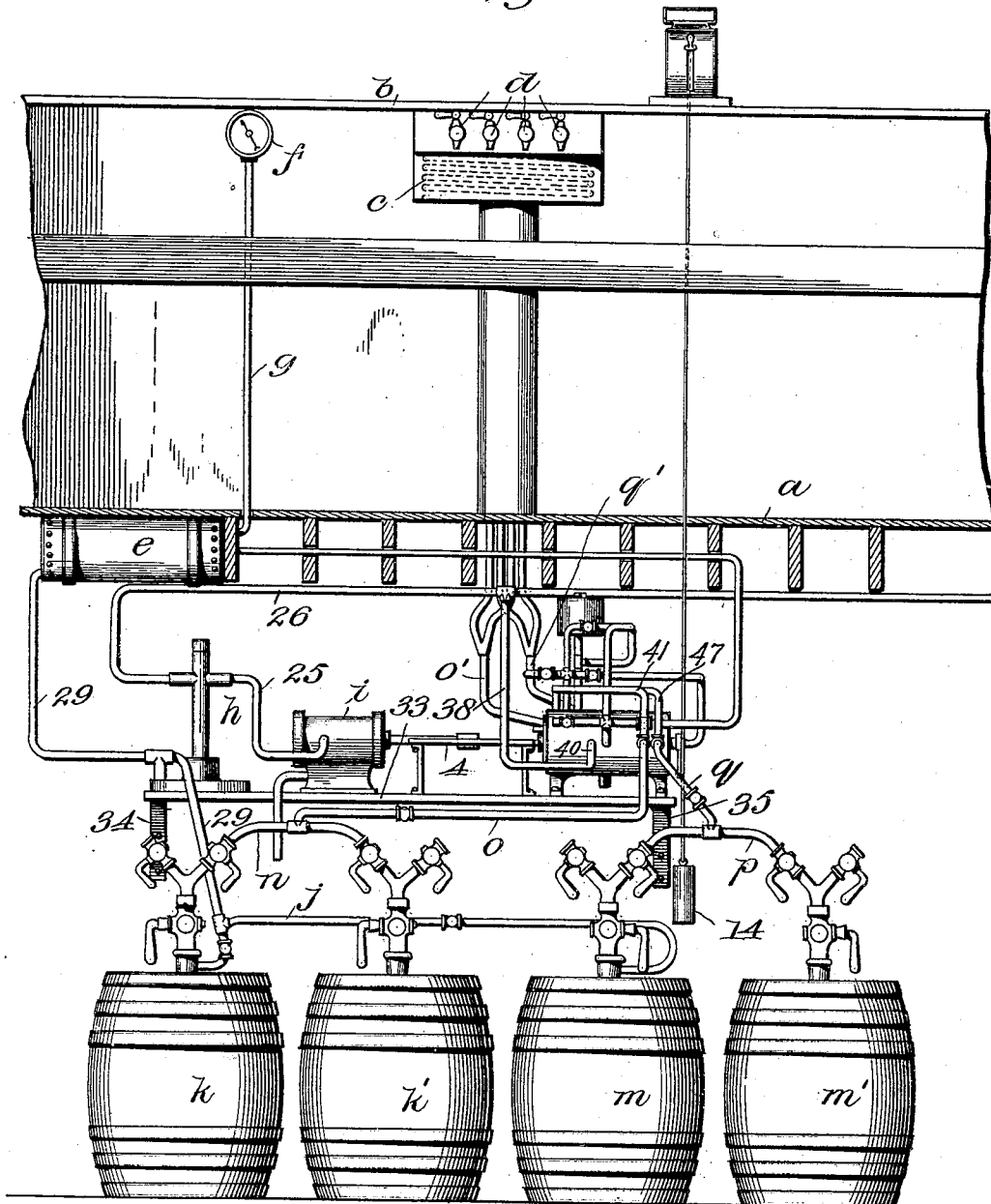


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SYSTEM FOR DISPENSING BEVERAGES.
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932,285.

Patented Aug. 24, 1909.
4 SHEETS—SHEET 1.

Fig. 1.



Witnesses
W. May. Durrall.
Jas. E. Dodge.

Inventor
Alva D. Jones.
By Wilkinson, Fisher & Witherspoon
Attorneys.

