Sept. 19, 1939. V. BEECHER 2,173,529

BARREL-TAPPING APPARATUS

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Fig. 1.

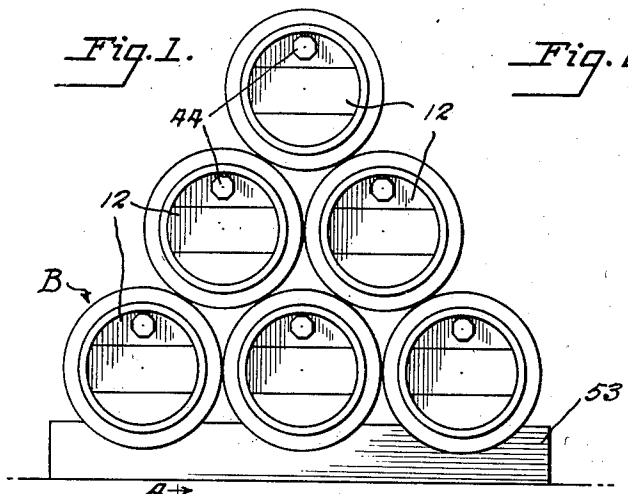


Fig. 2.

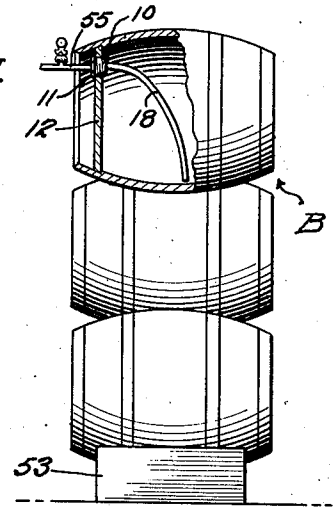


Fig. 3.

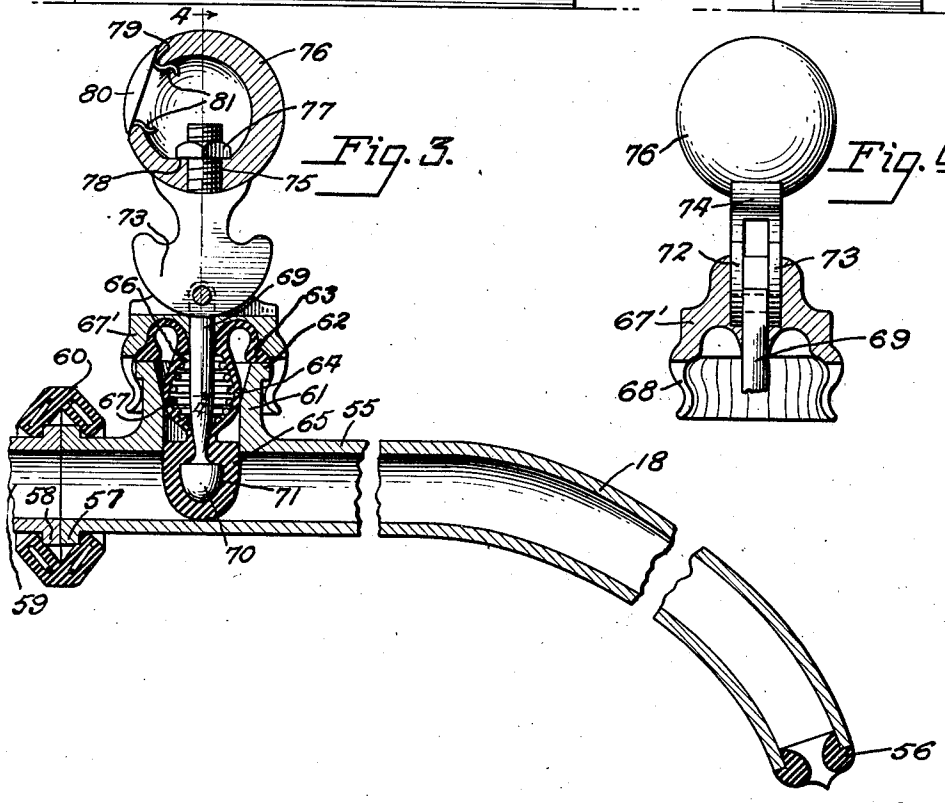


Fig. 4.

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Fig. 5.

