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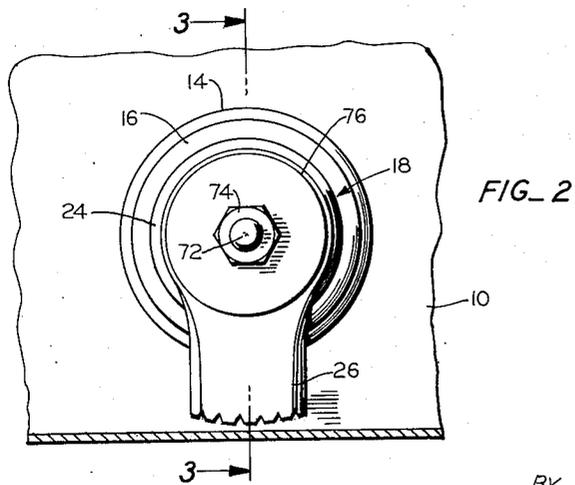
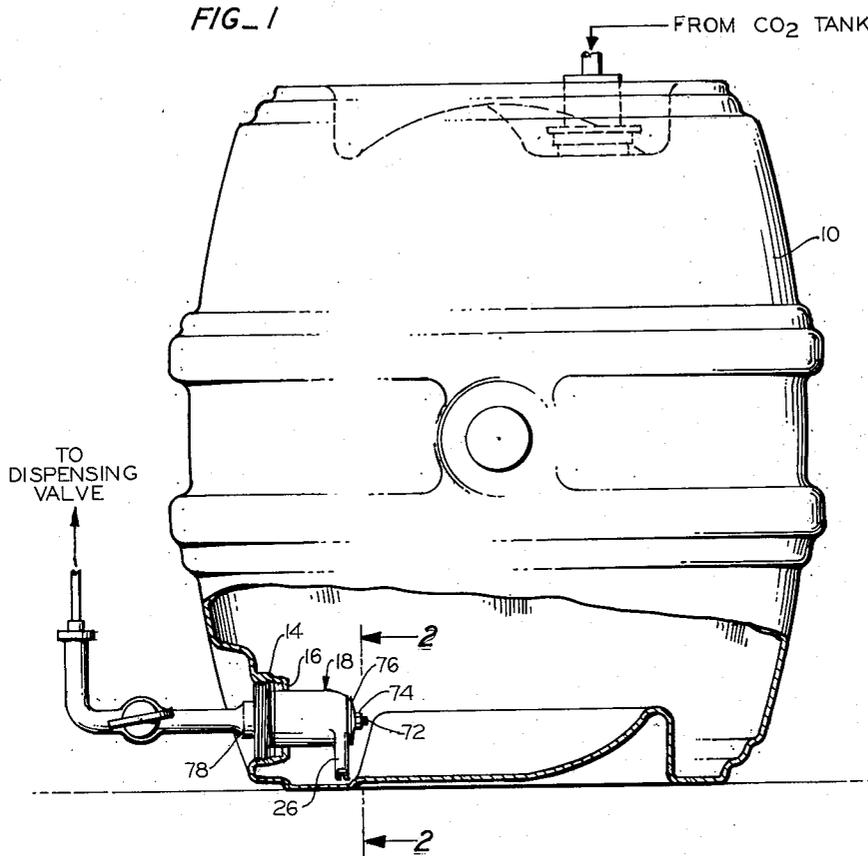
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3,115,150

