

April 26, 1938.

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2,115,052

LIQUID DISPENSING DEVICE

Filed April 13, 1934

2 Sheets-Sheet 1

Fig. 1.

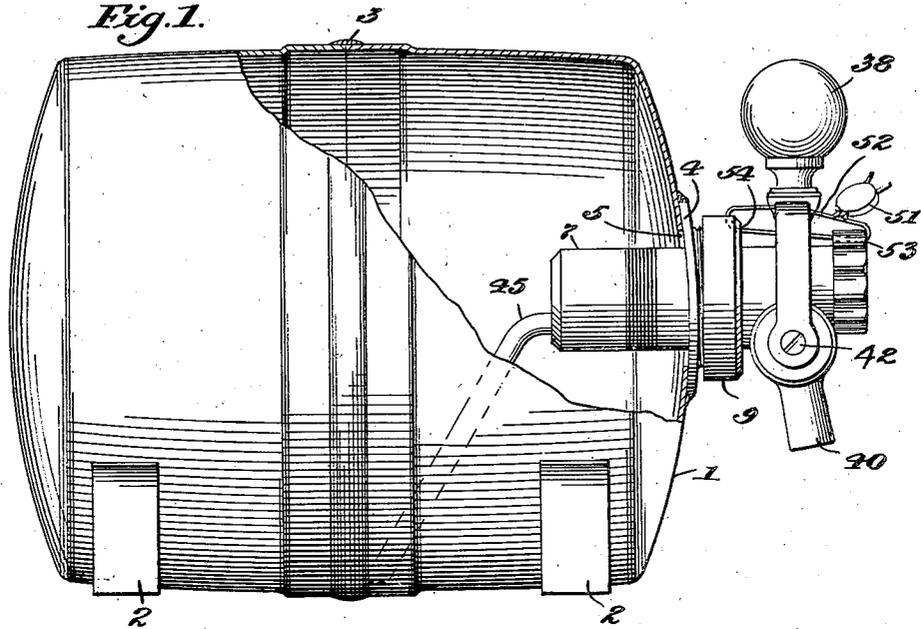
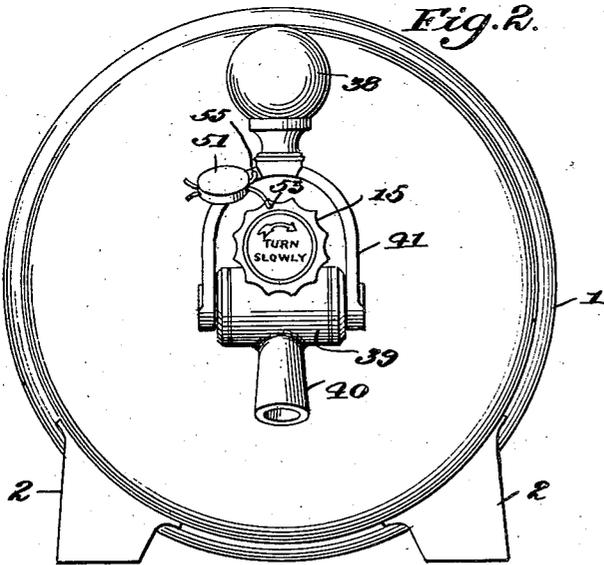


Fig. 2.