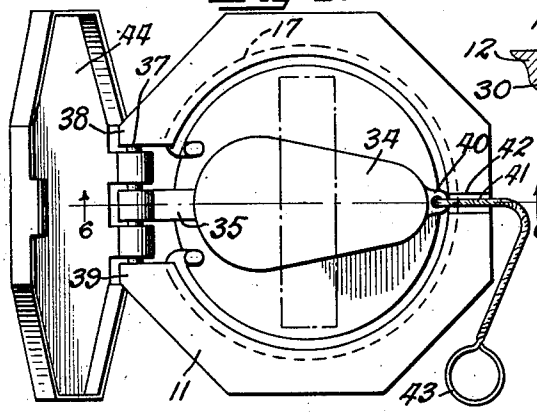
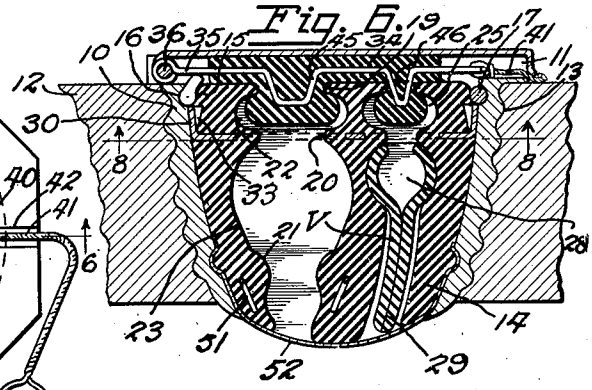


Fig. 6.



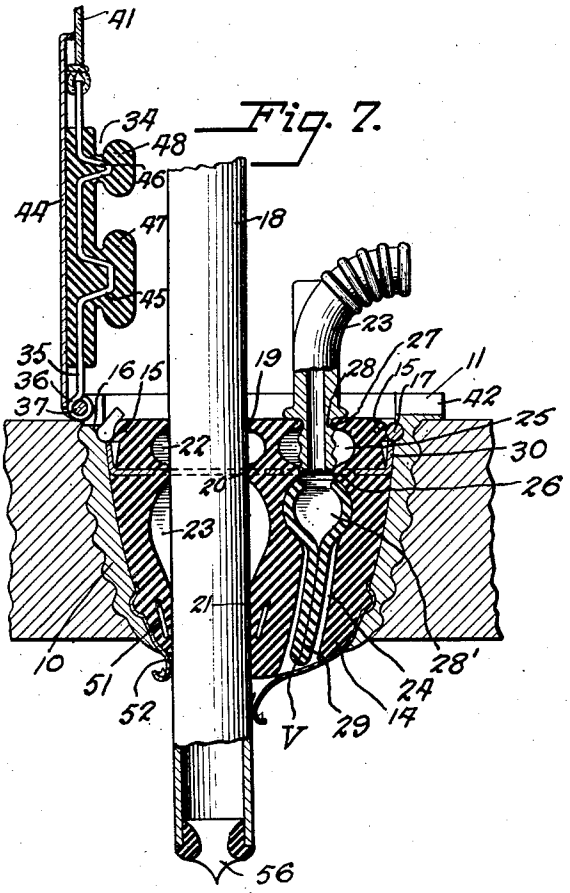


Fig. 7.

Fig. 8.

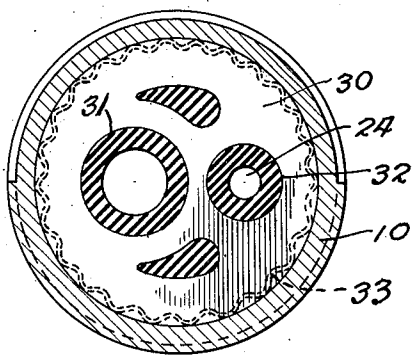




Fig. 9.

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2,173,529

BARREL-TAPPING APPARATUS

Valentine Beecher, Greenville, N. Y.

Application March 10, 1938, Serial No. 195,181

5 Claims. (Cl. 225—5)

The invention forming the subject matter of this application relates to barrel bung and barrel tapping apparatus generally; and more particularly to such apparatus adapted for use in sealing or drawing off liquids from barrels, casks, vessels, etc., irrespective of position, or arranged in superposed rows with their axes substantially horizontal or vertical.

The main object of the invention is to provide a compact bung and tapping arrangement by means of which a straight or curved draught tube of metal or any material may be inserted through the bung and into such position within the barrel as to facilitate the removal of part, or all of the liquid contents, whenever desired.

A further object of the invention is to provide a bung that is non-rigid and extremely flexible and a tapping construction requiring less physical force or pressure than would otherwise have to be created by mechanical means, adapted for use with straight or curved glass draught tubing to enable the liquid contents of the barrels to be dispensed; and also preventing such contents making contact with metal or other substances which might have an injurious effect upon the liquids dispensed, if so desired.