TAPPING VALVE FOR BEER KEGS

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2 Sheets-Sheet 1



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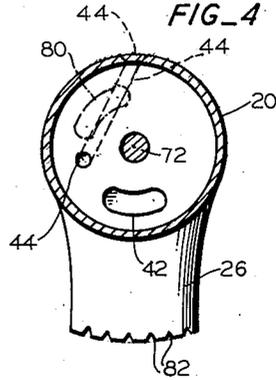
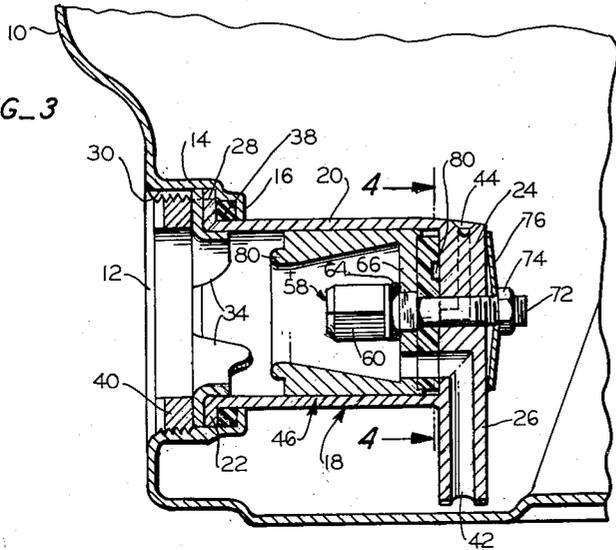
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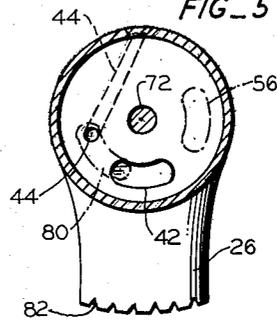
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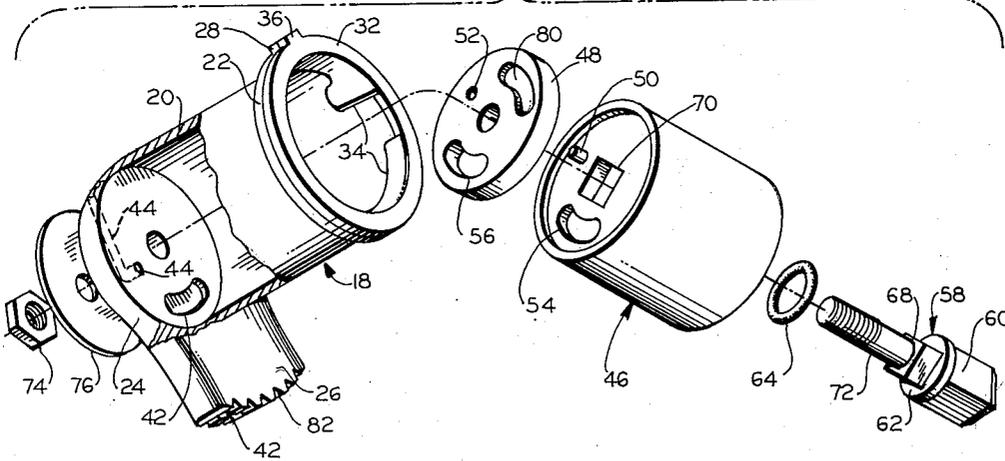
FIG_3



FIG_5



FIG_6



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TAPPING VALVE FOR BEER KEGS

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2 Claims. (Cl. 137-240)

This invention relates to the valve art, and more particularly to an improvement in a tapping valve for beer kegs.

One of the well known and long used beer keg pressurizing and dispensing systems is known as the Golden Gate system. In such a system the keg is characterized by the presence of a fitting in its upper wall for connection to a source of pressurized gas, a normally closed fill opening in its sidewall, a tapping valve fitted into the sidewall adjacent to the bottom wall, and a tapping device adapted to be fitted into the valve and locked thereto by rotative movement, the rotative movement being effective to open the valve. Reverse rotative movement of the tapping device serves to close the valve and to free the tapping device for disengagement from the valve.

In the valves of this type which are in use, the outlet port of the valve is located as much as an inch or more from the bottom of the keg. As a consequence, this port is uncovered to the pressurized gas before the keg is fully emptied. The keg still contains a number of quarts of beer. To minimize the loss of this beer, the keg is tipped, tipping blocks being regularly provided for this purpose, to maintain the valve outlet ports submerged as long as possible. Even so, many ounces of residual beer remain in the keg and are lost to the purchaser.

It has been suggested that the valve be provided with a radially disposed tubular extension, the inlet opening of which is disposed immediately adjacent the bottom of the keg when the valve is open, thereby enabling substantially complete draining of the keg. The patent to Lamoureux 2,545,620 discloses such an arrangement. But while the tubular extension type of valve shown in this patent enables a substantially complete emptying of the keg, it does not lend itself to conventional keg handling practice.

Such kegs are returned to the brewery for cleaning while the valve is closed and subsequent filling. Caustic solution is employed in the cleaning operation, and the tubular extension will entrap and retain an amount of cleaning solution, thereby rendering the use of such a valve unsatisfactory in practice.

