

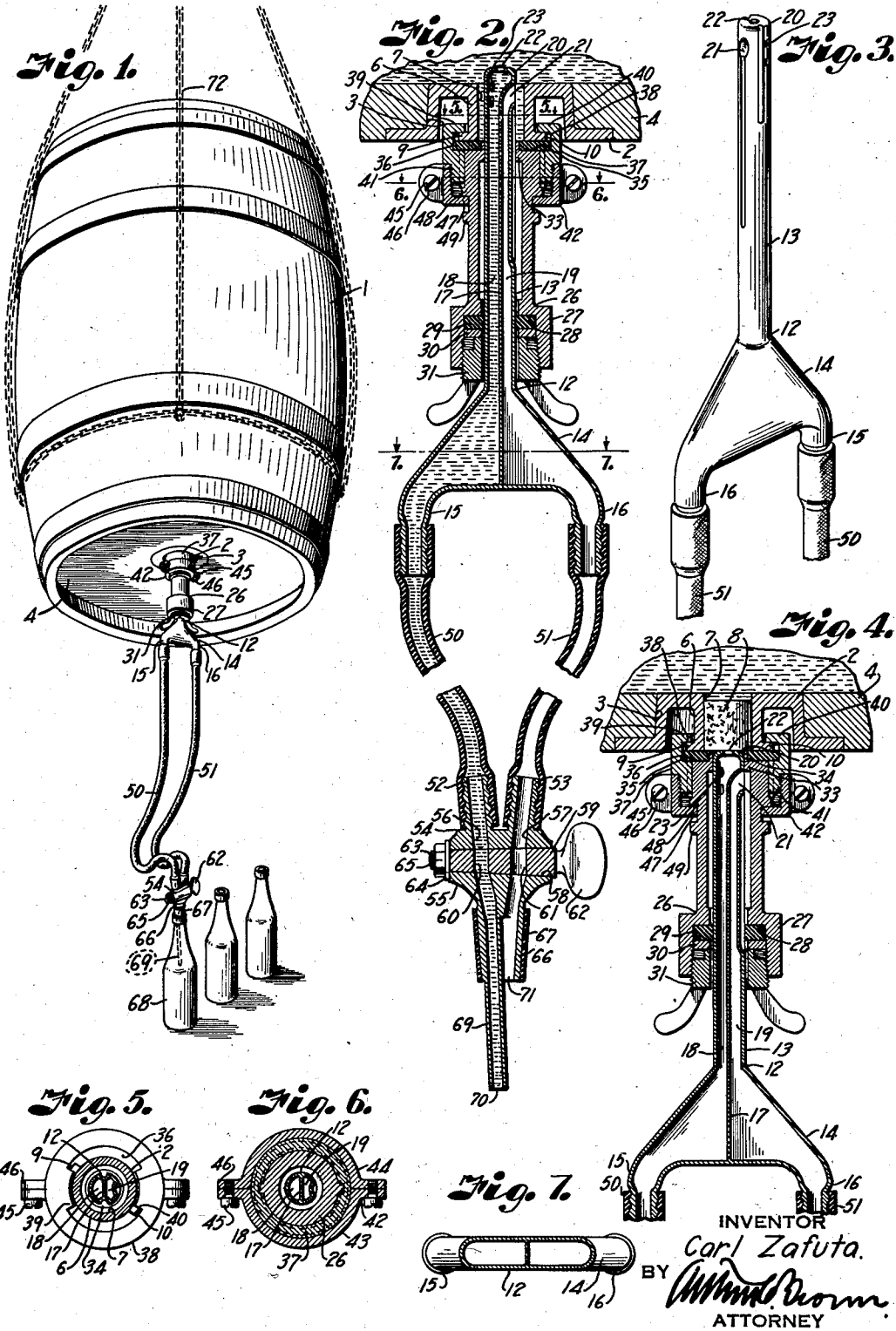
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BOTTLE FILLING EQUIPMENT

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## BOTTLE FILLING EQUIPMENT

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3 Claims. (Cl. 226—122)

This invention relates to bottle filling equipment and more particularly to an apparatus for filling bottles with beer and like foamy liquids contained in a barrel or similar receptacle.

