

Jan. 21, 1936.

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2,028,283

FOAM CONTROLLING BEER FAUCET

Filed Dec. 14, 1934

2 Sheets-Sheet 1

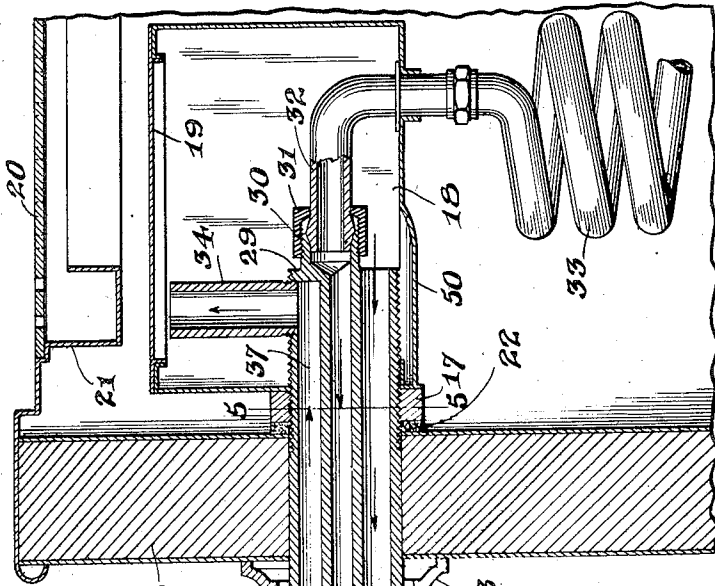


Fig. 1.

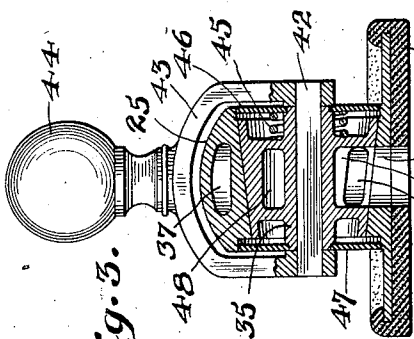


Fig. 3.

Fig. 4.

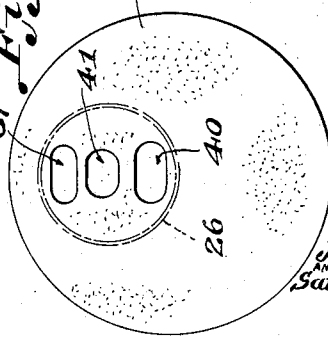


Fig. 5.

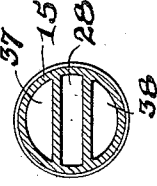
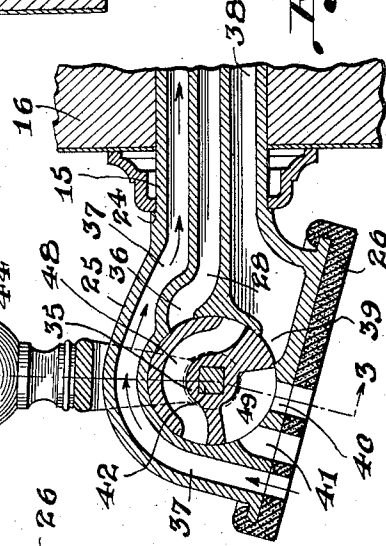


Fig. 2.



