

May 22, 1934.

E. F. ROSS

1,959,501

BEER DISPENSING DEVICE

Filed Aug. 19, 1933

2 Sheets-Sheet 1

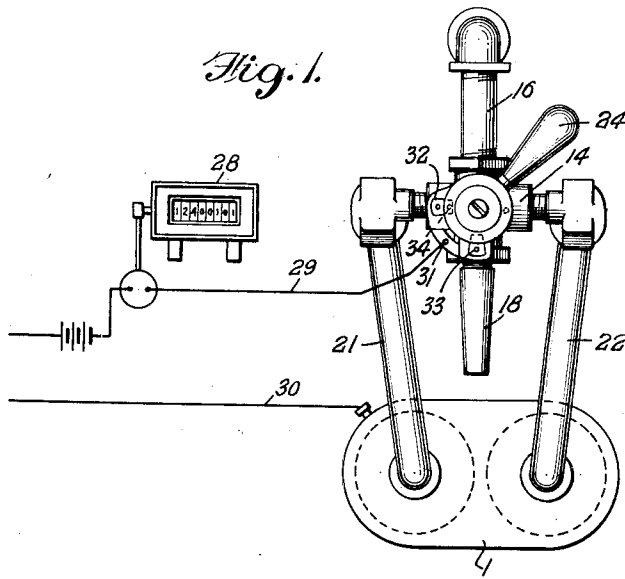
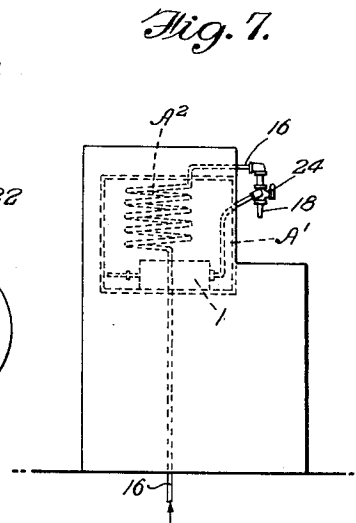
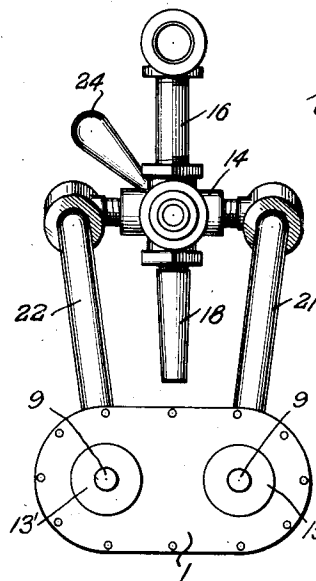
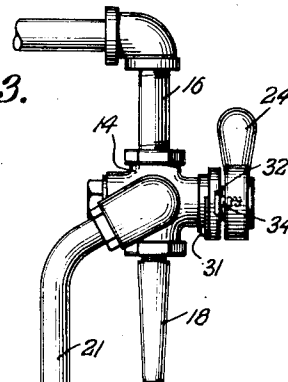


Fig. 2.

Fig. 3.



