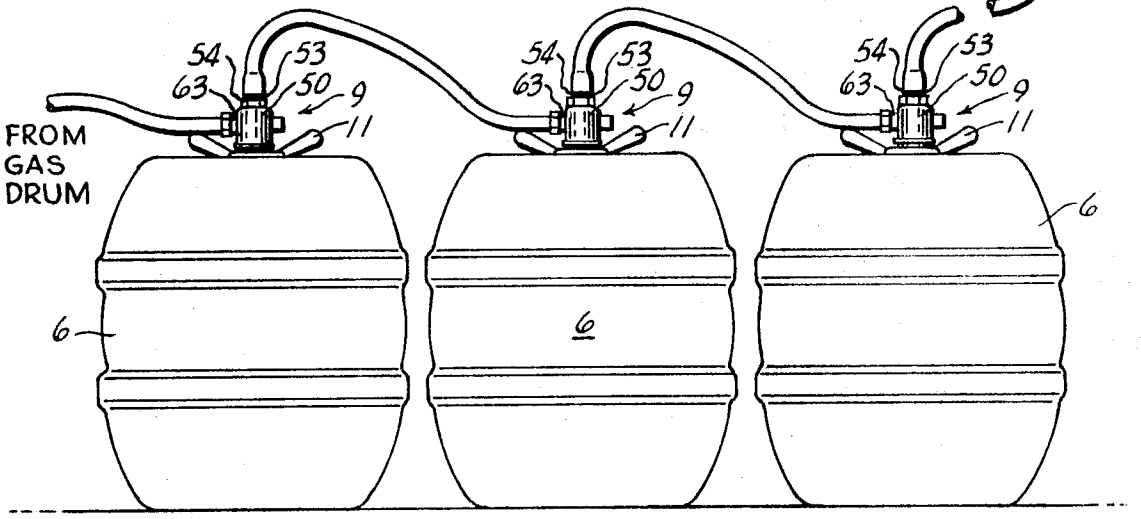


Fig. 2.



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Fig. 3.