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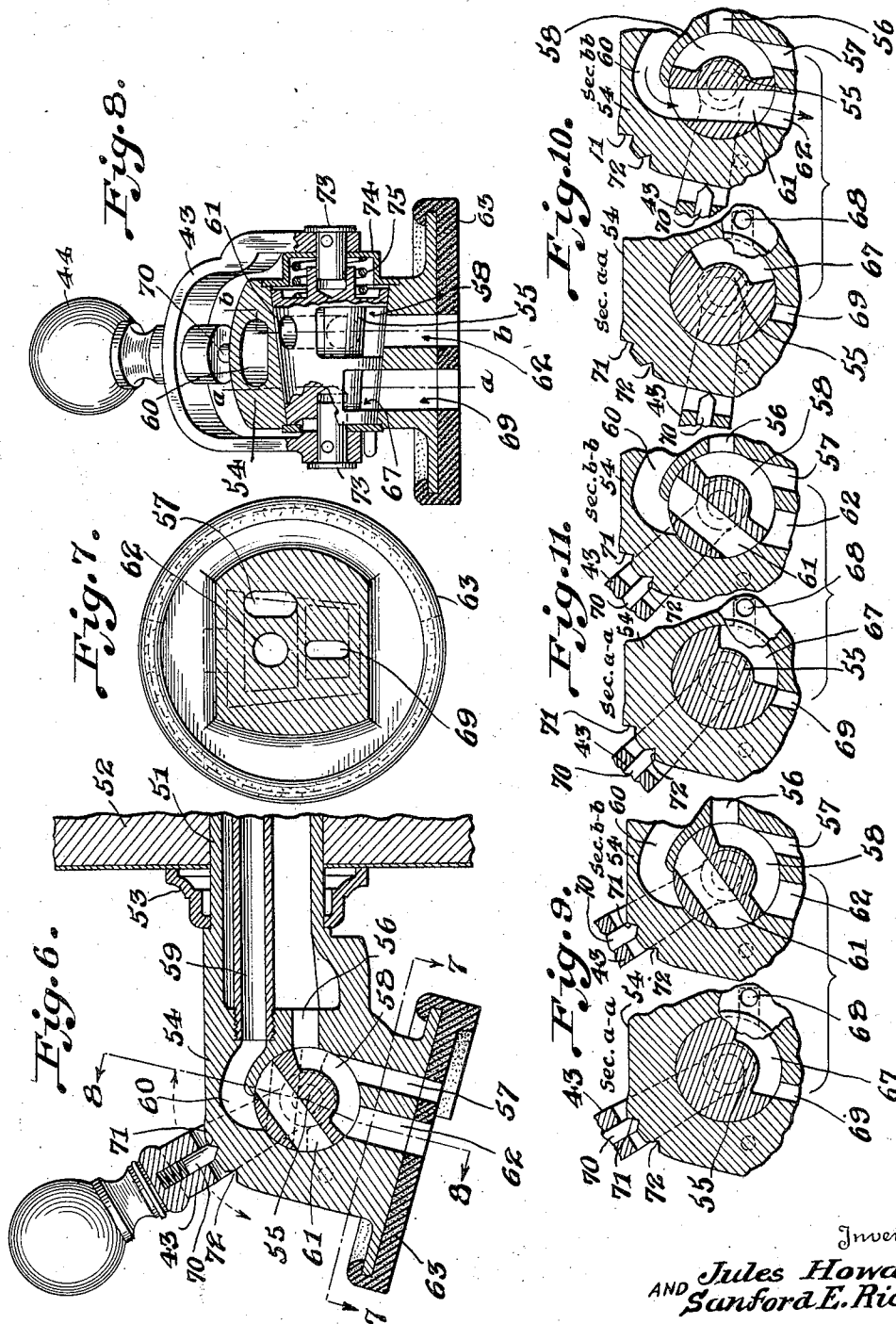
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FOAM CONTROLLING BEER FAUCET

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UNITED STATES PATENT OFFICE

2,028,283

FOAM CONTROLLING BEER FAUCET

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Application December 14, 1934, Serial No. 757,568

9 Claims. (Cl. 225—8)

The present invention relates to beer and like taps or valves for drawing off foamy liquid from a cooler or other container.

An object of the invention is to prevent loss of the liquid incident to foaming in the glass or receptacle, particularly in drawing the liquid after standing for some time in the cooler or container, and at the same time to regulate the depth of the "head" or "cap" of foam at the top of the glass.

A further object is to provide a tap with a tank and to combine the two so that excess foam in the glass may be collected in the tank and allowed to condense or settle therein and the resultant liquid be delivered to the succeeding glass with the fresh liquid from the cooler or container.