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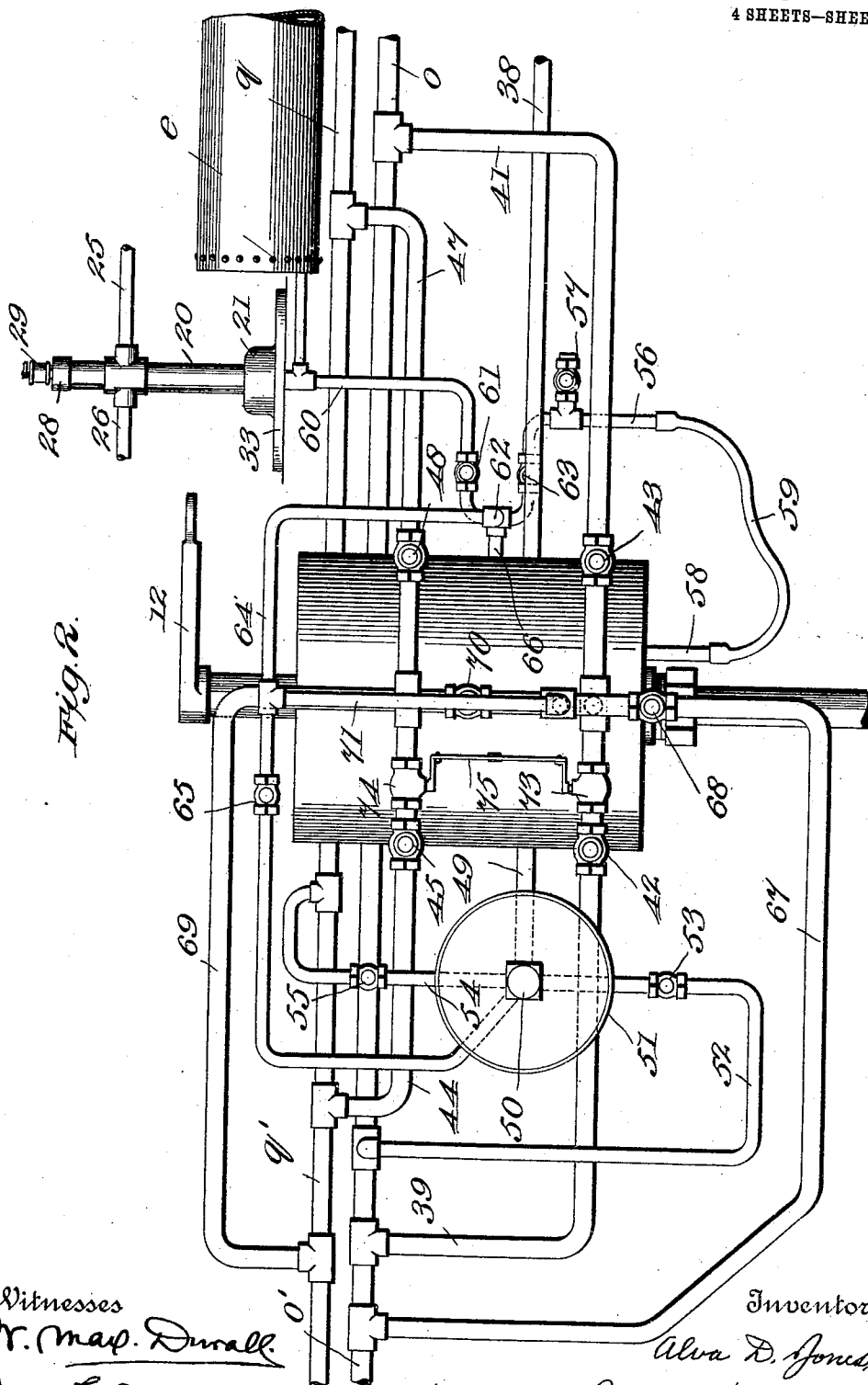


Fig. 2.

