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LIQUID DISPENSING DEVICE

4 Sheets--Sheet 1



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2,991,916

LIQUID DISPENSING DEVICE

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4 Sheets-Sheet 2

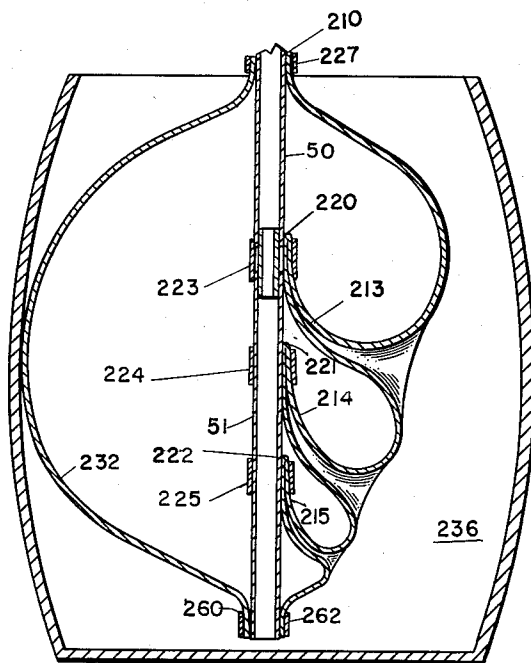


FIG. 3

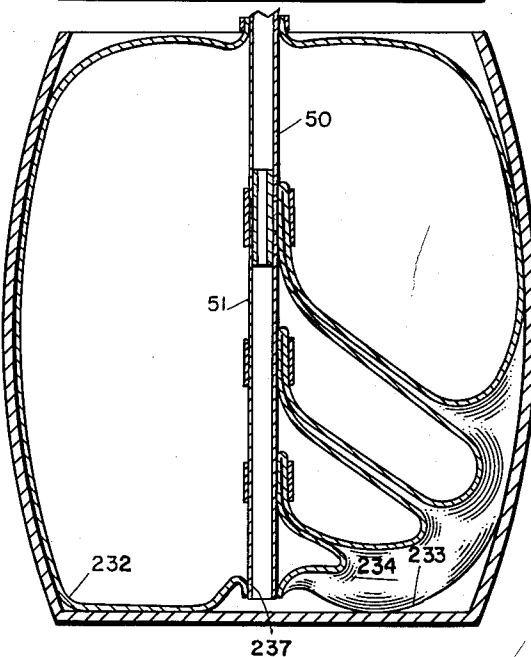


FIG. 10

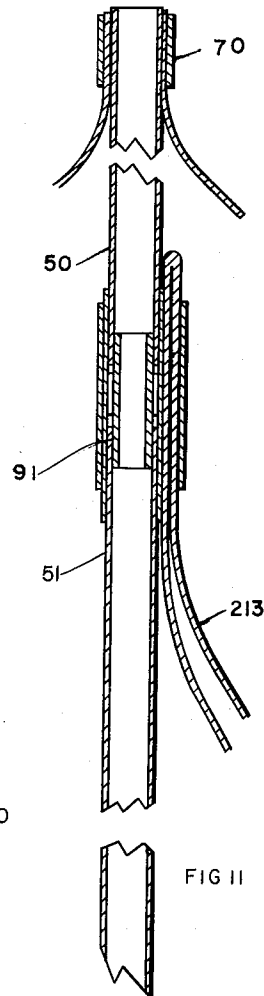


FIG. 2

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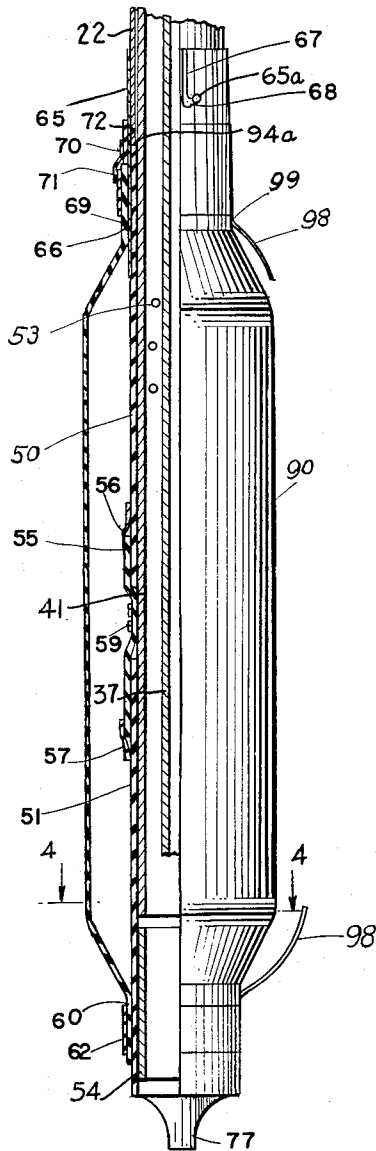


FIG. 5

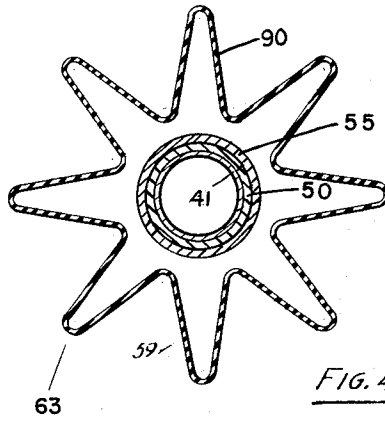


FIG. 4.