The invention also provides means for maintaining the excess foam closed from the air and storing the collected foam in the cooler to keep it in proper condition for subsequent use when delivered to the next glass being filled.

Another object of the invention is to provide a beer and like tap with a handle which may be swung down into full open position without any intermediate stopping and without manipulating any other devices to control the various passages and ports in the tap when it is desired to fill a glass or the like with the liquid.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a longitudinal section taken through a beer tap or valve embodying the features of the present invention, the tap being shown open.

Figure 2 is a fragmentary sectional view of the forward end of the tap in closed position.

Figure 3 is a vertical section taken through the outer end of the tap substantially on the line 3—3 of Figure 2.

Figure 4 is a bottom plan view of the outer end of the tap, showing the cushion for receiving glasses and the like thereagainst.

Figure 5 is a transverse section taken on the line 5—5 of Figure 1 through the shank of the faucet, showing the three passages there-through.

Figure 6 is a fragmentary longitudinal section taken through the outer end of the modified construction of the tap.

Figure 7 is a transverse section taken through the lower end thereof substantially on the line 7—7 of Figure 6.

Figure 8 is a transverse vertical section taken through the outer end of the tap substantially on the line 8—8 of Figure 6.

Figure 9 is a transverse section taken through the opposite end portions of the turning plug showing respectively *a—*a** and *b—*b** of Figure 8 of the tap, and showing the relation between the passages therein in the closed position of the tap, the view being of uniform size.

Figure 10 is a similar view showing the turning plug in full open position, and

Figure 11 is a like view showing the turning plug in partially returned position and at the second notch.

Referring now to the drawings, and first to the form of the invention disclosed in Figures 1 to 5, the tap is shown in the present instance as having a hollow or tubular shank 15, which is mounted through the front wall 16 of the cooler and which is held through the wall 16 by a clamping nut 17 threaded on the inner end of the shank 15 and which may be integral with a foam receiving tank 18. The tank 18 is disposed within the cooler and has an independent cover 19 which may be readily removed for gaining access to the interior of the tank 18 for clean out purposes and the like. The cooler itself may be provided with a top grating 20 supported upon an internal flange or cleat 21 which may be of trough shape as shown, the cooler being embodied in a counter structure as illustrated, and if desired. Of course the tap or valve may be mounted with reference to any type of cooler or container. A suitable packing gasket 22 may be interposed between the clamping nut 17 and the front wall 16 of the cooler, and the shank 15 of the tap may have a front plate or collar 23 adapted to seat against the outer side of the wall 16 and which is held thereagainst by a shoulder 24 or the like provided on the forward end of the shank 15.

The shank 15 has at its outer or forward end a head or body portion 25 of the tap and the head 25 is of suitable configuration best adapted to accommodate the various parts and passages of the tap and which at the same time is of relatively small size and neat in appearance. The lower face of the head 25 is preferably flat and provided with a cushion or sealing element 26 shown in the present instance as in the form of a rubber pad or the like against which receptacles 27, such as glasses, mugs, steins and the

like are adapted to be fitted, the upper ends of the receptacles being held by hand or the like against the cushion 26 in position to surround the various ports or openings in the head 25.

5 Disposed, within the hollow shank 15 is a conduit 28 which extends rearwardly through the shank 15 and may be supported at its rear end therein by a web 29 connecting the upper portion of the conduit 28 to the upper rear end of the shank 15, as shown in Figure 1. The conduit 28 at its rear end opens into a nipple 30 which is of suitable size to receive a coupling nut 31 for connecting the outlet end 32 of a coil 33 disposed in the cooler and which is adapted to receive under pressure the liquid to be dispensed. The outlet end 32 of the coil preferably passes into the tank 18, at a convenient angle thereto and is coupled directly to the rear end of the conduit 28 of the tap so that the liquid may be fed directly from the coil 33 into the conduit 28. The conduit 28 is of considerably less size, externally, than that of the shank 15 so that the shank 15 provides upper and lower outer passages or ducts in the shank, the lower one opening directly into the lower end of the tank 18 and the upper passage is provided with a riser or extension 34 opening near the top 19 so that air, gases and light foam may pass into the top of the tank while the condensed liquid and heavier foam may flow outwardly through the lower passage of the shank 15. The conduit 28 of the shank extends into the head 25 and the latter is provided with a transverse cylindrical opening of preferably tapering form, as shown to advantage in Figure 3, for the reception of a turning plug 35 insertable through one side of the head. The conduit 28 opens through a port 36 into the central opening of the head 29. The upper passage or channel 37 of the shank 15 extends through the upper and outer portion of the head 25 above and about the central opening in the head, and opens through the cushion or sealing element 26, as shown in Figures 1 and 2. This channel or passage 37 is open at all times and leads to the upper part of the tank 18. The lower part of the shank 25 provides a lower channel or passage 38 which opens into the lower portion of the head 25 and extends forwardly to a port 39 leading to the transverse central opening of the head.