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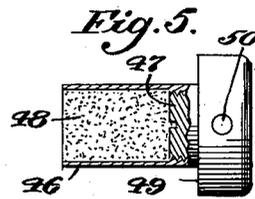
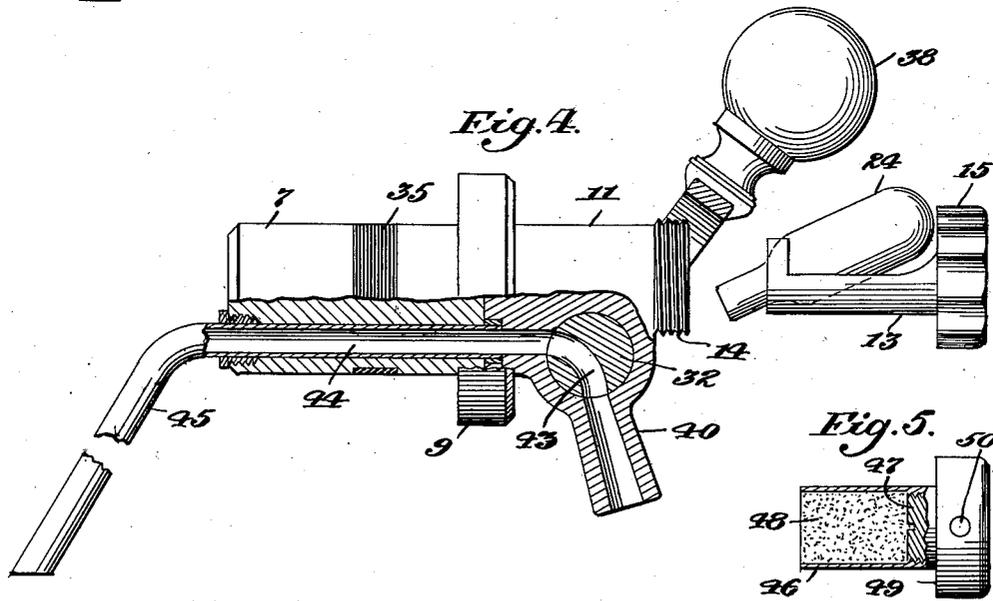
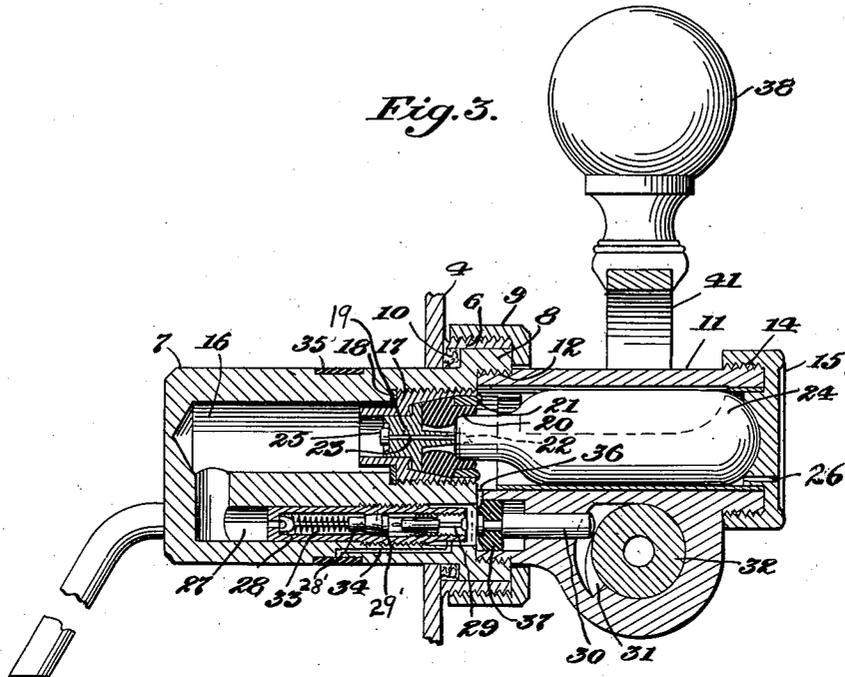
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UNITED STATES PATENT OFFICE

2,115,052

LIQUID DISPENSING DEVICE

Lawrence T. Ward, Kane, Pa.

Application April 13, 1934, Serial No. 720,479

13 Claims. (Cl. 225—18)

My invention relates to a liquid dispensing device and more particularly to a liquid container and associated liquid control valve wherein means are provided to supply a gaseous medium under pressure to the container as desired.

The main object of my invention is to provide a container from which a beverage may be dispensed as used and having means associated with the dispensing valve for admitting to the container as desired a sufficient quantity of carbon dioxide gas to maintain a suitable pressure within the container.

Another object is to provide in a dispensing container a means for supplying carbon dioxide gas thereto whereby to maintain the quality of the beverage and enhance its taste.

Another object is to provide in a dispensing container a means for charging the container either from a carbon dioxide capsule or by means of a solid portion of carbon dioxide.

Another object is to provide a metallic dispensing container that is adapted to be readily sterilized and refilled at the manufacturing plant, delivered to the consumer, stored by him in a household refrigerator, and charged by him as desired to ensure a proper dispensing pressure.