Witnesses
W. M. D. D. D.
J. E. Dodge

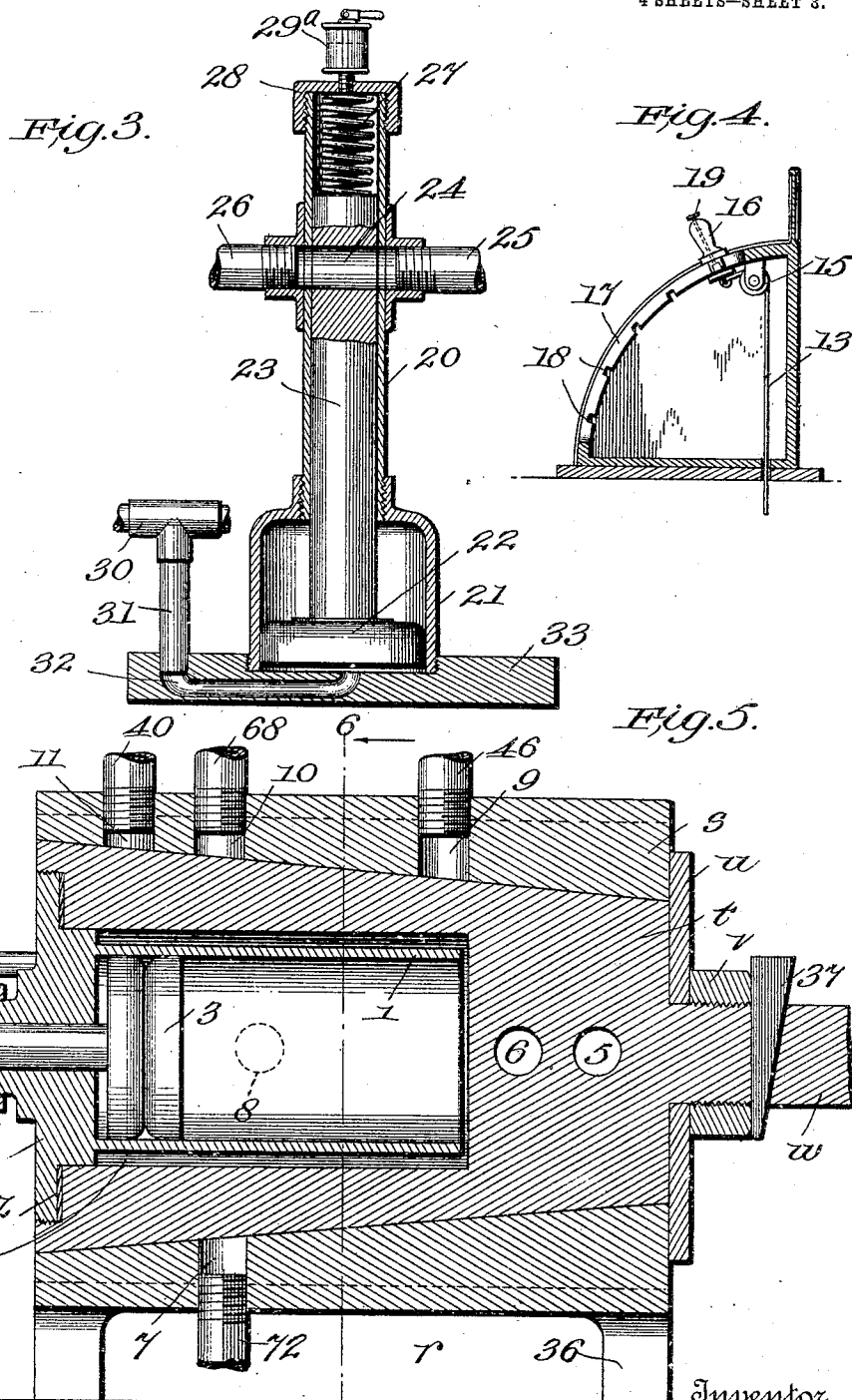
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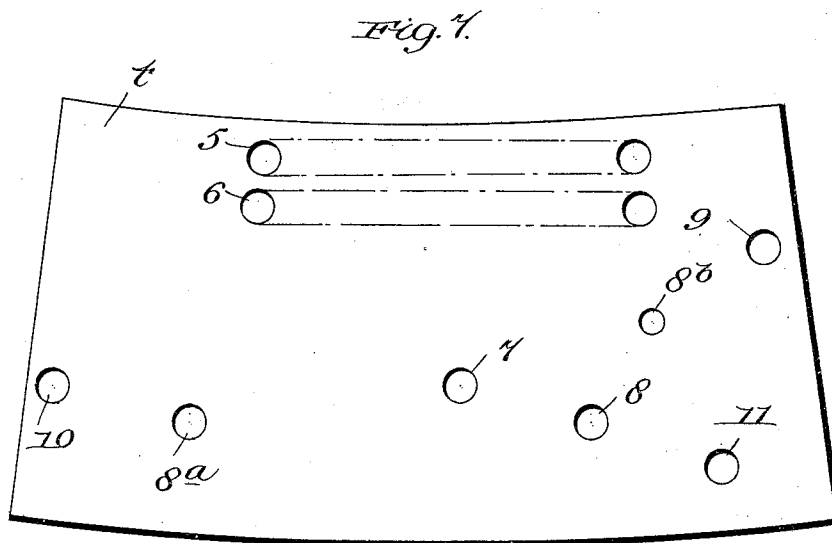
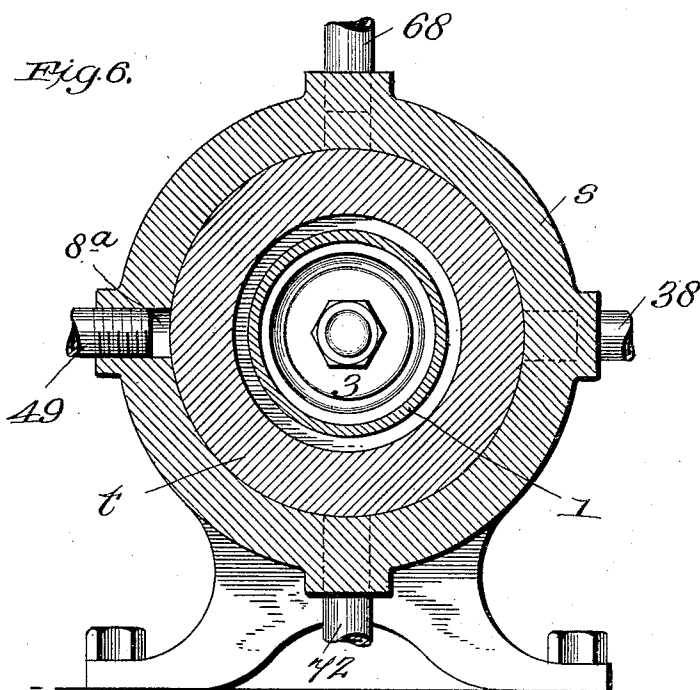
Inventor
Alva D. Jones.
By Wilkman, Fisher & Witterspoon.
Attorneys.