The lower face of the head 25 has an outlet port 40 which opens through the cushion member 26. The lower portion of the head 25 is also provided with an intermediate port 41 which opens through the cushion member 26 and preferably lies between the outlet of the channel 37 and the drain port 40. The port 41 leads to the central opening of the head 25. These ports or outlets 37, 41 and 40 are so relatively arranged in closely spaced apart relation as to be encircled or contained within the upper end of the receptacle 27 when the latter is fitted against the cushion member 26. Of course, the cushion member 26 may be of any desired dimensions for receiving receptacles 27 of large and small diameter.

The turning plug 35 may have a central pin or axle 42 which projects beyond the opposite sides thereof and to which is fixed the yoke 43 of a handle or knob 44 so that when the handle 44 is swung downwardly into open position, as shown in Figure 1, the axle or pin 42 with its turning plug 35 will be turned therewith. The turning plug 35 is held to its seat in the head

opening by an expanding coil spring 35 which is fitted in the recessed larger end of the turning plug, as shown in Figure 3, and which bears at one end against the plug, surrounds the hub of the plug, and at its other end engages a plate 46 which is fitted in the side of the head 25 and held in place by the adjacent arm of the yoke 43.

The opposite end of the turning plug is housed by a second plate 47 which is held in the opposite side of head 25 by the other arm of the yoke 43. Thus, the turning plug is yieldingly held in its opening or seat and is maintained in sealed position therein at all times by the pressure of the spring 45.

The turning plug 35 is provided with a main port or passage 48 which extends concentrically in the body portion of the plug for a distance greater than 180°, the port 48 being disposed in the upper portion of the plug and the ends of the passage 48 opening through the periphery of the plug for simultaneous registration with the ports 36 and 41 when the turning plug is in open position, as shown in Figure 1.

The lower side of the turning plug 35 is provided with a circumferential recess or depression providing a lower port or passage 49 which is of sufficient arcuate length to simultaneously register at spaced portions with the port 39 of the lower passage of the shank and with the outlet port 40 in the bottom of the head. If desired, the tank 18 may be provided at its forward central portion with a basin 50 which may be formed by pressing downwardly the portion of the bottom wall of the tank 18 beneath and about the inner end of the shank 15, as shown in Figure 1.

It will be observed from Figure 1 that the beer supply line 28 which is connected through the coil 33 with the key or other source of beer supply, opens simultaneously with the opening of the return line or passage 38 which leads from the foam or recapture tank 18. The air line 37 is always open, and it will be readily seen that the air from the glass or receptacle 27, as it is displaced by the beer, will pass through the air line 37 at the same time as the condensed beer is flowing from the recapture tank 18 flows into the receptacle 27 with the new beer which is supplied through the passage 28.

This valve or faucet is of the single operation type where the bartender places the glass beneath the spigot or faucet head against the rubber cap or cushion 26, pulls down the valve handle 44 until the proper head appears on the beer in the glass 27 when the bartender then swings the handle 44 upwardly into closed position, turning off both the beer line 28 and the return line 38; leaving the glass 27 in position sealed against the cushion 26 until the excess foam and gas have escaped through the air line 37. It is necessary, to prevent loss of foam and the desired pressure on the beer head in the glass 27 to allow the glass 27 to remain for a short time against the bottom of the faucet after the valve has been closed so that the gas and foam may pass upwardly through the air line 37 to the top of the recapture tank 18, such action being effected by the unspent pressure of the gases in the glass and adjacent parts of the faucet.