Other objects of the invention will become apparent as the detailed description thereof proceeds.

In the drawings:

Figure 1 is an end elevation of barrels mounted upon a supporting rack or chocked in superposed rows with their axes substantially horizontal;

Figure 2 is a side elevation of the barrel arrangement shown in Figure 1, part of one barrel being broken away and shown in section to illustrate details of construction;

Figure 3 is a longitudinal section taken through a curved draught tube controlled by a faucet;

Figure 4 is a section, taken on the line 4—4 of Figure 3, of the faucet shown in Figure 3, parts thereof being omitted and other parts shown in elevation;

Figure 5 is an elevation of a bung forming an essential part of this invention and showing a cover for certain elements thereof in open position;

Figure 6 is a section taken on the line 6—6 of Figure 5, with the aforesaid cover in closed position;

Figure 7 is a section taken on the line 6—6 of Figure 5, with the parts relatively located as they would be when a draught rod and air pressure connection are inserted in the bung for the purpose of withdrawing liquid from a barrel;

Figure 8 is a section taken on the line 8—8 of Figure 6; and

Figure 9 is an elevation of a reinforcing, spring band.

The bung forming an essential part of this apparatus is designed so flexible as to permit the use of a straight or curved draught tube; and, accordingly, to permit the barrels from which the liquid is to be drawn to be arranged either vertically or in superposed rows with their axes substantially horizontal. Such horizontal arrangement obviously permits the storage and immediate access for use of a greater number of barrels on a given floor space than would be possible where the barrels are arranged with their axes substantially vertical, that is, with their ends resting on a floor. The arrangement of the barrels in this preferred manner with their heads substantially vertical and in the same plane gives ready access to all the barrel heads and permits the barrels being thoroughly drained without disturbing the position of any of them in their respective rows.

The bung construction which permits the use of either a straight or curved draught tube, shown in Figures 5 to 9, inclusive, includes a metallic bushing 10 having an outwardly extending octagonal flange 11 forming a seat to limit the insertion of the bushing within the head 12 of a keg, or barrel. The bushing 10 is externally screw-threaded to engage corresponding internal screw-threads of a bung hole 13 formed in the head 12 of said barrel. Any part of the metal bushing which is likely to come into contact with the liquid in the barrel can, if necessary, be coated with rubber, resin or glass, or other material, to offset and prevent any chemical or other action injurious to the liquid.

The bushing 10, when fully seated in the head is shown slightly greater in depth, but this depends on the thickness of said head of the container. The bung proper comprises a plug 14 of live rubber shaped a trifle larger in order to fit the inner surface of the bushing 10 in a compressed manner. This plug is provided with a peripheral groove 15, semicircular in cross section and adapted to register and fit with a similar groove 16 formed in the surface of the bushing 10. A split ring 17 of springy material of sufficient strength of composition is seated in the groove 15 after the insertion and compressing of the plug 14 into the metallic bushing 10, and is adapted to snap into the groove 16. The plug 14 is provided with an aperture adapted to receive a draught tube 18 which may be straight

or curved, and is shaped or molded to provide spaced apart flanges 19, 20 and 21 forming air chambers 22 and 23 and adapted to grip securely and in liquid tight manner the draught tube inserted through said aperture. The plug 14 is provided with a second and smaller aperture 24 adapted to be connected to an air pressure tube. The plug is shaped so as to form an air chamber 25 bounded at its opposite ends by inwardly directed annular flanges 26 and 27 adapted to grip the nozzle 28 when inserted into the plug.

Below the flange 26 the aperture 24 is expanded to receive a substantially spherical end 28' of a rubber check valve V automatically operable and self closing to maintain the pressure within the keg and to permit air under pressure to be forced thereinto. The spherical end of the valve is secured suitably within the plug 14, and the lower end thereof is flattened and formed with an aperture 29 which is normally closed by the resilience of the rubber from which the valve is made. It will be apparent from inspection of Figure 7 of the drawings that when air pressure is applied through the nozzle 28, the air will be forced through the aperture 29 into the keg; and, when pressure is released, the apertured end of the valve will collapse to prevent leakage of the air in the opposite direction out of the aforesaid keg.

The plug 14 has a reinforcing disk 30, the exact size of the opening in the bushing 10, imbedded therein and is provided with apertures 31 and 32 coaxial with the annular flanges 20 and 26 formed in the plug 14. The outer periphery of the disk 30 is bent upwardly to form a crimped flange 33 to enhance the reinforcing effect of said disk and to be the dominant factor of control of the plug 14 with the bushing 10 and split ring 17. A stopper 34, for the apertures in the plug 14, is hingedly secured to the upper end of the bushing 10, by means of a metal strip 35 which is bent at one end to form a knuckle 36 encircling the pivot pin 37 extending between projections 38 and 39 formed on the octagonal flange 11.