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4 SHEETS—SHEET 4.



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W. May Durrall.
Jas. E. Dodge.

Inventor
Alva D. Jones.
By Wilkinson, Fisher & Witherup
Attorneys,

UNITED STATES PATENT OFFICE.

ALVA D. JONES, OF LOUISVILLE, KENTUCKY, ASSIGNOR, BY MESNE ASSIGNMENTS, TO NATIONAL HYGIENIC SERVICE COMPANY, A CORPORATION OF KENTUCKY.

SYSTEM FOR DISPENSING BEVERAGES.

932,285.

Specification of Letters Patent.

Patented Aug. 24, 1909.

Application filed October 23, 1908. Serial No. 459,206.

To all whom it may concern:

Be it known that I, ALVA D. JONES, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Systems for Dispensing Beverages; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in systems for dispensing beverages, more especially those systems wherein the beverage is forced from a keg or series of kegs through cooled piping to the service bar.

My invention is applicable more especially to a beer dispensing system, but it is not restricted to this use. In such systems the beer is carried through long coils of piping to efficiently expose it to the cooling means, no matter how rapidly the beer is served, so that the beer delivered from the faucets is always sufficiently cooled. Since long coils of pipe are used, it follows that there always remain therein after tapping large quantities of beer, which if not removed when the bar is closed, will spoil and become flattened by remaining in the pipes.

The objects of my invention are to produce a system operated by a single controller, by means of which the beer, when the bar is closed, is forcibly returned into the kegs and then the entire system of pipes thoroughly washed, disinfected and drained, all at slight expense and very quickly.

With these and other objects in view, my invention consists in the construction and combinations of parts as hereinafter described and claimed.

In the accompanying drawings—Figure 1 is a perspective view showing my complete invention. Fig. 2 is a diagrammatic top plan view showing the arrangement of the piping. Fig. 3 is a vertical section on an enlarged scale, showing the means for governing the action of the motor. Fig. 4 is a vertical section of the means for locking the main controlling valve in various positions. Fig. 5 is a vertical section on an enlarged scale of the control valve and pump. Fig. 6 is a cross section of the same on the line 6—6 of Fig. 5, and Fig. 7 is a view of the valve as developed, showing the ports therein.

a represents the flooring beneath which the main parts of the system are located.

b represents the bar, *c* the coiled pipes and *d* the service faucets.

e represents the tank for compressed air, which is used to force the beer to the faucets *d*, and this air tank is provided with an indicator *f* connected thereto by a pipe *g*.

h represents the regulator of the water motor *i*.