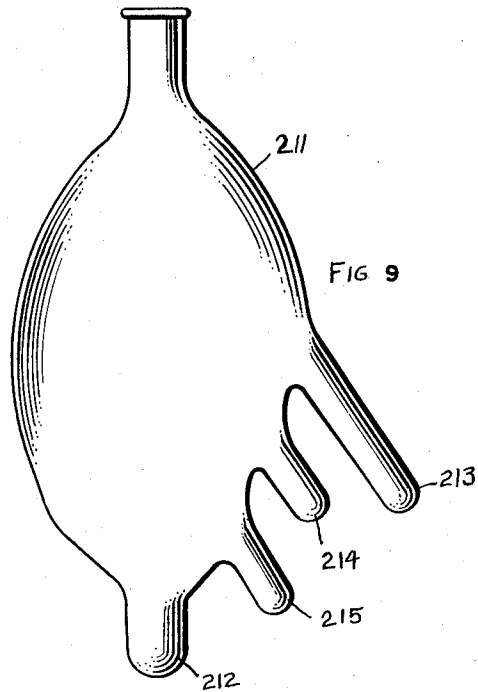


FIG 9

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4 Sheets-Sheet 4

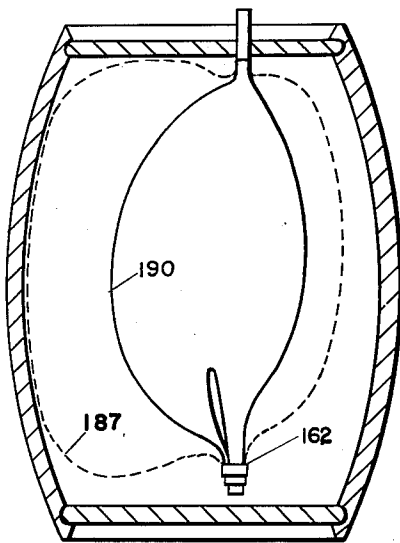


FIG 6

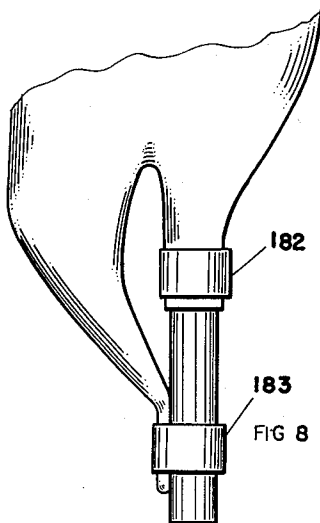


FIG 8

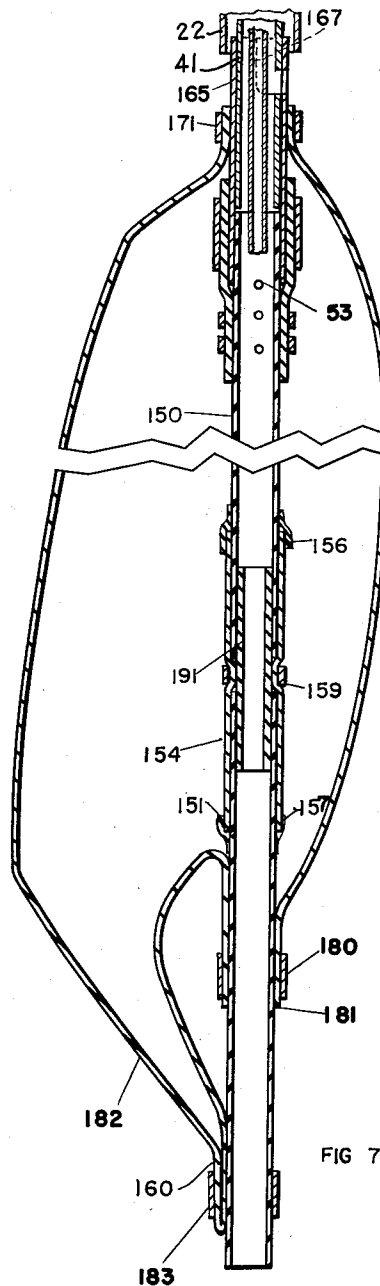


FIG 7

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2,991,916

LIQUID DISPENSING DEVICE

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15 Claims. (Cl. 222—386.5)

This invention relates to barrel tapping devices and, more particularly, to means for tapping a conventional beer barrel and forcing the beer therefrom to a dispensing means.

This application is an improvement over Patent No. 2,762,534, issued September 11, 1956.

Prior devices for dispensing beverages usually were unable to remove all of the beverage and a gallon or so of the beverage would remain in the bottom of the barrel. The said patent discloses an inflatable device which is adapted to be inserted in a barrel to force the contents therefrom.

The present application discloses a device in many respects similar to the device disclosed in the prior patent; however, the present device presents a novel means for attaching an inflatable device to the tapping equipment wherein the device can be readily removed from the equipment, can be readily and conveniently inserted in a barrel, and will remove nearly all, if not all, of the beverage. In another embodiment of the invention disclosed herein, an improved shaped bladder or air bag is provided to remove a maximum amount of liquid from the barrel wherein it is used. The present improvements make it possible to remove and replace the air bag of the device with convenience and without damaging the device. Also, the device is economical and simple to use. Another embodiment constituting an improvement disclosed herein shows a structure for holding the inflated bag out of engagement with the barrel bottom during the initial stages of its expansion and for expanding in such a manner that liquid will be pushed toward the center of the barrel or near the beverage tubes. In the present disclosure, the parts are so arranged that as soon as some beverage is drawn, the bladder expands and covers most of the top of the beverage. Therefore, only a little of the beverage is in contact with the air. This prevents decarbonization.

It is, accordingly, an object of this invention to overcome prior defects and disadvantages in previous designs of beer tapping devices and, more particularly, it is an object of this invention to provide a beer tapping device which is simple in construction, economical to manufacture, easy to install, and efficient in operation.

Another object of this invention is to provide a barrel tapping device utilizing an inflatable member wherein an improved valve is provided to prevent the air or gas introduced into the container from coming into contact with the beverage.