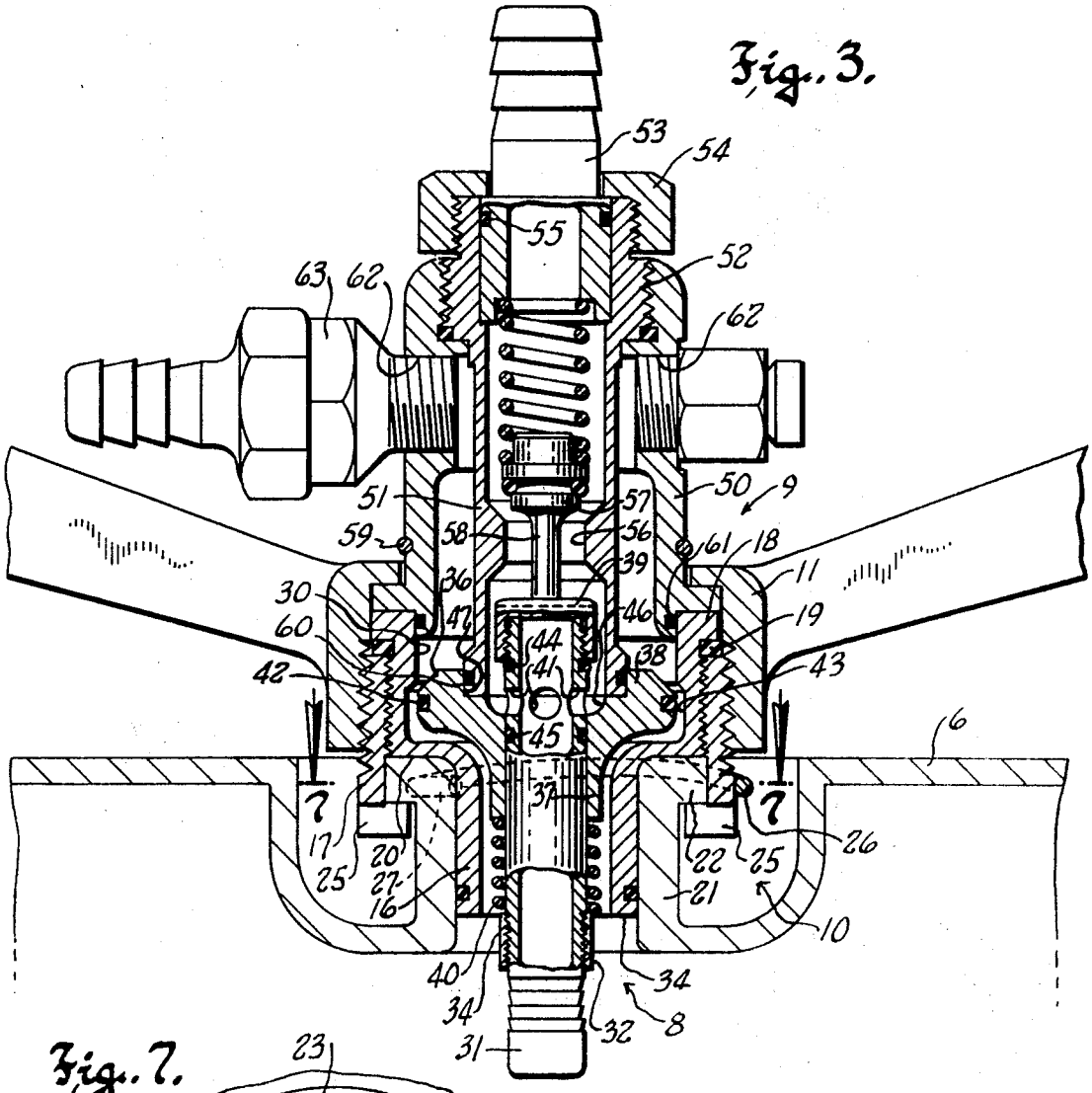
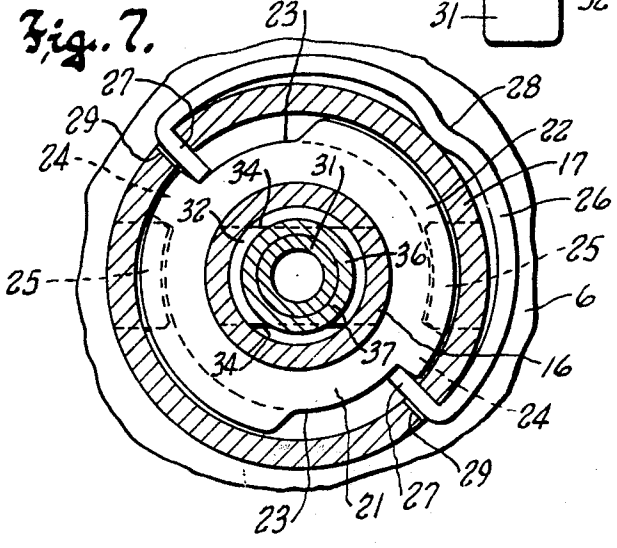


Fig. 7.



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Fig. 4.