5 The principal objects of the invention are to provide an apparatus whereby bottles may be completely filled without waste of the liquid and loss of its gas content, to provide a simple inexpensive apparatus which is readily applied to a  
10 barrel and connected with a bottle, to provide means in conjunction with the filling apparatus for tapping the barrel, and to provide means for simultaneously controlling flow of liquid from the barrel and delivering foam and air content of the  
15 bottle back into the barrel.

In accomplishing these and other objects of the invention, I have provided improved details of structure, the preferred form of which is illustrated in the accompanying drawing, wherein:

20 Fig. 1 is a perspective view of a bottle filling apparatus connected with a barrel and in filling relation with a bottle.

Fig. 2 is a vertical section through the filling apparatus particularly illustrating its connection  
25 with the barrel and the flow channels through which foam and liquid flows to and from the barrel respectively.

Fig. 3 is a detail perspective view of the barrel tapping and bottle filling rod wherethrough the  
30 liquid content of the barrel is delivered to the bottle and foam and air are returned to the barrel.

Fig. 4 is a detail sectional view similar to Fig. 2 showing the method of tapping the barrel.

35 Fig. 5 is a horizontal section through the barrel fitting on the line 5—5, Fig. 2.

Fig. 6 is a horizontal section through the filling apparatus on the line 6—6, Fig. 2.

40 Fig. 7 is a horizontal section through the head portion of the barrel tapping and bottle filling rod member on the line 7—7, Fig. 2.

Referring more in detail to the drawing:

1 designates a conventional type barrel such as  
45 employed for containing beer or like foamy liquids and which is equipped with an ordinary "Peerless" fitting through which liquid is injected and withdrawn from the barrel. The fitting 2 is fixed in an opening 3 in the barrel head 4 and provided with a neck 6 having an opening 7 normally  
50 closed by a plug 8.

In order to secure filling and draft connections the neck 6 is provided with lateral arcuate shaped  
55 sides thereof, as best shown in Figs. 2 and 5, and

adapted to be engaged by similar ears on the fill or draft connection presently described.

The liquid is usually carried in the barrel under pressure due to the gas contained therein and it is difficult to fill bottles and similar closed  
5 receptacles directly from the barrel because of the foamy characteristic of the liquid when it is released to atmospheric pressure.

As above pointed out, it is an object of the present invention to provide an apparatus where-  
10 by the barrel is tapped to allow flow of liquid to a bottle and to provide for returning the foam to the barrel so that the bottle may be completely filled with liquid exclusive of foam, as now to be described.

12 designates a barrel tapping and bottle filling rod including a cylindrical tube 13 of somewhat  
15 smaller diameter than the opening in the neck 6 and having a triangular shaped head 14 connected to the lower end thereof and which is provided with spaced nipples 15 and 16. The interior of the tube is transversely divided by a  
20 partition 17 to form spaced longitudinal channels 18 and 19 communicating with the nipples 15 and 16, respectively.

25 The upper end of the partition terminates short of the upper end 20 of the tube 13 and is curved laterally to connect with the wall of the tube at a point above the port 21 formed in the wall and communicating with the channel 19.

30 The lower end and side edges of the partition 17 are sealingly engaged with the walls of the tubular portion 13 and with the side walls of the head 14 so that the channel 18 is completely closed from the channel 19.

35 The end 20 of the tubular portion 13 is provided with an inlet port 22 communicating directly with the interior of the barrel. The side walls of the tubular portion 13 are also provided with similar ports 23 communicating with the  
40 channel 18 at points within the neck 6.

Slidably mounted on the tube 13 is a sleeve member 26 having a socket shaped head 27 on  
45 its lower end and having an internal shoulder 28 to accommodate a packing ring 29. The packing ring 29 sealingly engages the outer periphery of the tube and is engaged by a packing gland 30 which is retained in position by a winged nut 31  
50 sleeved over the tube and threaded into the socket 27.

55 The upper end of the sleeve member 26 has an opening 33 of suitable diameter to slidably pass the tube 13 and which is provided with a reduced extension 34 to cooperate with an annular shoulder 35 to form a seat for a second packing ring

36 that engages against the end of the neck 6 to prevent leakage of liquid through the opening 7.