A further object of the invention is to provide an improved shape of air container for forcing liquids from a container.

A still further object of this invention is to provide a barrel tapping device having an improved means for inserting an inflatable member into the barrel.

Yet a further object of the invention is to provide an improved means for removing and completely emptying a barrel of beer or other liquid.

With the above and other objects in view, the present invention consists of the combination and arrangement of parts hereinafter more fully described, illustrated in the accompanying drawings and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportions, and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:

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FIG. 1 is a cross sectional view of a barrel having a barrel tapping device attached thereto;

FIG. 2 is an enlarged detailed cross sectional view of a part of the equipment used with this invention;

FIG. 3 shows another embodiment of the invention;

FIG. 4 is a cross sectional view taken on line 4—4 of FIG. 5;

FIG. 5 is a longitudinal cross sectional view of the inflatable member supported on the dispensing assembly with the beverage rod shown broken away at the lower end, the tapping device broken away at the upper end, and the cardboard cylinder forced to the lower part of the assembly;

FIG. 6 shows a barrel containing a device comprising another embodiment of the invention;

FIG. 7 is an enlarged vertical cross sectional view of the embodiment of the invention shown in FIG. 6;

FIG. 8 is an enlarged partial view of the lower end of the embodiment of the invention shown in FIG. 7; and
FIGS. 9, 10, and 11 are other views of the embodiment of the invention shown in FIG. 3.

Now with more specific reference to the drawings, a tapping device 1 is shown having a sleeve 2 on the lower end thereof with an outwardly extending flange 15 on the upper end thereof. A female member 4 of a bayonet type coupling is attached to the sleeve 2 and welded or brazed thereto. The female member 4 is a complementary part of a coupling 5 and is adapted to engage the conventional male bayonet type coupling member 5 disposed on a conventional beer barrel of the type now in use in the United States by most breweries.

The flange 15 has an internally threaded portion 17 engaging a lower threaded end 18 of a gland 19 for forcing a sealing washer 20 into sealing engagement with a pipe 22 telescopically disposed and axially movable on the sleeve 2. The pipe 22 has a cylindrical head member 23 concentric thereto and welded at 24 to the upper end thereof. The member 23 has a laterally extending, apertured bossed portion 25 with a conventional pipe thread 26 for receiving a threaded end 27 of a pipe 28 to provide a path for a suitable source of air or other suitable fluid. The upper end of the cylindrical member 23 is internally threaded at 30 for receiving a lower end 31 of a cylindrical head 32. The head 32 has a laterally extending beverage outlet 33 in which is disposed a conventional shut-off valve 34 for controlling the flow of beverage from the head 32. The head 32 also has an internally threaded portion 35 for threadable engagement with an upper threaded end 36 of a beverage rod 37 which is disposed concentric to the pipe 22 and spaced therefrom so as to provide a passageway for air, gas, or other fluid therebetween. The above members are shown particularly in FIGS. 1 and 2.

The beverage rod 37 and tubes 22 and 41 are disposed concentric to each other and attached together at the top thereof. The tube 41 and rod 37 extend a sufficient distance beyond the lower end of the pipe 22 to reach substantially to the bottom of a container such as a keg or barrel to be tapped.

The inflatable member assembly shown in FIG. 5 is adapted to slide concentrically over the beverage rod 37 and the tube 41 and be disposed thereon generally in the position shown in FIG. 1 when in the barrel. When the device is to be inserted into a barrel, the device shown in FIG. 5 will be drawn into the sleeve 2 by loosening the gland 19 and pulling the pipe 22 upward, thus drawing the beverage rod 37 and tube 41 with the tapping device thereon up into the sleeve 2.