From its hinged end, the strip 35 extends substantially across the plug 14 and is provided at its free end with an eyelet 40 through which is twisted a flexible wire handle 41. The handle 41 is seated normally in a slot 42 formed in the upper surface of the octagonal flange 11 and is allowed to extend beyond said flange to form a flexible handle or finger piece 43 which may be used for cutting across the revenue stamp and raising the stopper 34 from its keg-sealing position, shown in Figure 6, to the open position shown in Figure 7. This flexible handle 43 also swings a cover 44 about the pivot pin 37 to open the same. The cover 44, of substantially the same shape as the octagonal flange 11, is designed to form a protecting cover for the bung.

The metallic strip 35 is shaped to form inwardly directed projections 45 and 46 extending into the apertures through the plug 14. For extra added sealing purposes, the stopper 34 is molded to form outwardly directed flange members 47 and 48 adapted to be snapped through the apertures formed by the flanges 19 and 27 in the plug 14 for the purpose of sealing the draught tube and air nozzle apertures when desired.

In that part of the plug adjacent the flange 21, there is bedded a woven spring wire band 51 to prevent the lower portion of the plug from collapsing inwardly and binding when the draught tube is withdrawn from the bung.

A sealing sheet 52 of insoluble paper or silver foil, Cellophane, thin metal or rubber, as desired, may be placed over the inner end of the plug 14, and clamped between the outer surface of the plug 14 and the inner surface of the bushing 10, as shown in the drawings. The revenue stamp is intended to be placed over the bung and partly under the cover when in closed position, and the cover 44 is intended to hold and protect the revenue stamps, so that they will not be washed off when water or ice is applied to the heads of the kegs or barrels, or they are subjected to other conditions which would cause removal or loss of the stamps during transit. The arrangement of the revenue stamps over the stopper 34 ensures cancellation of these stamps whenever the flexible handle member 41 is used to move the stopper from its closing position to the open position, shown in Figure 7.

In actual use, the bushing 10 and the plug part of this invention is intended to be of the same sectional area of the tapping bungs now in common use. This arrangement of bung-hole gives more access to the interior of the keg or barrel for the purpose of cleaning the same. The plug part of the bung may be used repeatedly, since the metallic bushing may be left as a permanent part of each barrel; and, the plug, being of resilient live rubber, can be readily snapped into and out of locking position in the permanently fixed bushing.

The bung shown particularly in Figures 6 and 7 is adapted, because of its resilient character, to receive straight or curved draught tubes. Because of this capability to receive curved draught tubes, the barrels B may be arranged in superposed rows on any suitable rack 53 with their axis substantially horizontal and their heads in substantially the same vertical plane as shown particularly in Figures 1 and 2. By this arrangement, all the barrels are supported to expose a maximum area of exterior surface to the chilled air in a pre-cooler, with all the heads of the barrels readily accessible for tapping This construction also eliminates the necessity of any operator lifting heavy kegs of liquid for the purpose of moving them into tapping positions.

The curved draught tube 18 may be inserted through the resilient plugs of the barrel bungs, as indicated in Figure 2 of the drawings; and a part 55 projecting outwardly from the head 12 of each barrel is provided with a faucet of peculiar construction, the structural details of which are broadly disclosed and claimed in my co-pending application for Faucet, Serial No. 188,767 filed January 4, 1938.

The inner end of the draught tube 18 is provided with holes and passageway for the liquid to pass and also a non-metallic cutting point 56 adapted to pierce the sheet of Cellophane, or tinfoil, or other sealing material inserted under the inner end of the resilient plug 14 which forms the essential part of the bung.

The other end of the draught tube is preferably formed with a flange 57 adapted to be held in contact with a similar flange 58 formed on the end of a suitable pipe 59, by means of a resilient coupling 60, disclosed and claimed in my co-pending application for Pipe couplings, Serial No. 193,997 filed Mar. 4, 1938. The faucet controlling the flow of liquid through the draught tube 18 requires the formation on the straight part 55 of the draught tube of a cylindrical off-

set 61 having an outwardly directed flange 62 at its outer end. The flat annular surface of the flange 62 forms a seat for an overhanging lip 63 extending outwardly from a rubber sac 64 which, at its lower end, is formed as a cylindrical plug 65 slidable in the cylinder formed by the offset 61. That part of the sac between the plug 65 and the lip 63 is formed as a hollow chamber 66 provided with ribs 67 to prevent the collapse of said chamber.