This operation admits the passage of the light frothy bubbles out of the glass 27 through the air line 37 after the valve has been closed, im-

parting a heavy creamy head in the top of the glass which stays for a relatively long time as compared with the filling of glasses while open to the atmosphere. This operation also gradually reduces the pressure on the head and in the return line so that there is less likelihood of dripping after the glass has been removed and the structure is such as to provide one continuously open line 37 for the foam and a second line 38 for the return of the recaptured beer. Thus the size of the head at the top of the glass 27 may be regulated to a nicety.

The static pressure which is provided on the beer head in the glass 27 has a tendency to produce bubbles which are smaller and more creamy than without pressure where the beer is drawn in the open air and wherein very large bubbles are formed which quickly disappear. Under pressure the small bubbles are maintained for a relatively longer time than when the beer is drawn in open air.

Referring now to the form of the invention shown in Figures 6 to 11, the modification shows a cylindrical shank 51 which may be mounted through the wall 52 of the cooler in the manner shown in Figure 1 and which is provided with the face plate or ring 53 for supporting the shank at its outer end on the wall 52.

The shank 51 has a head 54 provided with a transverse opening therethrough in which is placed a turning plug 55. The head 54 is provided with an opening or port 56 which leads from the interior of the shank 51 to said transverse opening so that the port 56 may be controlled by the turning plug 55. The lower end of the head 54 has a drain port 57 which leads to said transverse opening of the head and is adapted for communication through the turning plug 55 with the port 56 through a recess or slot port 58 provided in the periphery of the turning plug 55. From Figures 7 and 8, it will be noted that the port 57 is a drip port which leads to the interior of the shank 51 so that the latter may conduct the condensed foam and beer from the tank 18 through the bottom of the head 54 when the valve is open, as shown in Figure 6.

The shank 51 is provided therein with a pipe 59 which is connected to the source of beer supply, such as the coil 33, and which opens directly into a passage 60 provided in the upper part of the head 54. The passage 60 leads to the transverse opening and is adapted to register with an offset through port 61 provided in the turning plug 55 and with a registering beer supply port 62 in the lower part of the head. The ports 57 and 62 also extend through a cushion 63 of rubber or the like which is provided on the lower end of the head 54 for sealing a glass or receptacle against the bottom of the head and about the ports 57 and 62.

These various ports are located in a plane transverse to the axis of the turning plug 55 and toward one end thereof, such as the larger end, as shown in Figures 7 and 8. In a spaced transverse plane of the turning plug 55, and toward the smaller end of the plug, there is provided a peripheral slot providing a port 64 which is adapted to register with an air vent or relief opening 68 disposed in the adjacent side of the head 54 and which opens into the transverse opening of the head. The lower portion of the head 54 is provided with an air port 69 which is disposed in the plane of the port 68 of the head and the plane 67 of the turning plug

and which is also closely disposed with reference to the main beer supply port 62, as shown in Figure 7.

The port 67 for venting the air is in register with the vent 68 and the air port 69 for venting the interior of the glass held against the bottom of the head only when the main beer passage 60 is closed and the drip passage 56 is open, as shown in Figure 9. At other times, it is desired to maintain a seal in the glass as the beer under pressure is admitted into the glass through the port 62, and wherein the foam, gases and the like are forced under the pressure of the beer back through the opening 57, shank 51 and into the recapture tank 18.

The other structural details of this modified form are similar to that shown in Figure 1 with the exception that the yoke 43, which carries the handle 44, is provided with a stop pawl 70 for cooperation with a pair of notches 71 and 72 provided exteriorly upon the head 54 at the upper end thereof. The arms of the yoke 43 carry trunnions 73 which pass inwardly from the arms and engage in the opposite ends of the turning plug 55 and are suitably locked thereto, and the side plate 74 at the larger end of the turning plug is cupped to receive the outer end of the pressure spring 75.