One embodiment of the inflatable member and assembly is shown in FIG. 5. The inflatable member assembly is made up of a relatively thin tubular member 50 and a similar member 51 in aligned, axial spaced relation there-

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to. The members 50 and 51 are hollow cylindrical members, preferably made of odorless, tasteless, non-toxic plastic which can come into contact with beer and most other beverages without objectionable contamination resulting. The member 50 has a plurality of spaced holes 53 therethrough. The cylindrical bladder support tube members 50 and 51 are held in spaced relation by means of a cylindrical spacer tube 54 made of cardboard or a similar fairly rigid material disposed concentrically of the tube members 50 and 51 and extending into each of the tubes 50 and 51, and making a snug fit and frictional engagement with the insides thereof to hold them in spaced relation. When the bladder is assembled in a container, the cylindrical spacer tube 54 is forced to the bottom of a tube as shown in FIG. 5. A flexible sleeve 55 is disposed over the juxtaposed ends of the tubes 50 and 51 and held thereto by means of tape 56 and 57, respectively, which form an air tight seal between the ends of the tubes 50 and 51 and the sleeve 55 and may be held thereto by means of suitable plastic adhesive tape. A band 59 of resilient material is disposed around the sleeve 55 and makes two turns therearound and urges the sleeve 55 inwardly into sealing engagement with the cardboard cylinder 54.

The lower end of a resilient bladder or bag member 90 is sealed to the lower end of the tube 51 at 60 by means of tape 62 which has an adhesive material thereon and which seals to the lower end of the bag 90 and to the outer surface of the tube 51, thereby sealing the lower end of the tube 51 against leakage. The bag 90 is shown in cross section in FIGS. 4 and 5 and has a plurality of convolutions 63 which extend outwardly to a smooth, generally round container when the bag 90 is inflated. A resilient band 98 such as a rubber band is attached to a member 65 at 99 under tape 70 and at the other end thereof by the tape 62 and the bight thereof extends therebetween.

The sleeve 65 made of thin rigid material, for example, brass, is telescopically received over an end 66 of the tube 50. The sleeve 65 has an axially extending slot 67 therein terminating in an offset hole 68. An upper end 69 of the bladder member 90 extends over the sleeve 65 and is sealed thereto by means of adhesive tape 70 which is attached to the bag 90; that is, the sleeve 65 is slidable on the tube 50 and the cardboard cylinder 54 is slidable inside the tubes 50 and 51 and a liquid tight seal is provided between the sleeve 65 and the upper end 69 of the bag 90 and between the tube 51 and the lower end 60 of the bag 90.

To use the device, the tube 41 having the beverage tube 37 therein is inserted through the inside of the tubes 50 and 51 and the lower end 60 of the tube 51 engages the cardboard cylinder 54. Tube 41 pushes it to the lower end of the tube 51 so that the band 59 squeezes the sleeve 55 into sealing engagement with the outer periphery of the tube 41. The beverage rod 37, tube 41, and pipe 22 are then pushed down through until a lower end 94a of the pipe 22 engages an upper end 66 of the tube 50, forcing it out of the sleeve 65. The lower portion 94a of the pipe 22 has a transverse pin 65a therein which slides into the slot 67 and rests in the hole 68 thereof. The entire assembly, including the tube 51 and the beverage rod 37, is then drawn with the pipe 22 into the device 1 with the bag 90 in extended position. The entire device is then inserted through the opening in the barrel. A handle 10 is then rotated to form a seal between the bung of the barrel and the device 1. Then gas is pumped through the pipe 28 and it flows down around the outside of the beverage pipe 41 in the direction of the arrow shown in the pipe 28 and flows down between the beverage pipe 41 and pipe 22 and out through the holes 53 into the space between the tubes 50 and 51 and the inside of the bag 90. The pressure thereon tends to elongate the bag 90. Therefore, the force of the bag 90 at the lower end of the tube 51 causes the tube 51 to slide

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on the beverage rod 37 until a tip 77 rests on the bottom of the barrel. Since the sleeve 55 forms a gas tight connection between the bag 90 and the outer periphery of the tube 41, the air cannot pass out downwardly into the space above the beverage in contact with the beverage. As the pressure in the bag 90 increases, the bag 90 stretches and engages the top of the beverage and forces it out of the barrel.