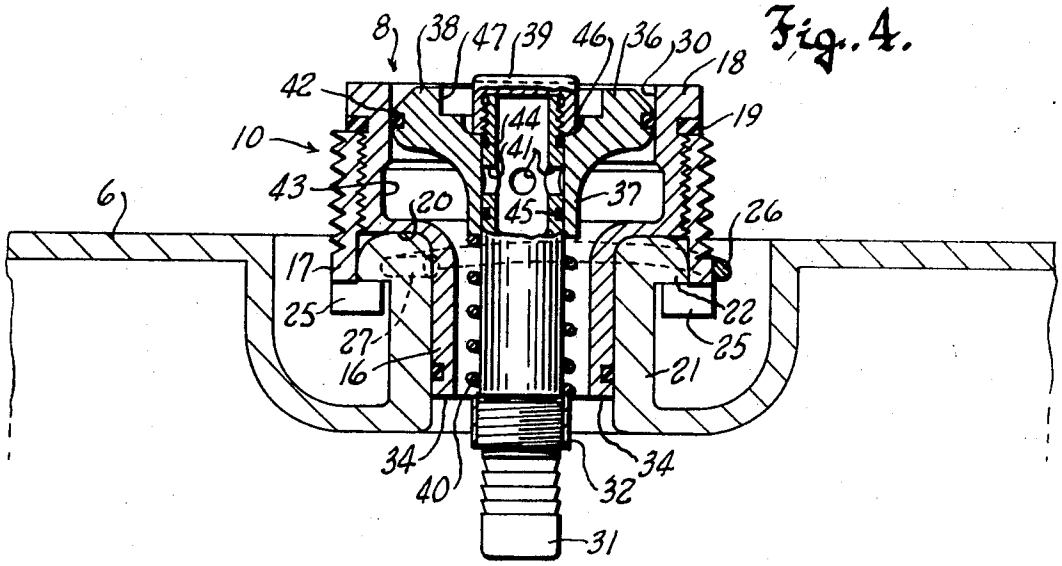
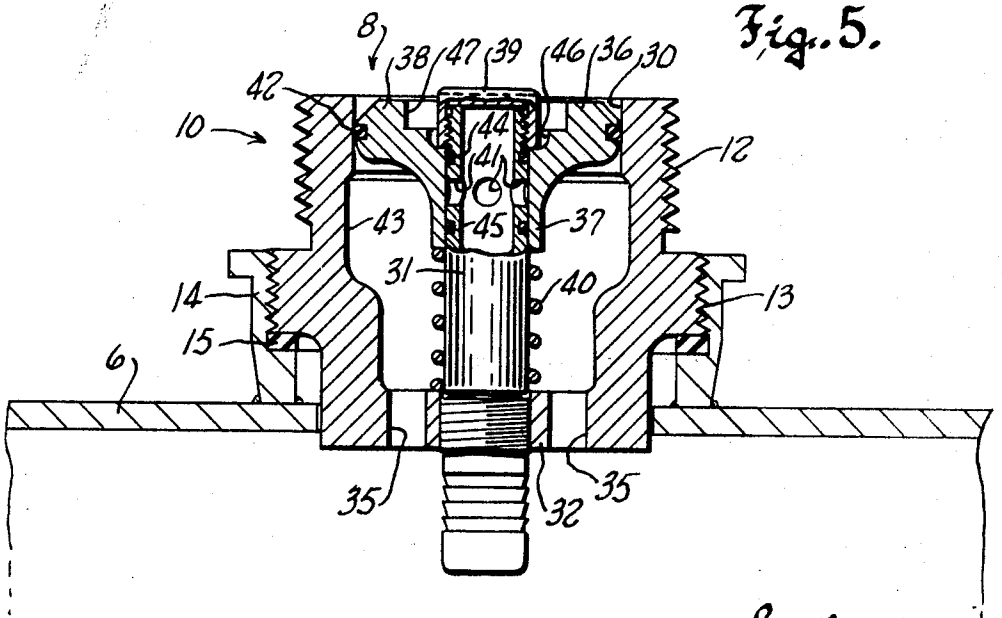
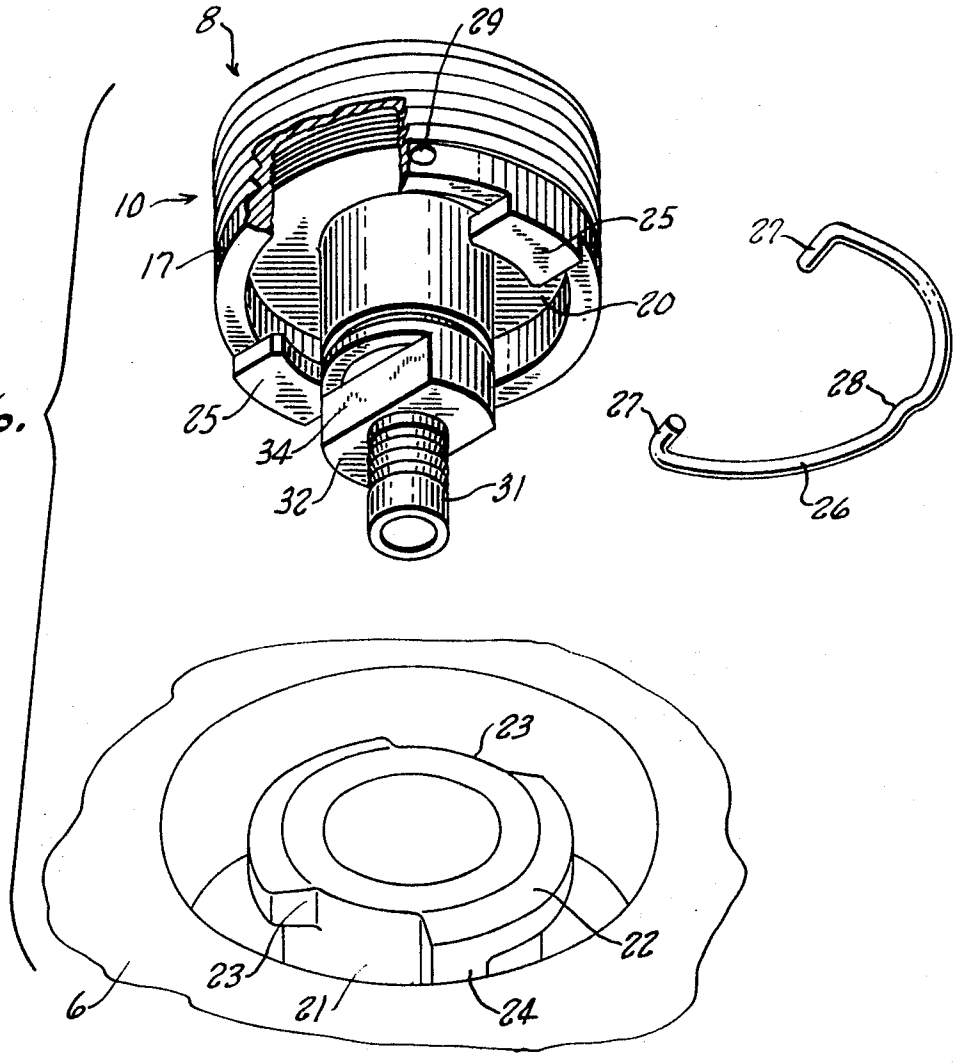