j represents the pipe through which air is delivered into the beer kegs, said pipe being connected by a pipe 29 with the air tank.

k, *k'*, *m* and *m'* represent the beer kegs which are usually arranged in pairs.

k and *k'* contain light beer, for example, and *m* and *m'* contain dark beer.

n represents a pipe connecting the kegs *k* and *k'* so that the pressure in either one of said kegs can be readily transmitted to the other. The pipe *n* is provided with branches so that any desired number of kegs may be connected together, and with valves so that all of said kegs may be brought into action when desired.

o represents the pipe delivering one kind of beer to the service faucets.

p represents a pipe fitting similar to the fitting *n*, which connects the kegs *m* and *m'*, and *q* represents a delivery pipe leading from the pipe *p*.

r represents a control valve and pump and consists of a casing *s*, preferably made of metal, and having a large conical perforation therethrough in which is located the conical valve *t*.

u represents a perforated plate against which the smaller end of the valve *t* is adapted to rest. The valve *t* is provided with an extension *w*, which extension is screw-threaded and provided with a perforation, as shown in Fig. 5.

v represents a nut adapted to engage with the screw-threaded portion of the extension *w*, and to prevent this nut from jar-ring loose under the action of the pump I provide a wedge 37, which is driven in through the perforation in the extension *w*, thus firmly fastening the parts *t*, *u*, *v*, *w* and 37 together.

The body of the valve *t* is hollowed out as shown at *x*, the outer part of the cut away portion being enlarged. In this cut away portion is screwed a head *y*, a packing *z* being used to make a tight joint. The part *y*

forms a cylinder head and carries upon it the cylinder 1.

2 represents the piston rod and 3 the piston carried thereby, which is arranged to operate within the cylinder 1, which, as shown in Fig. 5, is open at one end and does not touch any part of the valve *t*. This piston rod is connected with the motor *i* by a suitable cross head 4.

5, 6, 7, 8, 8^a, 8^b, 9, 10 and 11 represent ports or passages through the valve or casing thereof, the use of which will be described in connection with the piping.

On the extension *w* is firmly fastened an operating crank or arm 12, and to the ends of said arm is fastened a cord or wire 13, to which a weight 14 is attached, and which cord or wire passes upwardly over a pulley 15, carried in a casing mounted on the top of the bar. The front of this casing is curved, as shown at 17, and slotted and is provided with a series of notches 18.

16 represents a movable handle which passes through the slot in front of the casing and is arranged to slide therein, but is prevented from being disengaged therefrom, by means of suitable nuts. This handle is connected to one end of the cord or wire 13, and is provided with a spring clip 19 adapted to be operated by the thumb, so that the part 16 may be engaged with any one of the notches 18 at will.

The pump in the valve *t* may be driven from any source of power, but to save expense I generally prefer to have it driven by a water motor *z*, which is operated by the pressure in the city mains. The regulator *h* for stopping and starting this water motor is shown in detail in Fig. 3.

20 represents a small cylindrical tube, which at its lower end has attached to it a cylinder 21, within which the piston 22 is adapted to operate, which piston is connected to a piston rod 23, which is provided with a perforation 24 therethrough.

25 and 26 represent water pipes, the first leading from the water motor to the regulator and the second being connected to the service mains, which are adapted to register with the perforation 24 in the piston rod 23 when the water motor is running. On the top of the piston rod 23 is a strong spiral spring 27, which normally holds said piston rod down so that the water will not flow from the pipe 26 into the pipe 25. This spring is adjustably held in place by means of a cap 28 screwed on to the upper part of the tube 20.

29^a represents a lubricating device of any suitable type for delivering oil into the interior of the tube 20.

The pipe 29 which comes from the air reservoir *e* is connected by a tee 30 and a pipe 31 with a passage 32 in the support 33. This support is cut away as shown in Fig. 3,

and the lower open end of the cylinder 21 is screwed therein, the passage 32 leading into the lower end of the cylinder 21 underneath the piston 22. Should the pressure in the air reservoir *e* fall below a predetermined point, fifteen pounds for example, the force of the spring 27 would overcome the force of the air beneath the piston 22 and would force the latter down into the position shown in Fig. 3, placing the perforation 24 in line with the pipes 25 and 26, whereupon the water would flow into the motor *z*, operating the same. As soon as the air pressure in the reservoir *e* reaches the desired amount, the air underneath the piston 22 will force the latter up against the tension of the spring 27, cutting off the supply of water to the motor *z*. The support 33 which carries the regulator *h* also carries the motor *z* and the control valve *v*, the latter being provided with feet 36, which are bolted to the support 33. The support 33 rests upon brackets 34, which in turn are carried upon the cellar wall, or any other supporting means.