In this form of the invention the general features are similar to the form disclosed in Figures 1 to 5 with the exception that the passages or lines operate in rotation and the air line or vent 68 opens directly to the outer atmosphere and not to the top of the recapture tank 18. There is but one line 51 to the recapture tank.

As shown in Figure 9, when the handle or yoke 43 is raised into the first notch 71, the air vent 68 is open to the interior of the glass and the beer line or passage 60 is closed. At this time the return line 56 is open, and as it must be relatively large, it may be open to both the beer supply port 62 and the drip port 57 so that the combined ports may readily receive and carry into the glass the condensed beer and foam from the recapture tank 18 for passage into the glass.

The air in the glass at this time escapes through the vent 68 so as to offer no obstruction to the out-flowing of the condensed beer and foam from the tank 18. The handle or yoke 43 is now moved into the second notch 72 which, as shown in Figure 11, closes the air line 68 but leaves the return line 56 open and this point of the handle may be rapidly passed over on filling the glass. The handle or yoke 43 is now swung down into the full open position for filling the glass, as shown in Figure 10. In this position of the handle and its turning plug 55, the supply port 60 is open so that the beer under pressure from the container may pass freely through the head 54 and into the glass through the supply opening 62. At this time the drip port 57 becomes a return port and the excess foam and gases accumulating at the top of the receptacle are forced backwardly through the port 57, through the turning plug at the recess or port 58 and through the port 56 in the head into the shank 51 which leads to the recapture tank 18. At this time the air vent 68 is maintained closed. Thus, gas and foam flows through the return line 51 until the glass is filled with the proper depth of head on its beer contents. In closing off the valve, when the desired head is obtained, the handle 43 is moved back to the second notch 72, as shown in Figure 75

11, where only the condensation line 56 is open, thus relieving the glass of undue pressure and carrying off additional foam which would otherwise overflow if the glass were removed simultaneously with the closing of the main supply line 60.

It requires only but a few seconds to accomplish the various results at the different stages of operation of the handle, and these stages of operation are successively obtained during the swinging of the handle into an open and then back into a closed position. From Figure 6, it will be noted that when the valve is fully closed, by swinging the yoke 43 into substantially the plane indicated by the line 8-8, the turning plug 55 will move the port 58 of the turning plug out of line with the port 56 so that the valve is completely closed.

What is claimed is:—

20 1. In a foam controlling beer faucet, a faucet body adapted to receive a receptacle in sealed relation thereagainst and having a beer supply passage, a vent passage and a third passage, a foam recapture tank connected to said third passage, and valve means for controlling the beer supply passage and the third passage for venting the glass upon return of beer from the tank and for controlling admission of the beer from the supply passage.

30 2. In a foam controlling beer faucet, a faucet body having three passages therethrough for opening into a receptacle to be filled; a first through foam and gas passage, a second beer supply passage, and a third condensed foam return passage, a beer supply connection to said second passage, a recapture tank connected at its bottom to the third passage and at its top to said first passage, and a controlling valve in said faucet body intercepting said second and third passages to regulate the same.

40 3. A foam controlling beer faucet comprising a faucet body having a main passage therein for connection with a source of beer supply under pressure, a recapture tank, a second passage in said faucet body communicating with the lower end of said tank, a third passage in said faucet body communicating with the upper end of said tank, and valve means in said faucet body intercepting said first two passages for simultaneously opening the beer supply passage and the passage to the lower end of the tank for draining the latter and supplying beer to a receptacle, said passage to the upper end of the tank being free and unobstructed through said faucet body for the return of excess foam from the receptacle and for venting the upper end of the tank.