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2 Sheets-Sheet 2

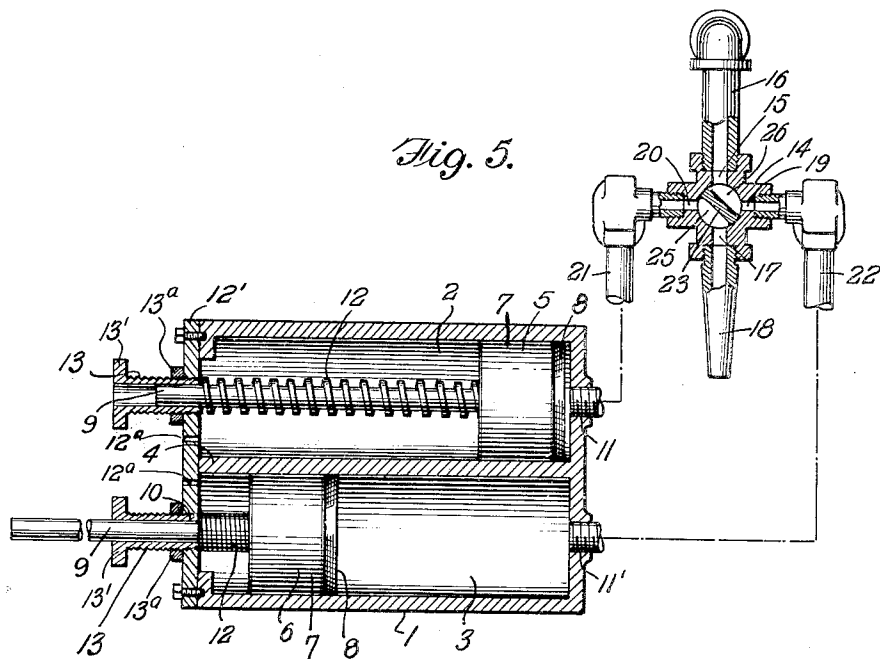
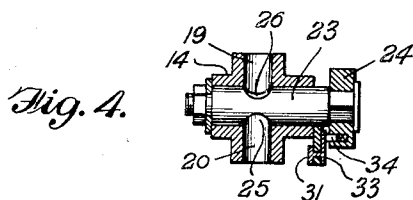
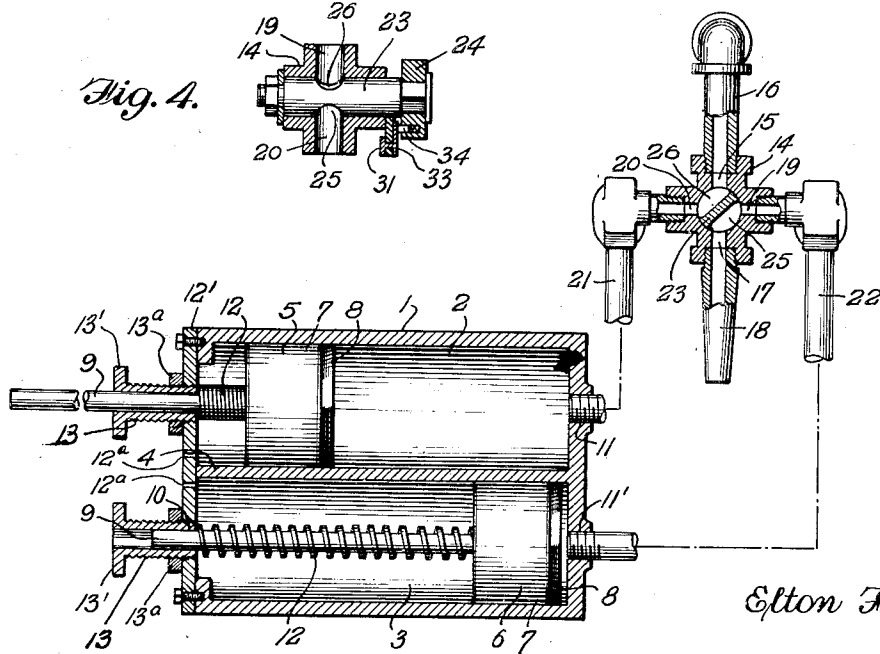


Fig. 6.

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UNITED STATES PATENT OFFICE

1,959,501

BEER DISPENSING DEVICE

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Application August 19, 1933, Serial No. 685,950

9 Claims. (Cl. 221-103)

This invention relates to a device for dispensing beer and other carbonated liquids discharged under pressure from a keg or other source of supply, and particularly to a dispensing device designed to supply measured quantities of the liquid and to control the discharge so as to prevent waste of the liquid and other objections due to "wildness" of the liquid.

It is well known that in dispensing certain liquids, beer especially, that so called "wildness" of the beer may occur due to over-pressure, so that the beer, instead of being supplied as a clear liquid, foams, with the result that there is a waste of beer and the operation of drawing a full and clear glass of beer is rendered tedious and annoying.