In Fig. 2 the connecting piping is shown. In this figure, however, the piping is shown diagrammatically in order that the connections may be perfectly clear. The pipes *q* and *o* register directly with the passages 5 and 6 when the system is in operation, and these passages extend entirely through the casing *s* and valve *t* and communicate on the other side of the casing *s* with pipes *q'* and *o'*, respectively. The pipes *q'* and *o'* are forked, as shown in Fig. 1, each delivering to two of the service faucets *d*.

Referring to Figs. 1 and 2, the system of piping will next be described. The water pipe 26 leading from the city main is provided with a branch pipe 38, which leads into one side of the casing *s* connecting with the passage 8, which extends through said casing and the valve body *t*, communicating with the space *x* around the cylinder 1, and is located nearly opposite to the port 8^a. 39 represents a branch pipe leading from the pipe *o'* and provided with a check valve 42 and connecting with a pipe 40, leading into the passage 11. The end of the pipe 40 is provided with a tee joint, and a pipe 41, provided with a check valve 43, leads from this tee joint back to the pipe *o*, this connection being used to return the beer to the kegs. Similarly, the pipe *q'* has connected with it a branch pipe 44, which is provided with a check valve 45 and which is connected with a pipe 46, which in turn is connected with the passage 9. The pipe 46 has a tee head into which is screwed one end of the pipe 47, having a check valve 48, which pipe 47 communicates with the pipe *q*. This is also for the purpose of returning the beer to the keg, through another system of pipes. After the beer has been returned to the

kegs, the whole system of piping is cleansed. The valve *t* is turned, admitting water through the pipe 38 to the space *x* in the valve *t*, where it is forced by the pump out through the pipe 49, which is provided with a vertical portion 50 which leads upward into the cylinder 51, into which any suitable cleansing or disinfecting material may be placed. At the point where the pipe 49 bends upwardly, it is connected with a pipe 52, having a check valve 53, which pipe connects with the pipe *o'*. Similarly, a pipe 54, provided with a check valve 55, runs from the bend in the end of the pipe 49 to the pipe *q'*. In cleansing the system of piping, however, I prefer to have air mixed with the water, in order to produce a more thorough cleansing. For this purpose, I provide a pipe 56 connected with the atmosphere and having a check valve 57, opening inwardly. 58 represents a short pipe leading in through the cylinder head *y* and communicating with the passage *x*. 59 represents a flexible pipe, preferably of rubber, connecting the pipes 56 and 58. 60 represents a pipe leading from the air compressor and provided with a check valve 61. The pipes 56 and 60 are bent around and joined in a tee in the bottom of a vertical pipe 62, a check valve 63 being placed in the pipe 56. The vertical pipe 62 is bent around as shown at 64 and provided with a check valve 65, and is then bent around and joins the vertical portion 50 of the pipe 49 under the cylinder 51. The pipe 62 is also provided with a pipe 66, leading into the casing *s*. After the system has been thoroughly washed, it is necessary that it should be drained, and for this purpose I provide a pipe 67, having a check valve, leading from the pipe *o'* into the top of the pipe 68, which is connected with the passage 10. Similarly, a pipe 69, provided with a check valve 70, leads from the pipe *q'* into the top of the pipe 68. Also the pipe 64 has a branch pipe 71 which leads into the top of the pipe 68. Diametrically opposite the pipe 68 is a waste pipe 72, which leads from the apparatus. For fear that the check valves 42 and 45 in the pipes 39 and 44 should not always operate, I have provided additional valves 73 and 74, having their stems provided with cranks which are connected to an arm 75. This arm is operated by a cord or wire, not shown, which passes up through the floor *a* within easy reach of the attendant.