In order to retain the packing ring 36 in sealing engagement with the neck of the barrel fitting, the sleeve member is provided with a ring 37 slidably mounted on the upper end thereof and having an internal socket 38 of suitable diameter to pass over ears 9 and 10 on the neck.

The ring 37 is provided with inwardly extending arcuately shaped ears 39 and 40 adapted to pass between the ears 9 and 10 and to engage therewith when the ring is rotated about the neck of the barrel fitting, thereby anchoring the ring to the barrel fitting and retaining the packing in sealing engagement therewith.

The lower side of the ring 37 is provided with a reduced threaded neck 41 for receiving an internally threaded clamping ring 42 preferably formed of half sections 43 and 44 that are secured together by fastening devices 45 extending through ears 46 on the respective sections, as best shown in Fig. 6.

The clamping ring is provided with an inwardly extending flange 47 for engagement between spaced annular collars 48 and 49 on the sleeve member so that when the ring sections are secured together about the sleeve member, the flange 47 will have limited longitudinal movement on the sleeve member, but will be free to rotate thereon when the clamping ring is adjusted to effect compression of the packing ring and to anchor the sleeve member to the barrel fitting.

Connected to the nipples 15 and 16 are flexible hoses 50 and 51 which have their lower ends connected to nipples 52 and 53 respectively of a valve 54.

The valve 54 includes a housing 55 having spaced channels 56 and 57 intersected by a transverse tapered bore 58. Rotatably mounted in the bore 58 is a similarly tapered valve plug 59 having transverse ports 60 and 61 adapted to communicate with the channels 56 and 57 respectively when the valve plug is in one position for allowing flow through the respective channels, but when the plug is turned in its other position the ports 60 and 61 are carried out of registry with the channels and flow is interrupted through the valve.

The plug 59 is provided at its larger end with a flat head 62 by which it is rotated, while the opposite end is provided with a reduced threaded shank 63 carrying a washer 64 and a nut 65 for drawing the plug tightly within the tapered bore to prevent leakage when the valve is closed.

The valve housing opposite the nipples 52 and 53 terminates in a tapered cylindrical neck 66 having a compressible covering 67 to sealingly engage within the open neck of a bottle 68 in the manner of a cork.

The channels 52 and 53 continue through the tapered neck portion 66, as shown in Fig. 2, but the channel 56 is continued below the outlet of the channel 57 through a tubular extension 69 that is preferably formed integrally with the valve housing 55 and is of sufficient length so that the outlet end 70 thereof is substantially below the inlet 71 to the channel 57.

This is an important feature of the invention because it is by the relative spacing of the inlet 70 to the outlet 71 that I am enabled to control flow of foam from the bottle back into the barrel as now to be described.

In using an apparatus constructed and as-

sembled as described, the barrel 1 is preferably suspended by a sling 72 so that the contents of the barrel will flow by gravity into the bottles.

The sleeve member 26 is then slid downwardly on the tube 13 of the tapping device so that the upper end thereof is below the packing ring 36 as shown in Fig. 4. The ring 37 is then sleeved over the neck of the barrel fitting so that the ears 39 and 40 thereon pass between the ears 9 and 10 and the packing ring engages against the end of the barrel fitting.

The ring is then rotated to cause the ears thereon to engage the ears on the barrel fitting, after which the threaded clamping ring is adjusted to draw the packing ring 36 tightly against the neck of the barrel fitting to prevent leakage between the fitting and the sleeve member.

The tube of the tapping member 12 is then driven upwardly through the sleeve to cause the end thereof to force the plug 8 out of the opening 7 and into the barrel, after which the packing nut 31 is tightened against the packing gland to prevent leakage between the sleeve member and the tubular portion 13.

The stopper shaped neck 66 of the valve is then fitted within the open end of a bottle, after which the tapered plug 59 is rotated to register the ports 60 and 61 therein with the channels 56 and 57.