One of the objects of my invention is to provide a dispensing device which overcomes this objection and by means of which in the drawing action the beer will be relieved from initial pressure, thus enabling a given quantity of clear liquid without or with only a relatively small and controlled amount of foam to be delivered on each draft action.

A further object of the invention is to provide a dispensing device of this character whereby a definitely measured amount of liquid may be dispensed on each draft action.

A still further object of the invention is to provide a dispensing device which is simple and inexpensive of construction, reliable and efficient in action and of compact character so that the advantages of a dispensing device of its kind may be availed of under conditions where space for the accommodation of the dispensing device is very limited.

With these and other objects in view, the invention consists of the features of construction, combination and arrangement of parts, herein-after fully described and claimed, reference being had to the accompanying drawings, in which:—

Fig. 1 is a front elevation of a liquid dispensing device embodying my invention.

Fig. 2 is a rear elevation of the same.

Fig. 3 is a side elevation of the dispensing device.

Fig. 4 is a section through the valve showing the rotary valve member in neutral position and also showing certain features of construction of the valve member.

Figs. 5 and 6 are vertical longitudinal sections through the device with parts arranged for better convenience of illustration, in a common

plane, and showing reverse working positions of the valve and pistons.

Fig. 7 shows the application of the dispensing device to one form of dispensing cabinet or counter.

In carrying my invention into practice I provide a dispensing device comprising a dispensing chamber 1 divided into counterpart vertical compartments 2 and 3 by a partition 4, each compartment being of a suitable form and size to form a measuring cylinder of prescribed dimensions for coaction with an expelling piston to dispense a measured quantity of liquid on each dispensing action. The chamber preferably comprises a unitary casting, but may be otherwise suitably constructed.

In the said compartments 2 and 3 operate pistons 5 and 6, each comprising a head 7 provided upon its lower face with suitable packing means 8 and having an upwardly extending stem 9 movable through a guide opening 10 in the rear wall of its compartment. These pistons are movable forwardly in their compartments under the pressure of liquid admitted therein through combined intake and discharge openings 11, 11' in the front walls of the compartments. Coiled springs 12 encircling the stems between the rear walls 12' of the compartments and rear surfaces of the piston heads resist the backward movement of the pistons, whereby they are tensioned, the springs subsequently acting under their expansive energy to propel the piston forward in their compartments and to expel the liquid therefrom.

Adjustably mounted in the rear wall of each cylinder or compartment, which has an air vent 12a, is a stop screw 13 which is provided to serve as a gage stop to regulate the backstroke of the associated piston and to thereby vary the effective capacity of the cylinder for discharging a predetermined or measured quantity of liquid within its maximum capacity range on each dispensing action. This screw 13 is preferably in the form of a hollow bushing forming a guard through which the stem 9 slidably extends. The rear end of the spring 12 contacts with this bushing, whereby the spring may be tensioned to regulate the discharge pressure. The outer end of the stop screw or bushing is provided with a knob or hand wheel 13'. The size of the cylinder, maximum stroke of the piston and degree of adjustability of the stop may be such as to obtain a minimum discharge of 7 ozs. up to a maximum discharge of 10 ozs., but, of course, any other desired variable discharge may be employed. A lock nut 13a may be provided to prevent casual

displacement of the stop pin from its adjusted position and if desired a suitable seal may be employed to prevent tampering with the pin for malicious or fraudulent purposes without giving
5 visual evidence of the fact that the pin has been tampered with.

Suitably disposed in relation to the chamber 1 is a four-way valve casing 14 having at its top an inlet 15 for connection with a supply pipe
10 16 leading in practice from a keg or other source of supply of the liquid to be vended, and also having at its bottom a discharge outlet 17 for connection with a discharge pipe, nozzle, or spout
15 18 and further provided with end ports 19 and 20 adapted to serve alternately as inlets and outlets for supply of the liquid to and its discharge from the cylinders. As shown, the ports 19 and 20 of the valve are connected through feed and return pipes or conductors 21 and 22 with the
20 combined intake and discharge ports 11, 11' of the dispensing cylinders or compartments 2 and 3.