Fig. 5.



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Fig. 6.



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KEG-TAPPING SYSTEM

This invention relates to keg-tapping devices and has as its purpose to provide an improved beer keg-tapping system of the type wherein the tapping device comprises two complementary sections or units, one of which is fixed to the keg and in effect becomes a permanent part thereof, while the other remains at the dispensing site and is coupled to the keg unit when the keg is tapped. Examples of this type of tapping system will be found in the U.S. Pat. No. 3,228,413, to Stevens the U.S. Pat. Nos. 3,231,154 and 3,438,553 to Johnston and in the British Pat. No. 930,015 published July 3, 1963.

While the tapping device of this invention lends itself well to the attainment of reliably sanitary beer-dispensing conditions, elimination of the possibility of beer being sprayed or splashed from the keg during the tapping operation is one of its most significant attributes.

An important advantage of this invention is that the coupler unit of the system, i.e. the part thereof which is kept by the dispensing facility, fits the keg units of both the Peerless and Golden Gate cooperage.

Another very important feature of this invention is the ease with which the tapping operation can be performed.

Still another advantageous feature of the tapping device of this invention is that it permits series connection of a plurality of kegs without introducing turbulence-producing flow restrictions.

With these observations and objects in mind, the manner in which the invention achieves its purposes will be appreciated from the following description and the accompanying drawings. This disclosure is intended merely to exemplify the invention. The invention is not limited to the particular structure disclosed, and changes can be made therein which lie within the scope of the appended claims without departing from the invention.

The drawings illustrate two complete examples of the physical embodiment of the invention constructed according to the best modes so far devised for the practical application of the principles thereof, and in which:

FIG. 1 is a side view with a part broken away and in section, of a keg with a Peerless-type tapping hole, having the keg unit of this invention in position thereon and showing the coupler unit adjacent thereto in position to be attached;

FIG. 2 illustrates the series connection of a plurality of kegs for which the tapping system of this invention is admirably adapted;

FIG. 3 is a view partly in elevation and the remainder in section, showing the tapping device of this invention in operative dispensing condition on a keg having the Peerless-type tapping hole;

FIG. 4 is a sectional view through the keg unit for the Peerless-type cooperage, showing the same installed in the tapping hole of the keg;

FIG. 5 is a view similar to FIG. 4, but showing the keg unit for the Golden Gate-type cooperage;

FIG. 6 is a perspective view of the tapping hole portion of a Peerless-type keg and the keg unit of FIG. 4 in position to be assembled with the keg; and

FIG. 7 is a cross-sectional view of the plane of the line 7–7 in FIG. 3, through the assembled keg unit and tapping hole portion of the keg, to illustrate how the keg unit is secured against accidental or unauthorized removal from the keg.