Another object is to provide in such containers a common means for controlling the delivery of beverage and the supply of gaseous medium to the container.

Although the pressure controlling and releasing faucet herein disclosed is particularly adapted for use in dispensing a draught beer, it is equally adapted to dispensing various kinds of carbonated waters. It is a matter of common knowledge that the trade has a pronounced preference for draught beer but, due to the elaborate and expensive type of equipment necessary to dispense such beer, present available apparatus makes it almost prohibitive to dispense draught beer for domestic or club use. According to my invention, a dispensing container, preferably metallic and of relatively small content, is provided with a simple and inexpensive type of faucet that has formed integrally therewith a device for storing a suitable charge of carbon dioxide which may be admitted by increments as desired to the container.

A preferred form of the invention is disclosed in the specification which follows and the accompanying drawings, wherein—

Figure 1 is a view, partly in section of a metallic keg fitted with a dispensing device of the type described;

Fig. 2 is a view, in side elevation, of the keg shown in Fig. 1;

Fig. 3 is an enlarged sectional view of the unitary dispensing and charging mechanism;

Fig. 4 is a view, partly in section, of the dispensing unit showing a charging capsule to be inserted; and

Fig. 5 shows a modified form of charge holder.

As shown in Fig. 1, my improved dispensing device is shown preferably as applied to a container in the form of a metallic barrel or keg 1 which may be formed either from aluminum or stainless steel. This container may be made rectangular, oval or round in cross-section according to the requirements of space or storage facilities. A plurality of leg portions 2 are provided to support the keg in a stable position. The container may be formed in sections as desired which are united by a weld 3 and in a well known manner. A ring-like collar 4 is shown as welded in position concentric with an opening 5 provided in one end of the container. A threaded flange 6 is formed on the collar 4. My improved unitary faucet and charging device comprises two main sections. The gas storage section 7 has a flange 8 adapted to engage the collar 4 to position this section within the container 1 and a threaded collar 9 engages the flanges 6 and 8 to retain the section 7 in operative position. A gasket 10 may be employed to ensure against loss of container contents. A second or main capsule container 11 is connected to the section 7 by means of a threaded joint 12. A capsule frame or holder 13 with a capsule in position is shown as inserted within the section 11 and is retained in position by a threaded coupling 14. The end cap 15 of this holder is fluted and serves as a grip to rotate the holder and pierce the capsule in a manner to be described.

A gas storage chamber 16 is formed in the section 7 and the outer end of this chamber is closed by a threaded plug 17 and gasket 18. The plug 17 comprises a central auxiliary plug 19 which is retained in position by rubber seat 20 and ring 21. The plug 19 terminates in a piercing pin 22. A gas discharge bore 23 extends through the pin 22 and plug 19. Rotation imparted to the cap 15 will be effective, when desired, to force the capsule 24 against the pin 22 in a manner to pierce the capsule and discharge its contents into the chamber 16. A check valve 25 serves to prevent return of gas through the bore 23. Any surplus or leakage of carbon dioxide in the chamber 11 is permitted to escape through a port 26 whereby no gas under pressure will remain in

this chamber. When the capsule holder 13 is unscrewed, the piercing pin 22 is fully withdrawn before the holder becomes free. Any gas liberated from the capsule at this instant may escape through the port 26, thereby providing a safety feature to prevent forcible ejection of this holder.

The gas is withdrawn from the chamber 16 through a lateral outlet 27 and its passage is controlled by means of a valve 28 positioned in this outlet passage. The valve 28 is of a type in common use on tire tubes. The pin 29 of this valve is controlled by a plunger 30 which, in turn, is caused to reciprocate by means of a cam 31 formed on the tapered valve plug 32. The spring 33 in valve 28 serves to return the pin 29 and the plunger 30. The valve proper 28' is secured on the pin 29 and seats on a sleeve 29'. Any carbon dioxide passed by valve 28 is conducted through a port 34 which has its outlet within the container 1. A rubber band 35 surrounding the section 7 is effective to close the port 34 and act as a check valve to prevent return of liquid or gas through this port. In the event that the valve 28 leaks, the leakage gas may pass through a port 36 into the chamber 11 and out through port 26. When the plunger 30 is moved by the cam 31 to contact the valve pin 29, a rubber seat 37 on the inner end of this plunger closes the port 36 and causes gas released by the valve 28 to pass through the outlet port 34 into the container 1.