In our co-pending application for "Tapping Valve for Beer Kegs," Serial No. 125,546, filed July 20, 1961, there is disclosed an improvement on the described tubular extension type of valve, said improvement comprising means embodied in the valve to render it self-clearing of cleaning fluids during the cleaning operation.

In both the aforesaid Lamoureux patent and the aforesaid co-pending application, the tubular extension type of valve shown is one wherein the tubular extension is rotated through an angle of 90° to effect closing of the valve and is rotated from its closed-valve position so as to be normal to the bottom of the keg when the valve is open.

The essential object of the present invention is to provide a tubular extension type of valve, as above described, wherein the tubular extension element remains fixedly positioned regardless of whether the valve is in the open or closed condition, and which furthermore embodies means therein to render the valve self-clearing of cleaning fluids during the cleaning operation.

Other objects and advantages of the invention will be apparent from the following description taken in con-

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junction with the drawings forming part of this specification, and in which:

FIG. 1 is a view in elevation, partially broken away, of a keg embodying the improved valve of the subject invention;

FIG. 2 is an enlarged detail view taken along lines 2-2 of FIG. 1;

FIG. 3 is a view in vertical diametral section through the valve of the invention, as taken along lines 3-3 of FIG. 2;

FIG. 4 is a detail view in section taken along lines 4-4 of FIG. 3, the valve being in the open condition;

FIG. 5 is a view similar to that of FIG. 4, but taken when the valve is in the closed condition; and

FIG. 6 is a view in perspective of the parts of the valve in disassembled relation.

The keg 10 is provided with an opening 12 defined by an inwardly directed sleeve 14 terminating in a radially inwardly directed flange 16. A tapping valve indicated generally at 18 comprises a sleeve portion 20 having integral at one end thereof a radially outwardly directed flange 22 and having integral with the other end thereof an end wall 24 of substantial thickness which is provided with a tubular extension 26. The flange 22 is provided with a tab 28 which extends into a groove 30 formed in sleeve 14, thereby preventing relative rotative movement between the sleeve portion 20 of the tapping valve and the keg sleeve 14. Fixedly secured to the outer end of the sleeve and flange portions 20 and 22 of the tapping valve is a flanged ring 32 which is provided with shaped means 34, adapted for a purpose hereinafter described, and with a tab 36 which likewise resides within groove 30 of the keg sleeve 14. A sealing ring 38 is provided between flanges 16 and 22, and a lock ring 40, threadably engaged with keg sleeve 14, secures the thus far described stationary portion of the tapping valve in place against endwise movement with respect to the keg sleeve 14.

The tubular extension 26 is provided with a bi-directional passageway 42 which communicates with the space defined within the sleeve portion 20 of the valve. The end wall 24 is provided with a bi-directional passageway 44 which at one end communicates with the interior of the keg and at the other end communicates with the space defined within sleeve portion 20 of the valve. The interior ends of the passages 42 and 44 are angularly offset from each other approximately 90°, as shown in FIGS. 4-6.

A cylindrical valve member indicated generally at 46 is closely fitted within the sleeve portion 20 and is rotatable therein. The inner end of member 46 is recessed to partially accommodate an insert face disc 48 formed of a material having good bearing and sealing qualities, such as nylon or Teflon. A pin 50 carried by member 46 is received within a complementary opening 52 to prevent relative rotative movement between the member 46 and disc 48. Member 46 and disc 48 are provided with aligned ports 54 and 56 which are disposed in registry with the inner end of passage 42 in the open condition of the tapping valve and which are disposed out of registry with the inner end of passage 42 in the closed condition of the tapping valve.

Means are provided to secure the cylindrical member 46 and its insert disc 48 relatively tightly against the inside surface of end wall 24 and for rotating the member 46 to and from open and closed valve conditions, said means comprising a spindle 58 provided with a polygonal end 60, a shoulder 62 adapted to compress an O-ring 64 into sealing relation with the interior end surface 66 of member 46, a flattened portion 68 which fits within a flattened aperture 70 formed in the end wall of member 46, thereby securing member 46 against relative rotative movement with respect to the spindle 58, a cylindrical portion 72 which extends through complementary bores formed in

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disc 48 and end wall 24, and a nut 74 secured to the threaded end of spindle portion 72 and adapted to maintain one or more spring washers 76 under compression.