THE TAPPING SYSTEM GENERALLY

Referring to the accompanying drawings, the kegs 6 shown in FIGS. 1 and 2 are typical of the Peerless-type cooperage being used by many breweries in the United States in the sale of draft beer. Other breweries use the Golden Gate cooperage. Except for the size of the tapping hole and the manner in which tapping devices are secured therein, the two types of cooperage may be the same, and often are. Depending upon the size of the dispensing facility, beer is dispensed from these kegs either singly or connected in series as shown in FIG. 2.

As is well known, gas pressure is employed to force the beer from the kegs. Hence every tapping device must have a liquid passage connectable with a dispensing faucet, as shown in FIG. 2, and a gas passage that is connectable with a source of gas, also as shown in FIG. 2. Where beer is drawn from only one keg at a time, the relative sizes of the liquid and gas passages is not too important as long as the liquid passage has adequate flow capacity, but when a number of kegs are connected in series between the dispensing faucet and the source of gas pressure, the flow capacity of the gas passage should be at least as large as that of the liquid passage. The tapping device of this invention has that very salutary feature.

As already noted, the tapping device of this invention comprises two connectable units, a keg unit 8 and a coupler unit 9. Both units have beer and gas passages that are respectively communicated when the units are coupled together. Novel valve means which includes a movable valve element held seated by spring pressure and the pressure within the keg, automatically closes the passages in the keg unit and keeps them closed until the keg is tapped by attaching the coupler unit to the keg unit.

An important feature of the invention is that the passages in the two units are joined or communicated before the valve element which closes the passages in the keg unit is unseated. This prevents beer from being sprayed or splashed from the keg during the tapping operation. The manner in which this is accomplished will be fully described hereinafter, but—before doing so—it should be understood that the keg unit is supplied in two different forms, one to fit the tapping hole of the Peerless-type cooperage (FIGS. 3, 4, 6 and 7) and the other for the Golden Gate cooperage (FIG. 5); while the coupler unit fits both keg units.

THE KEG UNITS

All keg units have a tubular body designated generally by the numeral 10, which is secured in the tapping hole of the keg and has an externally threaded upper end portion onto which a wingnut 11 is threaded to secure the coupler unit in place on the keg unit, as shown in FIG. 3.

For the Golden Gate cooperage, the body 10 is one integral barrel 12 with an externally threaded medial portion 13 larger in diameter than its threaded upper end portion, to screw into the internally threaded collar 14 which surrounds the tapping hole in Golden Gate cooperage. Below this medial threaded portion 13 the barrel is reduced in diameter to provide a shoulder to oppose an upwardly facing shoulder in the collar 14 with a gasket 15 clamped therebetween.

For the Peerless-type cooperage, the body 10 is in two parts, an inner part 16 and an outer part 17. The inner part 16 is essentially a two-diameter barrel or sleeve, the larger diameter portion of which is at the top and has an outwardly directed flange 18 at its upper end. The outer body part 17 is a ring into which the inner part is threaded with a gasket 19 between its flange 18 and the top of the ring. It is this ring which provides the externally threaded upper end portion of the body and has the wingnut 11 threaded thereon.

The smaller diameter bottom end portion of the inner body part is of a size to snugly fit into the tapping hole of Peerless-type cooperage with an O-ring therebetween for sealing purposes. The junction between the top and bottom portions of the inner body forms a downwardly facing shoulder 20 which seats upon the top of the neck 21 that surrounds the tapping hole and has a flange 22 at its upper end to provide downwardly facing circumferentially inclined ledges leading from diametrically opposite gateways 23 in the flange 22 to vertical abutments 24 projecting from the side of the neck. This structure is best illustrated in FIG. 6.

The manner in which the keg unit for the Peerless-type cooperage is attached to the keg is also best shown in FIG. 6. For this purpose, the outer ringlike body part 17 has two diametrically opposite hooklike lugs 25 that pass through the gateways 23 and engage under the inclined ledges upon rotation of the unit. Such rotation, which is limited by the engage-

ment of the lugs with the abutments 24, draws the body of the unit tightly down onto the neck 21.