Either air or CO₂ can be inserted to the bottom of the beverage through the tube 41 or into the bag 90. A source of compressed air is connected to the device and a source of CO₂ under pressure is connected to the device. By regulating valves the air and CO₂ over the top of the beverage can be regulated through the pipe 22. CO₂ or air can be exhausted to change the concentration of CO₂ by changing the CO₂ over the beverage and, therefore, the amount of CO₂ that the beverage will absorb.

It has been discovered through experimentation that when the bag 90 has fully expanded to the dotted line position 101, beverage will be trapped at 80. If it is desired to remove all of the beverage from a barrel, an additional device must be provided to provide a channel for the beverage to flow into since the center of the bag 90 will expand downward into engagement with the bottom of the barrel and some beverage will be trapped in the space 80 at the edge thereof. Various designs of barrels do not encounter this difficulty; however, a barrel of the conventional shape shown in FIG. 1 will almost always trap some beverage around the lower inside peripheral edge thereof. Therefore, an additional improvement is provided which will support a portion of the bladder from engagement with the bottom of the barrel and, therefore, allow all of the beverage to be expelled therefrom. The tip 77 of the tube 51 will be forced into engagement with the bottom of the barrel as explained supra.

FIG. 5 discloses another feature of the device for removing the beverage from the barrel. It is made up of the resilient band 98 which is fairly strong and resistant to stretching compared to the bag 90. As the member 90 is inflated, the bladder will engage the band 98 and force the bag to expand more on each side of the band 98 to form a channel thereinto along one edge thereof. The band 98 will indent the bag and form a channel therearound to allow the trapped beverage to pass along the member 98 from the volume trapped in the barrel at 80. Therefore, all of the beverage in the barrel will be evacuated. The entire device, including the bag 90 in extended position and the band 98, can be drawn up into the tube or sleeve 2 as explained and it can also be inserted into a barrel through a small opening or bung.

FIGS. 6, 7, and 8 show another embodiment of the invention wherein a bladder 190 supported on tubes 150 and 151 is disposed in a keg. The bladder 190 differs from the bag 90, however, in that the lower portion thereof is bifurcated and the lower end of one bifurcated portion is attached to the tube 151 by means of tape 180 and the tube 151 extends down through the opening at 181. The other bifurcated portion 182 is taped to the side of the tube 151 at 183. Therefore, when air is admitted to the bladder 190 and the beverage rod is inserted through the tubes 150 and 151, a cylinder 191 will be forced out and a rubber band 159 will cause a resilient sleeve 154 to grip the tube 41. The sleeve 154 is taped to the tube 150 at 156 and to tube 151 at 157. A slot 167 in a sleeve 165 performs the same function as the slot 67 and sleeve 65 in the embodiment shown in FIG. 5. The bladder 190 is attached to the sleeve 165 by means of tape 171. Air will be admitted through the holes 53 into the bladder 190 and expand it generally in the shape shown in FIG. 6. The main portion will expand the fastest at 187 and will crowd the beverage to one side. The bifurcated portion 182 will hold a portion of the bladder 190 from expanding and, therefore, will crowd the beverage to one side before it finally flows up through the beer rod.

In FIGS. 9, 10, 11, and 3, another embodiment of the bladder is shown. The bladder is made in the form of a closed container having an opening at 210 and having an elongated body 211 terminating at the distal end thereof in a reduced size, closed end portion 212 and having three hollow closed end projections 213, 214, and 215 on one side. The first projection 213 is longer than the others and is disposed slightly below the midpoint of the length of the body 211. The short finger or projection member 214 is disposed adjacent the long member 213 and the third finger or projection member 215 is slightly longer than the member 214 but shorter than the member 213.