The operation is as follows: To begin the service of beer, the part 16 is moved into the position shown in Fig. 4. This leaves a clear passage from the four kegs through the pipes *o* and *q*, passages 5 and 6 and pipes *o'* and *q'* up to the service faucets. Meantime a suitable valve, (not shown) in the water pipe 26 is opened, and,

there being no pressure in the air reservoir *e*, the motor *i* is at once started in operation, which pumps air into the air reservoir *e* which delivers it into the beer kegs, creating sufficient pressure to lift the beer to the faucets. The motor *i* continues to operate until the pressure in the air tank reaches the desired point, say fifteen pounds, when the regulator *h* cuts off the supply of water from the motor *i* and the motor stops. The motor, however, will be automatically started should the pressure in the air reservoir *e* fall too low. When it is desired to stop the service of beer, the handle 16 is moved from the position shown in Fig. 4 to the notch next below it, where it is confined. This closes the passages 5 and 6. The beer in the pipes *o*, *o'* and their connections is then returned by the pump to the proper kegs in the following manner: The beer falls by gravity down to the pipe 39 and through the pipe 40 into the space *x* around the cylinder 1, and this movement of the beer is aided by the movement of the piston 3. On the return stroke of the piston, the beer is forced upwardly through the pipe 40, but is prevented from returning through the pipe 39 by the check valve 42, and therefore passes out through the pipe 41 into the pipe *o* and back to the keg. As soon as the attendant perceives by a gurgling noise in the pipe that the beer in the pipe *o'* has all been returned to the keg, he pulls the handle 16 down to the next notch, whereupon the beer in the pipes *q* and *q'* is returned to the keg in a similar manner, passing through the pipe 44 down through the pipe 46 into the space *x*. On the return stroke of the piston 3, the beer is driven up through the pipe 46, but is prevented by the check valve 45 from returning into the pipe *q'*, and is therefore delivered through the pipe 47 into the pipe *q* and back into the proper keg or kegs. The end of this operation is made evident by the gurgling sound in the pipes, it being noted that the faucets *d* are opened, when the beer is to be returned to the kegs, in order to permit a free entrance of air thereinto. After the beer in the service pipes has all been returned to the kegs, the entire system of piping is thoroughly washed in the following manner: The handle 16 is pulled down to the fourth notch from the top and is there confined. The water from the city main enters through the pipe 38 under pressure, being aided by the action of the pump in the valve *t*. Air is admitted through the pipe 58 into the space *x* around the pump cylinder. The water is driven out through the pipe 49 up into the cylinder 51, in which disinfectants may be placed. The air admitted on the return stroke of the pump piston is driven through the pipes 58, 59, 56, 62 and 64, around into the pipe 49 where it is mixed with the water delivered

into said pipe. The mixture of air and water after being suitably charged passes out through the pipes 52 and 54 into the pipes o' and q' , thoroughly washing out the whole system of piping. As the pump in the valve cylinder is a reciprocating pump, the mixed water and air will be delivered in impulses into the chamber 51 and through the pipes 52 and 54, the check valves 53 and 55 preventing backward flow of the water.

After the system of piping has been thoroughly washed, either with or without the addition of disinfecting material, it is forcibly drained in the following manner: The handle 16 is pulled down to the last notch, which cuts off the inflow of water through the pipe 38 and opens the waste pipe 72. The supply of air, however, from the air reservoir e is not interrupted. The water in the pipes o' and q' comes in under the influence of gravity through the pipes 67 and 69 into the space x and is forced by the pump out through the waste pipe 72. Similarly, any air or water that may be in the pipe 64 is sucked back down through the pipe 68 and the whole system entirely dried out by the inrush of fresh air. The apparatus is thus thoroughly cleansed and ready for the next day's use, whereupon the supply of water in the pipe 26 is cut off. It is not necessary that the chamber 51 should always be charged with disinfectants. Usually it is quite sufficient to wash the pipes out thoroughly every day. At intervals, however, say once a fortnight or once a month, it is desirable to put a small quantity of disinfectant in the cylinder 51.

While I have thus described my invention, I wish it to be distinctly understood that I do not limit myself to the exact details shown and described, as these could be varied greatly without departing from the spirit of my invention, the essence of which is that different kinds of beer may be supplied to the service bar through cooled pipes, that when the bar is closed all the beer remaining in the pipes may be quickly, economically and positively returned to the proper kegs, that the service pipes may be then thoroughly cleansed, either with or without the use of a suitable disinfectant, and that the whole system may be then thoroughly and forcibly drained.

I claim:—

1. In a system for dispensing beverages, the combination of service faucets, a source of supply, means for forcing the beverage from said source to said faucets, and means for returning the excess of the beverage to the source of supply, including a controlling valve, a pump located in said valve, and means for operating said pump, substantially as described.

2. In a system for dispensing beverages, the combination of a beer supply, service

faucets, means for forcing the beer to said faucets, said means including an air reservoir and a motor, and means for returning the excess of the beer to the source of supply when the bar is closed, said means including a controlling valve, and a pump located in said valve and operated by said motor, substantially as described.