A novel retaining device holds the body against retrograde rotation from its tightened down position. This retaining device consists of a semicircular spring wire bail 26 with inturned ends 27 and an indented medial portion 28. The bail embraces the lower end portion of the ringlike outer body part and has its inturned ends protruding through diametrically opposite holes 29 that are so located with respect to the lugs 25 that the protruding ends of the bail engage the sides of the vertical abutments 24 opposite those engaged by the hooklike lugs 25. Downward displacement of the medial portion of the bail is prevented by engagement of its indentation 28 with the lowermost of the adjacent external threads. This secures the keg unit against accidental or unauthorized detachment from the keg. Only someone familiar with the unit and possessing an appropriate tool can remove the same from the keg.

It has now been shown how the keg unit of this invention is attached to kegs of both types of cooperage, and it should be borne in mind that, in both cases, the body 10 has exactly the same size externally threaded upper end portion to fit the wingnut 11 by which the coupler unit is secured to the keg unit. But for the coupler unit to be interchangeably connectable with the keg units on both Peerless and Golden Gate cooperage, more is needed. The valve means by which the beer and gas passages in the keg unit are controlled must be alike in structure and operation whether the keg unit is for Golden Gate or Peerless cooperage, so that as the units are coupled, the beer and gas passages of the keg unit will be respectively joined to the beer and gas passages of the coupler unit.

Accordingly, the body 10 has a straight bore 30 in its upper end portion of the same diameter for both the Peerless and the Golden Gate keg units, and a coaxial tube 31 that rises from a wall 32 at the bottom of the body. The tube is solidly secured to the wall 32, either by a threaded connection, as shown, or in any other suitable manner. The lower end portion of the tube 31 has a plastic extension 33 attached thereto to reach the bottom of the keg.

The tube 31 forms the beer passage of the keg unit and the space between the tube and the encircling wall of the body forms its gas passage, the upper end portion of which is defined by the straight uniform diameter bore 30. In the Peerless-type unit, communication between the gas passage and the keg interior is provided by diametrically opposite openings 34 which result from slabbing off the bottom end portion of the inner body part 16; and in the Golden Gate version, holes 35 in the wall 32 provide the needed communication between the gas passage and the keg interior.

A valve element 36 comprising a hub 37 and a disc 38 on the upper end of the hub, is slidably mounted on the tube 31 for movement between a "seated" position defined by its collision with the bottom edge of a cap 39 that is threaded onto and closes the upper end of the tube 31, and an "unseated" position. A coil spring 40 encircling the tube 31 and confined between the wall 32 and the bottom of the hub 37, yieldingly holds the valve element in its "seated" position. In this position the valve element closes both the beer passage and the gas passage.

Closure of the beer passage results from the hub 37 covering ports 41 in the upper end portion of the tube 31, and closure of the gas passage is effected by sealing engagement between the valve disc 38 and the wall of the bore 30. An O-ring 42 seated in a groove in the periphery of the disc, provides the seal between the disc and the wall of the bore until the valve element is depressed a distance sufficient to carry the O-ring out of the bottom end of the bore 30 and into a larger counterbore 43. Entry of the disc 38 with its encircling O-ring into the counterbore creates a large capacity annular passageway through which gas—or beer in the case of series connected kegs—may freely flow to and through the openings 34 and/or 35 into the keg.

O-rings 44 and 45 respectively above and below the ports 41, engage the wall of the bore in the hub of the valve element to provide a liquid tight seal between the valve element and the tube 31. The top ring 44 prevents leakage of beer from the keg when the valve element is in its upper passage-closing position which, for convenience, has been defined as the seated position of the valve element, despite the fact that the valve element does not coact with a valve seat in the conventional manner. The bottom ring 45 prevents gas in the keg above the beer level and/or from the source of gas pressure, leaking into the beer being dispensed—which, of course, necessitates the coupler unit being in place and the valve element being "unseated".

In the "unseated" position of the valve element 36 at which its disc is in the counterbore 43, the ports 41 in the tube 31 must be uncovered. To meet this requirement and still keep the keg unit desirably short, the valve element has a counterbore 46 opening to its upper end, the bottom of which is slightly below the ports 41 in the "unseated" position of the valve element. The diameter of this counterbore is large enough to accept the cap with considerable clearance therebetween, when the valve element is in its raised seated position, and for a purpose to be presently described, the counterbore is stepped to form a socket 47 with a straight cylindrical sidewall.