The tube 51 is inserted into the end 212 and an outer surface 237 is caused to lie in intimate relationship with the outer surface of the tube 51. Tape 262 is then wrapped around the end 212 to seal the finger member end 212 to the tube 51. The entire body member 211 is then turned inside out back over the tube 51 as shown generally in FIGS. 11 and 3. The fingers 213, 214, and 215 are turned inside out as shown in FIG. 12 and ends 220, 221, and 222 are taped to the tube by means of tape 223, 224, and 225, respectively. The end 221 is then taped to the upper tube 50 by means of tape 227, the end 212 of the bladder over the surface 237 of the pipe is then punctured, and the entire bladder and tubes are disposed on a beverage rod or on the tube 41 in the manner in which the member 59 is disposed on the beverage rod in FIG. 1 and the beverage rod and bladder are inserted into a barrel of beverage which is to be evacuated.

When the bladder and tube are disposed in a beverage barrel as shown in FIG. 3 with the beverage rod therein, the operator then begins to admit air under pressure into the interior of the bladder which begins to expand it and it takes generally the shape shown in FIG. 3 when air is first introduced. The finger 213 restrains the top, the finger 214 restrains the intermediate portion, and the finger 215 restrains the lower portion of the bladder against expansion and allows a side 232 to expand freely. The side 232 expands downwardly and conforms to the shape of the interior of the barrel as shown in FIG. 10 as the air pressure is increased.

As shown in FIG. 10, the fingers 213, 214, and 215 will restrain the opposite side of the bladder against expansion while corners 233 opposite the side 232 will expand down into intimate contact with the interior of the barrel, leaving a channel between cheeks 234 for the last volume of the beverage to collect. Therefore, the beverage from the side adjacent the side 232 is forced out through the beverage rod. Then as the side 232 expands outwardly and upwardly, the beverage on that side is forced out through the tube, the beverage on a side 236 remaining in place. As the bladder continues to expand as air pressure is increased, the beverage is swept from around the outer periphery of the barrel by the cheeks 234 of the bladder so that the final volume of beverage remaining in the barrel is contained between the two cheeks 234, the fingers restraining the left side of the bladder from expanding. Then as the bladder continues to expand, the last volume of beverage is expelled from the cheeks 234 as the side of the bladder continues to sweep on around and the fingers are stretched so that, finally, only a very small quantity of beverage remains in the barrel. Finally, substantially the last volume of beverage will be expelled from the barrel and forced up through the beverage rod.

The operator may stop the air pressure from increasing inside the bladder as the barrel approaches the empty condition so that a portion of the bladder itself is not expelled up through the beverage rod and, therefore, a small area pushed up through the tube 51, overstressed, and punctured. If precautions are taken not to puncture the bladder, the air pressure inside the bladder may be

released and the bladder may be withdrawn through the bung of the barrel for use in another barrel.

The foregoing specification sets forth the invention in its preferred practical forms but the structure shown is capable of modification within a range of equivalents without departing from the invention which it is to be understood is broadly novel as is commensurate with the appended claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A device for inserting into a container to remove the contents therefrom comprising two axially aligned, rigid, spaced tubes connected by a flexible sleeve, said tubes disposed in a flexible resilient bag and extending into one opening thereof and out another opening with one of said tubes closing said one opening and sealingly attached thereto, a hollow sleeve disposed in said other opening and sealed to said bag around said opening, said second tube being telescopically slidable in said hollow sleeve, a hollow rod adapted to be inserted through said tubes with an open end extending through the end remote from said hollow sleeve, means to seal said flexible sleeve to said hollow rod, and means to direct fluid into the space between said tubes and said bag whereby said bag is expanded and material from said container is expelled therefrom.

2. The device recited in claim 1 wherein said sealing means for said flexible sleeve comprises a resilient band disposed around said flexible sleeve, urging said flexible sleeve into sealing engagement with said rod.

3. The device recited in claim 2 wherein a hollow body is adapted to be attached to said bag around an inlet thereto and said hollow rod and said bag are adapted to be retracted into said body.