The rubber sac 64 is secured in position by a cap 67' having a slitted skirt adapted to snap over the flange 62 and to secure the sac in position on the offset 61. The cap 67' is apertured to permit the reciprocation therein of a valve rod 69 which, at its lower end, is shaped to form an enlargement 70 seated in a correspondingly shaped chamber 71 in the valve plug 65.

The passage of liquid through the draught tube 18 is thus controlled by the raising and lowering of the plug 65 across the straight part 55 of the aforesaid draught tube. For the purpose of raising and lowering this rod 69, the upper end thereof is pivoted between a pair of cam plates 72 and 73 which are integrally connected at their upper ends to a solid part 74 which has a screw-threaded pin 75 and engages a flat surface 78 on the interior of the knob 76 for the purpose of clamping said knob securely to the part 74. An aperture 79 formed in the knob 76 gives access to the pin 75 and nut 77; and this aperture is adapted to be closed by a segmental closure 80 provided on its inner surface with spring clips 81 adapted to snap into locking position around the edges of the apertures 79 to hold the closure 80 in position to complete the spherical surface of the knob 76.

As disclosed in my Coupling application, Serial No. 193,997 filed Mar. 4, 1938, the pipe 59 and the piping connected thereto may be curved or bent in any manner desired. The complete construction is so devised and designed that it is extremely flexible and adapts itself to the use of tubing of glass or some other material which cannot injuriously affect the beer or other liquids passing therethrough. This construction of piping facilitates the assembling and disassembling of the various parts without the use of tools; and the entire system throughout is constructed so that no metallic parts are ever in contact with the beer or other liquid being dispensed. It is obvious that the operation of this bung stopper system is not dependent upon positioning of the barrels or other containers with their axes horizontal. The operation is the same whether the barrels, etc. be arranged vertically or inclined to the horizontal; and is not in any way altered by the use of straight draught tubes instead of the curved tubes shown in the drawings.

While I have shown this invention as embodied in a particular form, it is to be understood that it is not to be considered as limited to that form or in any other manner except as indicated by the scope of the claims appended hereto. Furthermore, the invention is not to be considered as limited to use with any particular type of container, whether it be in the form of a barrel or keg, or any other kind of vessel. Where specific terms such as "barrel" are used in the claims, it must be understood that this is done for convenience only and not by way of limitation in the claims.

What I claim is:

1. A bung comprising a metallic bushing provided with means for securing it to a container, a plug of resilient, non-metallic material detachably seated in said bushing and having an aperture therethrough, said aperture having spaced apart annular flanges adapted to hold a draught tube in air-tight friction fit with said flanges.

2. A bung comprising a metallic bushing provided with means for securing it to a container, a plug of resilient, non-metallic material detachably seated in said bushing and having an aperture therethrough and adapted to hold a draught tube in air-tight engagement with the walls of said aperture, said plug having a second aperture extending therethrough, and a check-valve of non-metallic resilient material secured in said second aperture.

3. A bung comprising a metallic bushing provided with means for securing it to a container, a plug of resilient, non-metallic material detachably seated in said bushing and having an aperture therethrough and adapted to hold a draught tube in air-tight engagement with the walls of said aperture, a closure for said aperture hinged to said bushing a cover hinged to one edge of said bushing to swing across and form a cover for said bushing, closure and plug, and a flexible handle secured to the free end of said closure and extending from said bushing and under said cover for simultaneously moving said closure and cover from closed positions on said plug.

4. A bung comprising a metallic bushing provided with means for securing it to a container, a plug of resilient, non-metallic material detachably seated in said bushing and having an aperture therethrough and adapted to hold a draught tube in air-tight engagement with the walls of said aperture, said plug having a second aperture extending therethrough, a check valve of non-metallic resilient material secured in said second aperture, a closure for said apertures hinged to said bushing, a cover hinged to one edge of said bushing to swing across and form a cover for said bushing, closure and plug, and a flexible handle secured to the free end of said closure and extending from said bushing under said cover for simultaneously moving said closure and cover from closed positions on said plug.

5. A bung comprising a metallic bushing provided with means for securing it to a container, a plug of resilient, non-metallic material detachably seated in said bushing and having an aperture therethrough and adapted to hold a draught tube in air-tight engagement with the walls of said aperture, said plug having a second aperture extending therethrough, a check-valve of non-metallic resilient material secured in said second aperture, and a closure for said apertures hinged to said bushing and including resilient stoppers adapted to be snapped into and out of closing position in said apertures.

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