THE COUPLER UNIT

The coupler unit comprises a generally cylindrical tubular body 50 with a cylindrical sleeve 51 coaxially disposed therein. At their upper ends the body and sleeve are connected by having the upper end portion of the sleeve enlarged and threaded into the body, as at 52; but for the most part, the sleeve is spaced from the inner wall of the body to provide the gas passage of the unit. Its beer passage, which is formed by the sleeve, leads to a nipple 53 attached to the upper end thereof by confining an enlarged end portion of the nipple in a counter bore in the sleeve by means of a coupling nut 54 threaded onto the sleeve. An O-ring 55 provides a leak-proof connection between the nipple and the sleeve.

Medially of its ends, the sleeve has a constriction 56, the upper surface of which provides a conical seat for a check valve 57 by which back flow of beer is prevented when the coupler unit is detached from a keg unit. The valve 57 is biased to its seated position by a spring confined between the valve and the bottom of the nipple, and preferably the valve is of the type that has an O-ring positioned to engage the valve seat. When the valve is seated, a pin 58 projecting from the bottom thereof collides with the cap 39 at the top of the tube 31 of a keg unit and thereby unseats the valve as the units are connected.

Near its bottom end, the tubular body 50 has an encircling flange which seats upon the upper end of the body of the keg unit and is clamped thereto by the wingnut 11 which freely rotatably encircles the body 50 and is confined against any substantial upward displacement by a retaining ring 59. The lower end portion of the tubular body 50 is of a size to telescope into the bore 30 of any keg unit body and the bottom end of the sleeve 51 is of a size to snugly fit into the socket 47 in the valve element 36 of any keg unit. Preferably, the bore of the sleeve has the same diameter as the counterbore 46 in the valve element, so that when the units are coupled together, a smooth continuous passage conducts the beer from the keg unit into the coupler unit.

To seal the connection between the beer passage of the two units, an O-ring 60 encircles the bottom end portion of the sleeve which enters the socket 47 in the valve element, and to seal the connection between the gas passages of the two units, an O-ring 61 is seated in a groove in the lower end portion of the tubular body to engage the wall of the bore 30 of the keg unit.

Near the upper end of the tubular body 50 there are two diametrically opposite, preferably aligned tapped holes 62.

One of these holes has a hose nipple coupling 63 screwed into it to enable the gas passage of the coupler unit to be connected with a source of pressurized gas, or with the beer line from another keg if two or more kegs are connected in series. The coupling 63 is equipped with the customary check valve, not shown.

The other tapped hole 62 has a conventional relief valve screwed into it.

COUPLING THE UNITS TO TAP A KEG

Tapping of the keg simply involves inserting the bottom end of the coupler unit into the body 30 of the keg unit and tightening the wingnut. Since the gas and beer passage of the two units are coaxial, no special rotational orientation of the units is needed. As the coupling unit is set onto the keg unit and drawn down by tightening the wingnut 11, the bottom of the sleeve 51 engages and unseats the valve element, i.e. depresses it to uncover the ports 41 and move the valve disc out of the bore 30. Because of the dimensional relationship that exists between the connectable parts of the two units, during the tapping operation, the O-ring 60 encircling the bottom end of the sleeve 51 enters the socket 47 in the valve element 36 to seal the junction of the beer passages of the two units before the valve element is depressed far enough to uncover the ports 41. Hence it is impossible for beer to splash or spray out of the keg as it is being tapped.

Also, before the valve disc leaves the bore 30, the O-ring 61 on the bottom end portion of the tubular body 50 moves into sealing engagement with the bore 30 to seal the junction between the gas passages of the two units.

Tapping a keg is thus a safe and very simple operation.

As noted hereinbefore, if two or more kegs are to be connected in series, the beer line leading from the beer discharge nipple 53 of one keg is connected with the gas inlet nipple 63 of another keg, so that beer flows from the first keg into the second. In this connection it is significant that the gas passages of the coupler and keg units have relatively large capacity and are free of turbulence-producing restrictions.

From the foregoing description, taken with the accompanying drawings, it will be apparent to those skilled in this art that the tapping system of this invention has much to recommend it.