Liquid is then free to flow into the bottle through both of the channels 18 and 19, flexible connections 50 and 51, and channels 56 and 57 due to the fact that the pressure of the air in the bottle is less than the pressure of the fluid in the barrel; however, the pressures soon equalize so that flow will be continued from the barrel through the ports 22 and 23, channel 18, hose connection 50, channel 56 and tubular extension 69 under the static head of fluid carried in the barrel while the air in the bottle will be vented into the barrel through the inlet port 71, channel 57, hose connection 51, channel 19 and port 21 to take the place of the liquid discharged from the barrel.

Due to the fact that the outlet opening 71 is above the opening 70, the channel 18 thus becomes the flow channel into the bottle, while the channel 19 becomes the channel for movement of air and foam collecting in the bottle back into the barrel.

When the bottle is completely filled, the valve 50 plug is turned to close the channels 56 and 57. The valve fitting is then removed from engagement with the bottle and inserted in another bottle which is filled in exactly the same manner.

The bottles may then be capped as in customary practice.

The bottle filling apparatus may be retained in connection with the barrel so that bottles may be filled from time to time until the barrel has been completely emptied. The filling apparatus is then removed from the barrel and connected with a filled barrel, as previously described.

It is apparent that by providing a filling apparatus having two separate flow channels, the bottles may be completely filled by gravity flow from the barrel while the foam is returned to the barrel without waste of liquid or any of its gaseous content.

What I claim and desire to secure by Letters Patent is:

1. In combination with a receptacle containing a foamable liquid under pressure and having a draft fitting, a bottle filling apparatus including a sleeve member engageable with the draft fitting and having sealing means at its upper and lower

ends, a tapping rod engageable within the sleeve member for removing a bung from the receptacle and extending into the interior of the receptacle having at its upper end liquid outlet perforations and a fluid inlet opening, the tapping rod being retained in position by the sealing means of the sleeve member, a hollow head on the lower end of the tapping rod provided with spaced nipples, a partition connected to the base of the head extending upwardly and terminating short of the perforations and sealing off the opening to divide the tapping rod into liquid outlet and fluid inlet channels, flexible tubes connected to the nipples, a valve fitting connected with the tubes, and means on the valve fitting insertable within a bottle for filling the bottle and returning foamy fluid to the receptacle.

2. In combination with a receptacle containing a foamable liquid under pressure and having a draft fitting, a bottle filling apparatus including a sleeve member engageable with the draft fitting and having sealing means at its upper and lower ends, a tapping rod engageable within the sleeve member for removing a bung from the receptacle and extending into the interior of the receptacle having at its upper end liquid outlet perforations and a fluid inlet opening, the tapping rod being retained in position by the sealing means of the sleeve member, a hollow head on the lower end of the tapping rod provided with spaced nipples, a partition connected to the base of the head extending upwardly and terminating short of the perforations and sealing off the opening to divide the tapping rod into liquid outlet and fluid inlet channels, flexible tubes connected to the nipples, a valve fitting connected with the tubes and having flow channels therethrough corresponding to the channels of the tapping rod, a

bottle stopper connected with the valve fitting and having flow channels communicating through said valve channels and tubes with the tapping rod channels for flowing liquid into a bottle and foamy fluid from the bottle back to the receptacle.

3. In combination with a receptacle containing a foamable liquid under pressure and having a draft fitting, a bottle filling apparatus including a sleeve member engageable with the draft fitting and having sealing means at its upper and lower ends, a tapping rod engageable within the sleeve member for removing a bung from the receptacle and extending into the interior of the receptacle having at its upper end liquid outlet perforations and a fluid inlet opening, the tapping rod being retained in position by the sealing means of the sleeve member, a hollow head on the lower end of the tapping rod provided with spaced nipples, a partition connected to the base of the head extending upwardly and terminating short of the perforations and sealing off the opening to divide the tapping rod into liquid outlet and fluid inlet channels, flexible tubes connected to the nipples, a valve fitting connected with the tubes and having flow channels therethrough corresponding to the flow channels of the tapping rod, a bottle stopper connected with the valve fitting and having flow channels communicating through said valve channels and tubes with the tapping rod channels for flowing liquid into a bottle and foamy fluid from the bottle back to the receptacle, and a tube connected with the stopper and extending into the bottle for extending the liquid flow channel below the other of said channels.

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