4. A foam controlling beer faucet comprising a faucet body having a head at its outer end with a transverse opening therethrough and a flat cushioned lower face for receiving receptacles thereagainst in sealed relation to the head, said head having a foam and air passage leading therethrough and about said transverse opening of the head, a recapture tank opening at its upper end into said air and foam passage, said faucet head having a lower opening therein leading to the bottom portion of said tank and provided with a port leading to said transverse opening in the head, said head having a third passage therein adapted for connection with a source of beer under pressure and provided with a port leading to said transverse opening in the head, a turning plug mounted in said head having independent ports therein for registry with said ports of the lower and beer supply passages,

said head having outlet ports in its cushioned face adapted to communicate with a receptacle when in position, and means for turning said plug for closing both the lower opening and the beer passage respectively from the beer supply in the bottom of the tank and the source of beer under pressure.

5. A foam controlling beer faucet comprising a shank adapted to be mounted through the wall of a cooler and having a head on its outer end with a transverse opening through the head and having a flat cushioned lower face for sealing receptacles against the bottom of the head, said shank and head having three independent passages therein leading from the rear end of the shank through the head and the cushioned bottom face thereof for communication with the interior of a receptacle when in place, a turning plug mounted in said head in line with two of said passages, the third passage being free and uninterrupted through the head and the shank, a recapture tank mounted in the cooler and connected to the rear end of said shank, said shank having a riser terminating in the upper portion of the tank and leading from said third free passage, one of said other passages opening into the lower portion of said tank, and a source of beer supply connected to the shank and communicating with the other passage, said turning plug adapted for adjustment to simultaneously open the passages leading to the source of beer supply and to the lower end of the tank.

6. A foam controlling beer faucet comprising a faucet body having a hollow shank for connection with a recapture tank and having a head on the outer end of the shank with a transverse plug opening and a port extending from said opening to the interior of the shank, a supply duct disposed in said shank for connection with a source of beer supply and said head having a passage therein leading from the duct and extending to said transverse opening, said head having an atmospheric vent at one side leading to said transverse passage in the head, and said head having a group of ports in its lower face leading from said transverse opening and disposed in the planes of the respective ducts and ports in the head, and a turning plug mounted in said transverse opening of the head and provided with openings there-through arranged in the respective planes of the ports and openings in the head and adapted to be turned for regulating the passage of beer, air and foam through the respective passages.

7. A foam controlling beer faucet comprising a faucet body having a head with a valve opening therein and relatively disposed ports in the upper and lower portions of the head intercepting the valve plug opening, a turning plug in said opening having ports therein relatively disposed with respect to the ports in the valve head, a handle connected to the turning plug for rotating the same to align the ports of the plug with the respective ports in the valve head, a remote source of beer supply connected to the faucet body and leading to one of the upper openings in the head, a foam recapture tank remotely disposed with respect to the faucet body and connected to another one of said ports in the upper portion of the head, said head having a third port leading to the exterior of the head for venting the head through said turning plug.

8. A foam controlling beer faucet comprising a faucet body having a hollow shank with three passages therein and having a head through

which said passages are continued and provided with a flat cushioned lower face having ports leading to said passages, said head adapted to be sealed against the upper end of a receptacle
5 held against said flat cushioned face and about said ports, said shank adapted for positioning through the wall of a cooler, a recapture tank mounted on the inner end of the shank within the cooler, a beer supplying coil in said cooler
10 connected to said shank and opening into one of said passages, a section of said passages opening into the lower portion of the recapture tank, a riser mounted on said shank of the faucet and terminating in the upper portion of said tank
15 and leading to a third one of said passages, said third passage being free and unobstructed from the top of the riser through the shank and head to the outlet port in the flat face of the head, a turning plug mounted in said faucet
20 head intercepting said other passages and hav-

ing ports therein for controlling the out-flow of beer from said tank and the out-flow of beer from said coil to a receptacle.

9. A beer faucet comprising a faucet body having a head and a shank, a turning plug on the head, a receptacle engaging cushion mounted
5 on the lower face of the head for sealing a receptacle thereagainst, said head and shank having three independent passages therein and said turning plug having ports therein adapted to
10 register with two of said passages, the third passage being free and uninterrupted through the head and shank, a foam recapture tank connected to the remote end of the shank and communicating at its upper end with said free and
15 uninterrupted passage and at its lower end with one of said other passages, and a source of beer supply connected to the third passage.

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