3. In a system for dispensing beverages, the combination of a source of beer supply, service faucets, means for forcing the beer from said source of supply to said faucets, including a compressed-air tank and a motor, and means for forcibly returning the excess of beer to the source of supply when the bar is closed, said means including a rotatable valve and a pump mounted in said valve, the piston of said pump being connected to said motor, substantially as described.

4. In a system for dispensing beverages, the combination of a source of supply, service faucets, means for forcing the beer from said source of supply to said faucets, said means including an air tank, a motor, and piping connecting said air tank to said source of supply and said faucets, and means for forcibly returning the excess of beer to the source of supply when the bar is closed, said means including a rotatable valve connected with the piping passing from the source of supply to the faucets, a pump located in said valve, the piston of said pump being operated by said motor, and means for operating said valve, substantially as described.

5. In a system for dispensing beverages, the combination of beer kegs, service faucets, means for forcing the beer from said kegs to said faucets, including an air tank and motor, means for operating said motor when the pressure in said air tank falls below a predetermined limit, piping connecting the beer kegs with the faucets and means for forcibly returning the excess of beer into the kegs when the bar is closed, including a rotatable valve having ports adapted to engage with the piping leading from the beer kegs to the faucets, and a pump in said valve, the piston of said pump being operated by said motor, and means for rotating said valve and confining it in different positions, substantially as described.

6. In a system for dispensing beverages, the combination of service faucets, means for forcing beer to said faucets including suitable lines of piping, means for returning the excess of beer to the source of supply when the bar is closed, means for cleansing said piping, and a valve for controlling the operation of the beer delivery and return means, connected to said piping and having a pump therein, substantially as described.

7. In a system for dispensing beverages,

the combination of service faucets, means for delivering beer to said faucets, means for forcibly returning the beer to the source of supply when the bar is closed, means for cleaning the piping of the system, and means for forcibly draining said piping after cleaning, all of said means including a rotatable valve provided with ports, means for rotating and locking said valve in several different positions, a pump in said valve and a motor for operating said pump, substantially as described.

8. In a beer dispensing system, the combination with piping of a valve casing provided with ports or passages, a rotatable valve in said casing also provided with ports and passages, said valve being centrally cut away, a pump cylinder secured to said valve within the cut away portion thereof, means for rotating said valve, a reciprocating piston mounted in the pump cylinder, and a motor operatively connected to said piston, substantially as described.

9. In a system for dispensing beverages, the combination of a source of beer supply, service faucets, piping running from said source to said faucets, a valve casing connected with said piping and provided with ports or passages, a rotatable valve in said casing also provided with ports and passages, said valve being centrally cut away, a pump cylinder secured within the cut away portion of said valve, a reciprocating piston mounted in said pump cylinder, a motor operatively connected to said piston, and means for rotating said valve and locking it in different positions, substantially as described.

10. In a system for dispensing beverages, the combination of service faucets, a source of beer supply, means for forcing the beer from the supply to the faucets, including suitable piping and a tank for compressed air, a water motor for forcing air into said tank, means for cutting off the supply of water to said motor when the pressure in said tank reaches a predetermined limit,

said means including a movable piston, a perforated piston rod connected thereto and arranged to admit or cut off the supply of water, a spring bearing against said piston rod, and piping from said tank to the space beneath said piston, substantially as described.

11. In a beer dispensing system, the combination with suitable piping, of controlling means therefor, consisting of a casing provided with ports or passages, a rotatable valve mounted in said casing and provided with ports or passages, said valve being provided with a cut away portion, a pump cylinder and a cylinder head secured within said valve, leaving a space between the cylinder and the valve, a reciprocating piston mounted in said cylinder, a motor operatively connected to said piston, and means for rotating said valve, substantially as described.

12. In a system for dispensing beverages, the combination of service faucets, a source of beer supply, piping leading from said source of supply to said faucets, means for forcing beer from said source of supply to said faucets, including a tank for compressed air, a motor, a rotatable control valve connected with said piping and having a pump therein, the piston of which is operatively connected to said motor, said piping being provided with check valves at various points, and means for rotating said valve into various positions, the first for forcing beer from the source of supply to the faucets, the second and third for forcibly returning the beer to the source of supply when the bar is closed, the third for cleaning the system of piping, and the fourth for forcibly expelling the cleaning material from said piping, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

ALVA D. JONES.

Witnesses:

G. C. TERRY,
C. O. TICE.