The details of the tubular tapping device 78 (FIG. 1) are well known in the art and do not require specification here, it being considered sufficient to state that the end of said tapping device is inserted into the cylindrical member to lockingly engage the polygonal end 60 of spindle 58 to thereby enable operation of the tapping valve between the open and closed conditions. The shaped means 34 is effective in conjunction with conventional means provided on the tapping device 78 to cam the tapping device inwardly to bring a washered shoulder thereon into sealing relation with lip 80 formed on the cylindrical member 46 during the course of the approximately 90° conjoint movement of the tapping device and the cylindrical member 46 to change the valve from its closed position to its open position. When the tapping device and cylindrical member 46 are rotated approximately 90° in the opposite direction to bring the valve from its open to its closed position, the shaped means enables withdrawal of the tapping device from the tapping valve.

When the valve is in the open position, as in FIGS. 3 and 4, the inner end of passageway 44 is deadended against the planar face portion of disc 48. When the valve is in the closed position, as shown in FIG. 5, the passageway 44 is brought into communication with passageway 42 to thereby provide a single overall passageway which is open at both ends to the interior of the keg but closed relative to the exterior of the keg. This renders the single overall passageway comprised of 44 and 42 self-clearing during the cleaning operation, such cleaning operation of course taking place while the tapping valve is closed.

The means provided in the subject valve for bringing passageways 44 and 42 into communication during the time when the valve is in the closed position comprises an arcuate and fairly elongated slot 80 formed in the end of disc 48 and adapted to bridge the inner ends of passageways 42 and 44, as shown in FIG. 5, when the valve is in the closed position. When the valve is in the open position, as shown in FIG. 4, the slot 80 is not in communication with either of the passageways 42 or 44.

The end surface of tubular extension 26 is provided with a plurality of notches 82. The purpose of these notches is to allow flow of the keg contents into the passageway 42 in the event that the bottom wall of the keg is accidentally deformed inwardly, as might occur during handling operations, into engagement with the end of the tubular extension. Without the notches 82, or the equivalent thereof, such deformation of the bottom wall of the keg could impede or even block off flow of the keg contents into passageway 42.

What is claimed is:

1. A tapping valve for the dispensing of beer from kegs, said kegs being of the type which are charged and from time to time recharged with beer at a charging station, the operator of said charging station being required to sterilize the interiors of said kegs when said interiors have been relatively emptied and said kegs have been returned to said charging station, the sterilizing of said kegs being normally accomplished by the use of media comprising a solution of alkali followed by the application

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of rinse water under pressure, said tapping valve being adapted to enable the pressure-dispensing from said kegs of substantially the entire volume of beer charged into said kegs and being further adapted to enable the complete rinsing from said kegs of alkali solution by said rinse water to thereby insure that none of said alkali solution will remain in said kegs to contaminate the beer subsequently charged into said kegs, said tapping valve comprising, in combination with a keg having an interior and having a tapping valve orifice, a tubular body member having keg-exterior and keg-interior ends, said body member being attached to said tapping valve orifice of said keg and extending into the interior of said keg, a chamber extending longitudinally of said body member and terminating in an end wall, means for admitting fluid into said chamber comprising a radial extension fixedly attached to said body member adjacent said end wall and said keg-interior end of said body member and a first passageway means, the same being through said extension, and a port in said end wall, a cylindrical valve member disposed in fluid-tight engagement with said end wall, a second passageway means, the same being in said valve member, terminating in a port at said end wall, spindle chamber, extending through said end wall and said valve member for rotating said valve member in one direction to bring said ports into beer-flow communication with each other and for rotating said valve member in the other direction to bring said ports out of beer-flow communication, a third passageway means, the same being at the keg-interior end of said body member, a fourth passageway means, the same being in said valve member, said third and fourth passageway means being out of communication with each other when said ports are in beer-flow communication, said third and fourth passageway means being in communication with each other when said ports are out of communication with each other, and being then in communication with said first passageway means to provide two-way, or double-ended, flow-through communication with the interior of said keg when said beer-flow communication is interrupted, whereby alkaline solution subsequently entering said first passageway means during the course of sterilizing said keg may be substantially fully flushed from said first passageway means by rinse water to the interior of said keg and therefrom to drain.

2. The combination of claim 1, said radial extension having the peripheral edge of that end thereof which is disposed remote from said body member formed with at least one indentation, said indentation being directed toward said body member and extending transversely across the full width of said peripheral edge, whereby inflow to said first passageway means of said radial extension may not be closed off by deformation of the bottom wall of the beer keg into engagement with said end of said extension.

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