Mounted to operate in the valve casing is a four-way rotary valve 23 having an operating
25 handle 24, which valve is rotatable or oscillatable from a central or upright neutral position, in which it cuts off communication between the valve casing and dispensing chamber, to right and left hand dispensing positions in which it
30 connects one of the cylinders or compartments with the supply keg or container and the other cylinder or compartment with the discharge spout, and vice versa. In the valve are formed passages 25 and 26 operating on such reverse
35 movements of the valve from a neutral position, as shown in Fig. 4, to the dispensing position shown in Fig. 5, in which passage 25 connects the supply pipe through the pipe 21 with the cylinder 2, while the passage 26 connects the discharge
40 charge spout through the pipe 22 with the cylinder 3. The valve is movable to the reverse dispensing position shown in Fig. 6, in which its passage 26 connects the cylinder 2 through the pipe 22 with the source of supply of the liquid,
45 while its passage 25 connects the discharge spout through the pipe 21 with the cylinder 2. The movement of the valve is limited in opposite directions by stop pins 27 adapted to be engaged
50 by the valve handle or stop shoulders on the valve, whereby movements of the valve to exact degrees from a neutral position to opposite dispensing positions, and vice versa, is secured in a simple and effective manner.

In the operation of the device for vending a
55 certain liquid, such as beer, from a cask or other source of supply under pressure to a glass or other receptacle of a definite size, it will be understood that movement of the valve handle from a neutral position to one of its operating positions will cause
60 liquid to flow from the container to one of the cylinders, the cylinder 2, for example, thus effecting upward movement of the piston 5 in said cylinder under the pressure of the inflowing liquid and against the resistance of the coiled spring 12. The
65 valve will in this operation connect the other chamber or cylinder 3 with the discharge nozzle, so that, if liquid has been previously taken in the manner above indicated into the cylinder 3, such liquid will be discharged by the downward move-
70 ment of the piston under the action of its spring, the piston having a range of movement governed by the position of the associated stop pin, whereby a definite amount of the liquid will be discharged into glass or other receptacle. Movement of the
75 valve back to neutral position will cause the valve

to cut off communication between the keg or container and the cylinder and between the cylinder and the discharge nozzle, so that the beer taken into the cylinder 2 will be held confined therein.
80 On a subsequent movement of the valve handle to the reverse operating position, the valve will connect the container with the cylinder 3 for the supply of liquid thereto and will connect the cylinder 2 with the discharge nozzle, whereby during
85 the taking of a charge by the cylinder 3 the liquid previously taken into cylinder 2 will be discharged. Thus on each operation a measured amount of liquid will be dispensed from one of the dispensing compartments, and on alternate back and forth
90 movements of the valve liquid will be alternately discharged from the respective compartments, and, as the liquid taken into either compartment is, during its discharge by the piston, free from communication with the keg or container and relieved of the working pressure therein, such liquid
95 will be discharged at a neutral pressure or at a pressure much lower than that in the keg or container. By this means the pressure under which the liquid is discharged may be governed to a nicety and "wildness" of the liquid prevented, so
100 that in a single continuous operation the supply of a measured quantity of solid beer and depth of foam may be delivered on each discharge action and a uniformity in the discharge of measured quantities of liquid and foam obtained. Uniform
105 service of a satisfactory supply of liquid on each working operation may therefore be effected and the annoyances and inconveniences due to "wildness" absolutely prevented. It will, of course, be understood that the working action of the dispensing device may be regulated to the exact
110 degree required to secure this uniform discharge action by reason of the construction of the dispensing device as set forth and by proper adjustment of the stop devices to regulate the extent of
115 throw or movement of the piston to control the intake and discharge operations thereof.