4. A device for removing liquid from a container comprising two axially aligned tubes connected by a flexible tube, a flexible bag having two openings said tubes extending into one opening in said flexible bag and out the other, said flexible bag defining a fluid tight chamber between said tubes and said flexible bag, and means to hold said flexible tube in sealing engagement with a hollow rod adapted to extend through said tubes.

5. The device recited in claim 4 wherein said flexible bag adjacent said one opening has means thereon adapted to be attached to a sleeve concentrically disposed on said hollow rod.

6. The device recited in claim 5 wherein a resilient band is attached to said bag adjacent said one opening at one end thereof and adjacent said other opening at the other end thereof and has an unstressed length substantially equal to the distance between said openings whereby said band deflects said bag when said bag is inflated.

7. A device for forcing liquid from a container comprising a resilient body, a tubular means extending into one portion of said resilient body and out the other portion thereof and providing a space for air between said body and said tubular means, said tubular means being sealed to said body, means to admit gas into said space to expand said resilient body, and a resilient band, and means to support said band at spaced points on said tubular means adjacent said body whereby said band is adapted to indent said body, providing a passage to said tubular means for liquid trapped adjacent the inside surfaces of said container.

8. The device recited in claim 7 wherein one end of said body is attached to a sleeve adapted to be attached to a hollow rod.

9. The device recited in claim 8 wherein said hollow rod is adapted to extend through said tubular means.

10. A device for forcing liquid from a container comprising a resilient body having first and second openings, tubular means extending into the first opening of the resilient body and out the second opening and providing a space for air between said body and said tubular means,

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means to admit gas into said space to expand said resilient body, a resilient band, means to support said band at spaced points on said tubular means adjacent said body whereby said band is adapted to indent said body, providing a passage to said tubular means for liquid trapped adjacent the outside of a container, and a second tubular means sealingly attached to said body at one end thereof and extending through said first opening on said first tubular means and concentrically disposed on said first tubular means, said body being sealingly attached to said first tubular means around said second opening.

11. A bladder for evacuating a beverage container, said bladder having an open end and a distal end made of resilient material and having an expandable body and a closed end opposite an open end, one side of said bladder having a finger member attached thereto between said open end and said distal end, said finger member being adapted to be attached to a member of a beverage dispensing mechanism to restrain one side of said bladder against elastic deformation.

12. The bladder recited in claim 11 wherein said bladder has a plurality of spaced fingers attached thereto to limit expansion of part of said bladder.

13. The bladder recited in claim 12 wherein said spaced fingers are disposed in proximate relation on one side of said bladder.

14. A device for tapping a container and forcing the contents therefrom comprising a tubular body member, means to secure said body member to a coupling member on said container, a pipe and a hollow rod sealed together at the upper end thereof and disposed concentric

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to each other and to said tubular member, sealing means between said pipe and said tubular member, a sleeve disposed around said rod, means to attach said sleeve to said pipe in general alignment therewith, sealing means sealing one end of said sleeve to said rod, a resilient bag having two openings therein, said rod extending through said openings, said bag being sealingly attached to said pipe around one said opening and to said sleeve around said other opening, means to connect a supply of compressed gas to said pipe to flow through the space between said pipe and said rod into said bag, discharge means on said rod for material forced from said container by said gas expanding said bag, and means on said device to introduce gas into said container outside of said bag.

15. The device recited in claim 14 wherein a band of resilient material is attached to said bag at the attachment thereof to said pipe and at the other end of the attachment thereof to said sleeve and adapted to be forced therewith into engagement with the bottom of said container holding said bag away from the bottom of said container along a path from said side to said rod and thereby providing a passage for fluid to flow to said hollow rod.

References Cited in the file of this patent

UNITED STATES PATENTS

642,960	Clibborn	Feb. 6, 1900
1,977,862	Scholtes	Oct. 23, 1934
2,223,012	Wanderski et al.	Nov. 26, 1940
2,673,013	Hester	Mar. 23, 1954
2,762,534	Kish	Sept. 11, 1956