It will be noted that the chamber section 11 serves to support the faucet handle 38 and valve 32. The main body or casing 39 of the valve is formed integrally as a unit with the casing 11 and with the delivery spout 40. The handle 38 terminates in a yoke or fork 41, the ends of which are secured rigidly by screws 42 to the valve 32. As shown in Fig. 4, a port 43 is formed in the valve and this port may be put in communication with the fluid delivery passage 44 when the handle 38 is moved in a forward direction. A liquid pick-up conduit 45 is secured in one end of the passage 44 and is made of sufficient length to reach to the wall of the container 1.

Fig. 4 shows the cap 15 and capsule holder 13 after the latter has been unscrewed and withdrawn from the chamber 11 in order to refill this holder with another capsule 24.

Fig. 5 shows an alternative means for supplying a charge of carbon dioxide gas. A cup-shaped carrier 46 is shown as internally threaded to receive an axially adjustable threaded plug 47. The carrier 46 may be filled with a quantity of solid carbon dioxide 48 as determined by the position of the plug 47. The carrier 46 terminates in a head portion 49 which may be formed as shown for the cap 15. If desired, the head 49 may be provided with recesses 50 which may be changed, for example, with a spanner wrench to rotate the head 49.

The construction shown lends itself readily to the application of a seal 51 which may be applied in a manner to prevent sufficient forward motion of the handle to open the port 43. A sealing wire 52 may be threaded through openings 53, 54, 55 provided, respectively, in the cap 15, coupling collar 9, and the yoke 41 after which the seal 51 may be applied to this wire and, if desired, the insignia of the manufacturer may be inscribed thereon, which will ensure that no party will tamper with the handle 38 to deliver liquid prior to breaking of this seal by the consumer.

In the operation of the device shown in Figs. 1 to 5, the handle when in a vertical position closes the port 43 to port 44 and thereby seals

the liquid within the container 1. As the handle is moved forwardly, these ports are put into communication to allow discharge of the liquid from the container 1 through the faucet 40. As the liquid is drawn from the container and the pressure within the container is reduced, it becomes necessary to supply additional carbon dioxide gas. This is done by continuing to move the faucet handle forwardly until the cam 31 on the valve plug 32 forces the plunger 30 inwardly to operate the valve pin 29 of the check valve 28 to release additional gas through the port 34 into the container 1. The rubber band or check valve 35 prevents liquid from entering the port 34 after the gas ceases to flow therethrough. This admission of gas to container 1 will build up sufficient pressure therein to again force liquid from the container. The handle is then brought back to the open position of the valve before again closing the same which will allow sufficient time to reduce any extreme pressure within the container.

While I have shown and described preferred forms of my invention to better illustrate the principles thereof, it is to be understood that other modifications and equivalents are contemplated as will be embraced within the scope of the appended claims.

What I claim is:

1. In a liquid dispensing device, a dispensing head comprising two detachably connected sections, a carbon dioxide chamber formed in one section, an outlet valve chamber formed in said section, a closure for one end of the carbon dioxide chamber, a tubular piercing pin associated with said closure, a valve in said valve chamber, a capsule compartment formed in the other section, a valve releasing device mounted in said other section, said compartment and device being positioned to align respectively with the piercing pin and outlet valve when the sections are secured together as a unit.

2. In a device as set forth in claim 1, a liquid release valve secured within one section and a liquid outlet passage extending through both sections and communicating with the release valve.

3. In a device as set forth in claim 1, a liquid release valve mounted in that section which supports the releasing device, and means operably responsive to movement of the release valve for operating the device.

4. In a device as set forth in claim 1, a liquid release valve mounted in that section which supports the releasing device, said valve being movable to one position to release liquid, and means operably responsive to further movement of the valve to another position to move the device and associated valve to release carbon dioxide from its respective chamber.