A counter or indicator 28 of suitable electrically-operated type may be provided to enable the number of discharge actions, or number of glasses
120 of liquid served, to be counted and registered or indicated so that an accurate tab on the liquid dispensed may be kept. Conductors 29 and 30 may be provided for connecting the dispensing chamber with one terminal of the counter and a
125 binding post 31 with the other terminal of the counter, which post is suitably connected with contacts 32 and 33 mounted on or insulated from the valve casing, which contacts are adapted to be engaged by a contact button 34 on the valve
130 whereby the valve is adapted to operate as a switch to connect the terminals of the counter for a counting action each time the valve is moved in one direction or the other to a dispensing position. The terminals of the counter will, of course, be
135 connected in practice to an electric supply system or other source of electric energy. By the use of this counter mechanism the number of working operations or number of glasses of liquid dispensed within any given time may be registered,
140 so that a complete tab on the amount of liquid dispensed within any given period may be kept.

It will be observed that the feed and return pipes 21 and 22 extend at an angle to the dispensing chamber and valved discharge outlet so
145 as to dispose these parts in different vertical planes and the valved outlet at a higher elevation than the cylinder. By this means the cylinder may be arranged in a cooling compartment A' in a counter or cabinet A in which the pipe 16 is con-
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nected or provided with a cooling coil A² while the discharge valve is disposed in a convenient working position and the supply pipe 16 is placed so as to extend to the source of supply of the liquid without interference from other parts.

From the foregoing description, taken in connection with the accompanying drawings, the construction, mode of operation and advantages of my improved liquid dispensing device will be readily understood by those versed in the art without a further and extended description. While the construction disclosed is preferred, it will, of course, be understood that changes in the form, details of construction and arrangement of the parts may be made within the scope of the invention without departing from the spirit or sacrificing any of the advantages thereof. The device will be found most efficient for dispensing beer or other charged liquid or carbonated liquid discharged at varying working pressures, and which have a tendency to foam, so as to entirely eliminate the wildness of the liquid and its excess foaming when discharged under initially high pressure.

What I claim is:—

1. In an apparatus for dispensing beer or like liquids, the combination of a liquid supply pipe, a pair of alternately acting feed and return pipes, and a discharge pipe or nozzle, of a valve casing connecting said pipes, a valve in said casing having a neutral or cut off position and movable to opposite working positions to alternately connect the feed and return pipes with the supply and discharge pipes, a dispensing chamber partitioned to provide parallel compartments each having a combined intake and discharge port communicating with one of the feed and return pipes, and a piston in each compartment movable in one direction under pressure of the liquid feeding thereto from the valve casing through the associated feed and return pipe and automatically movable in the opposite direction to expel the liquid through said pipe.

2. In an apparatus for dispensing beer or like liquids, the combination of a liquid supply pipe, a pair of alternately acting feed and return pipes, and a discharge pipe or nozzle, of a valve casing connecting said pipes, a valve in said casing having a neutral or cut off position and movable to opposite working positions to alternately connect the feed and return pipes with the supply and discharge pipes, a dispensing chamber partitioned to provide parallel compartments each having a combined intake and discharge port communicating with one of the feed and return pipes, a piston in each compartment movable in one direction under pressure of the liquid feeding thereto from the valve casing through the associated feed and return pipe and automatically movable in the opposite direction to expel the liquid through said pipe, and an adjustable stop device for variably limiting the movement of the piston in the first-named direction.

3. In an apparatus for dispensing beer or like liquids, the combination of a liquid supply pipe, a pair of alternately acting feed and return pipes, and a discharge pipe or nozzle, of a valve casing connecting said pipes, a valve in said casing having a neutral or cut off position and movable to opposite working positions to alternately connect the feed and return pipes with the supply and discharge pipes, a dispensing chamber partitioned to provide parallel compartments each having a combined intake and discharge port communicating with one of the feed and return pipes, a piston

in each compartment movable in one direction under pressure of the liquid feeding thereto from the valve casing through the associated feed and return pipe and automatically movable in the opposite direction to expel the liquid through said pipe, and a spring associated with each piston for moving it in the latter-named direction.