I claim:

1. A beer keg-tapping system wherein each keg has a tapping hole that is automatically closed by a valved keg unit mounted in the tapping hole, and each such keg unit has a beer passage and a gas passage, both normally closed by a single movable valve element biased to its closed position, and wherein coupler units, each of which has a beer passage and a gas passage, located at dispensing sites are connectable to any of said keg units and by such connection move the valve element of the keg unit from its closed position to connect the beer passage in the keg unit with a dispensing faucet with which the beer passage in the coupler unit is connected, and the gas passage in the keg unit with a source of pressurized gas that is connected with the gas passage in the coupler unit, each keg unit having
   1. a tubular body with a straight bore in which the valve element is located to coact therewith in closing the gas passage, and
   2. a central ported tube with which the valve element coacts to close the beer passage, each coupler unit having
   3. a tubular body which upon connection of the coupler unit to a keg unit stands erect and has upper and lower ends, and
   4. a centrally disposed sleeve in the tubular body to provide the beer passage through the coupler unit,
   said sleeve having upper and lower ends, the former being joined to the upper end portion of the tubular body and the latter being so located as to engage the valve element in a keg unit and move the same from its closed position as the coupler unit is connected to the keg unit, said system being characterized by:
   A. a constriction in the sleeve between the ends thereof, the upward facing surface of said constriction forming a valve seat;
   B. a check valve in the sleeve above the constriction;
   C. a beer line nipple secured to the upper end of the sleeve;
   D. a spring confined between the bottom of said nipple and the check valve to hold the same on said seat; and
   E. means on the check valve engageable with a part on the keg unit to unseat the check valve when the units are connected.

2. The structure of claim 1, wherein the means to unseat the valve when the units are connected comprises
   a pin extending down from the valve through the constriction in the sleeve,
   and a cap closing the upper end of the tube of the keg unit against which said pin abuts.

3. The structure of claim 1, wherein the body of the keg unit has a cylindrical lower end portion of a size to snugly fit into the tapping hole of the keg for which the keg unit is designed,
   said cylindrical lower end portion projecting down from a shoulder on the keg unit body which sets upon the top of a neck that surrounds the tapping hole and has an annular flange at its top with gateway-forming interruptions at circumferentially spaced locations leading to the underside of the flange,
   hook-shaped lugs on the keg unit body projecting down from said shoulder to pass through the gateway-forming interruptions and upon rotation of the body engage the underside of said flange; and
   means for preventing rotation of the keg unit body back to a position aligning its hook-shaped lugs with said gateway-forming interruptions, comprising abutments on the neck that surrounds the tapping hole, one side of each of said abutments being engaged by one of the hook-shaped lugs, and
   a spring wire bail when inturned ends embracing the lower end portion of the keg unit body with the inturned ends thereof protruding into the interior of the lower end portion of the keg unit body at the opposite sides of two of said abutments.

4. In a beer-tapping device, a valved keg unit adapted to be installed in the tapping hole of a beer keg of the type wherein the tapping hole passes through an upstanding neck having an annular flange encircling its upper end, the flange having substantially diametrically opposite gateway-forming interruptions and the neck having substantially diametrically opposite bosses, each of which forms a pair of oppositely facing abutments, said keg unit having
   a hollow body with separate beer and gas passages, and
   a single movable valve element in said body, biased to a position closing both passages but movable from said position by the attachment of a coupler unit to the keg unit,
   the hollow body having a small diameter lower end portion of a size to snugly fit into the tapping hole and a larger diameter upper end portion, the junction between said large and small end portions providing a downward facing shoulder which seats upon the top of the neck surrounding the tapping hole,
   a skirt depending from the periphery of said downward facing shoulder to telescope over the flange at the top of the neck,
   substantially diametrically opposite hook-shaped lugs at the bottom of said skirt, each of which is adapted to pass through one of the gateway-forming interruptions in the flange at the top of the neck and engage the underside of said flange at one side of one of said abutment-forming bosses upon rotation of the body, and
   a retaining member assembled with the skirt to embrace the neck and having diametrically opposite projections to engage said abutment-forming portions to prevent rotation of the body to a position at which its hook-shaped lugs align with the gateway-forming interruptions in said flange.

5. The beer-tapping device of claim 4, wherein said retaining member comprises:

a spring wire bail with inturned ends, embracing the skirt with its inturned ends protruding through holes in the skirt at points so related to the lugs that said inturned ends of the bail are at the opposite sides of the abutment-forming bosses.