5. In a liquid dispensing device, a container for liquids, said container having an opening in a wall thereof, a storage chamber for carbon dioxide secured to said container adjacent said opening, a capsule holder, a casing for receiving the holder, a pin on said casing for piercing a capsule in position in the holder, said pin having an opening therethrough communicating with the chamber to permit the contents of the capsule to pass into the chamber, said holder being secured to the casing by a threaded connection whereby rotation of the holder is adapted to move a capsule towards said pin, a liquid dispensing valve mounted on the casing, a valve in said chamber for controlling flow of carbon dioxide, and means for operating said second-

named valve in response to movement of the first-named valve.

6. In a liquid dispenser, a liquid container, a dispensing head secured to said container, a gas capsule holder, said holder being secured to the head by a threaded connection whereby rotation of the holder is adapted to move a capsule, a valve casing detachably secured to said head, a piercing pin secured to the casing in alignment with the capsule holder, a gas release valve detachably secured within said casing, said pin serving to pierce a capsule to admit gas to the casing and said valve serving to release gas from the casing, a liquid dispensing valve supported within a chamber in the head, a fluid port, said last-named valve being movable to uncover said port, and means for operating said gas release valve in response to movement of the dispensing valve beyond its fluid port opening position to feed gas from the casing.

7. A dispensing head for a fluid receptacle comprising a base portion and a head portion, means for detachably securing said sections in end-to-end relation, a gas holding chamber and a valve chamber formed in the base portion, a gas release valve in the valve chamber, a gas capsule holding compartment in said head portion in alignment with the gas holding chamber, a dispensing valve in said head portion and being movable to one position to dispense liquid, and means in said head portion operably responsive to further movement of the dispensing valve for opening the gas release valve.

8. A dispensing head for a fluid receptacle comprising a base portion, a gas holding chamber formed therein, a valve chamber formed in said base portion and communicating with the first-named chamber, a plug for closing the gas holding chamber, a check valve and piercing pin associated with the plug, a gas release valve in the valve chamber, a valve casing detachably secured to said base portion, a gas capsule holder carried by said casing, a dispensing valve in said valve casing, an operator for said dispensing valve, and means operably responsive to movement of the dispensing valve for opening said gas release valve.

9. A dispensing head for a fluid receptacle comprising a gas capsule holder, a piercing pin for the capsule, a gas release valve, a slidable pin operator associated with the gas release valve, a liquid port, a liquid dispensing valve, a lever for moving said dispensing valve to one position to uncover said port, a projection on the dispensing valve, said projection upon further movement

of the valve contacting the pin operator to operate the gas release valve, said head comprising a casing completely housing the valves and the pin operator.

10. A dispensing head for a fluid receptacle comprising a casing, a tubular piercing pin serving as a gas inlet to said casing, a gas release valve in said casing for controlling flow of gas from said casing, said casing being detachable as a unit from said dispensing head, a liquid port in said head, a liquid dispensing valve, a lever on said head operable to move said dispensing valve to one position to uncover said port, means in direct engagement with the dispensing valve for moving the gas release valve and being movable to open the latter valve by a continued movement of the lever past the position at which the port is uncovered.

11. In a dispensing head, a casing, a gas chamber therein, a tubular piercing pin for admitting gas to the chamber, a gas release valve for releasing gas from the chamber, a fluid port, a rotary valve having a port to register with the fluid port, a cam surface on said rotary valve, a gas release valve operator in position to engage the cam surface, said valve operator being movable by the cam surface to release gas after the rotary valve has been moved to a position beyond that at which the fluid port has been opened.

12. In a liquid dispensing device, a container for liquids, a holder for a carbon dioxide capsule, a casing secured to the container and adapted to receive the holder, a valve carried by said casing, a handle operably connected to the valve and sealing means for preventing operation of said valve and holder and comprising a wire in engagement with the handle and holder, said holder being threadably secured to the casing to permit rotation and advancement of the holder.

13. A dispensing head for a fluid receptacle comprising a gas capsule holder, a piercing pin for the capsule, a gas release valve, a valve operating rod in alignment with the gas release valve, a liquid port, a liquid dispensing valve, means for moving said dispensing valve to one position to uncover said port, a projection on the dispensing valve, said rod being movable toward the gas release valve by said projection, said gas release valve being operable by said rod only upon further movement of the dispensing valve beyond its liquid port opening position, said head comprising a casing completely housing the valves and the rod.

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