4. In an apparatus for dispensing beer or like liquids, the combination of a liquid supply pipe, a pair of alternately acting feed and return pipes, and a discharge pipe or nozzle, of a valve casing connecting said pipes, a valve in said casing having a neutral or cut off position and movable to opposite working positions to alternately connect the feed and return pipes with the supply and discharge pipes, a dispensing chamber partitioned to provide parallel compartments each having a combined intake and discharge port communicating with one of the feed and return pipes, a piston in each compartment movable in one direction under pressure of the liquid feeding thereto from the valve casing through the associated feed and return pipe and automatically movable in the opposite direction to expel the liquid through said pipe, an adjustable stop device for variably limiting the movement of the piston in the first-named direction, and a spring associated with each piston for moving it in the second-named direction.

5. In an apparatus for dispensing beer or like liquids, the combination of a liquid supply pipe, a pair of alternately acting feed and return pipes, and a discharge pipe or nozzle, of a valve casing connecting said pipes, a four-way valve in said casing having a neutral or cut off position and movable to opposite working positions to alternately connect the feed and return pipes with the supply and discharge pipes, a dispensing chamber partitioned to provide parallel compartments each having a combined intake and discharge port communicating with one of the feed and return pipes, and a piston in each compartment movable in one direction under pressure of the liquid feeding thereto from the valve casing through the associated feed and return pipe and automatically movable in the opposite direction to expel the liquid through said pipe.

6. In an apparatus for dispensing beer or like liquids, the combination of a liquid supply pipe, a pair of alternately acting feed and return pipes, and a discharge pipe or nozzle, of a valve casing connecting said pipes, a four-way valve in said casing having a neutral or cut off position and movable to opposite working positions to alternately connect the feed and return pipes with the supply and discharge pipes, a dispensing chamber partitioned to provide parallel compartments each having a combined intake and discharge port communicating with one of the feed and return pipes, a piston in each compartment movable in one direction under pressure of the liquid feeding thereto from the valve casing through the associated feed and return pipe and automatically movable in the opposite direction to expel the liquid through said pipe, and an adjustable stop device for variably limiting the movement of the piston in the first-named direction.

7. In an apparatus for dispensing beer or like liquids, the combination of a liquid supply pipe, a pair of alternately acting feed and return pipes, and a discharge pipe or nozzle, of a valve casing connecting said pipes, a four-way valve in said casing having a neutral or cut off position and movable to opposite working positions to alter-

nately connect the feed and return pipes with the supply and discharge pipes, a dispensing chamber partitioned to provide parallel compartments each having a combined intake and discharge port communicating with one of the feed and return pipes, a piston in each compartment movable in one direction under pressure of the liquid feeding thereto from the valve casing through the associated feed and return pipe and automatically movable in the opposite direction to expel the liquid through said pipe, and a spring associated with each piston for moving it in the latter-named direction.

8. In an apparatus for dispensing beer or like liquids, the combination of a liquid supply pipe, a pair of alternately acting feed and return pipes, and a discharge pipe or nozzle, of a valve casing connecting said pipes, a four-way valve in said casing having a neutral or cut off position and movable to opposite working positions to alternately connect the feed and return pipes with the supply and discharge pipes, a dispensing chamber partitioned to provide parallel compartments each having a combined intake and discharge port communicating with one of the feed and return pipes, a piston in each compartment movable in one direction under pressure of the

liquid feeding thereto from the valve casing through the associated feed and return pipe and automatically movable in the opposite direction to expel the liquid through said pipe, an adjustable stop device for variably limiting the movement of the piston in the first-named direction, and a spring associated with each piston for moving it in the second-named direction.

9. In an apparatus for dispensing beer or like liquids, the combination of a liquid supply pipe, a pair of alternately acting feed and return pipes, and a discharge pipe or nozzle, of a valve casing connecting said pipes, a valve in said casing having a neutral or cut off position and movable to opposite working positions to alternately connect the feed and return pipes with the supply and discharge pipes, a dispensing chamber, a pair of cylinders each having a combined intake and discharge port communicating with one of the feed and return pipes, and a piston in each compartment movable in one direction under pressure of the liquid feeding thereto from the valve casing through the associated feed and return pipe and automatically movable in the opposite direction to expel the liquid through said pipe.

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