L. CHEVALLEY.

DISPENSING APPARATUS.

APPLICATION FILED OCT. 18, 1916.

1,260,255.

Patented Mar. 19, 1918.

3 SHEETS—SHEET 1.

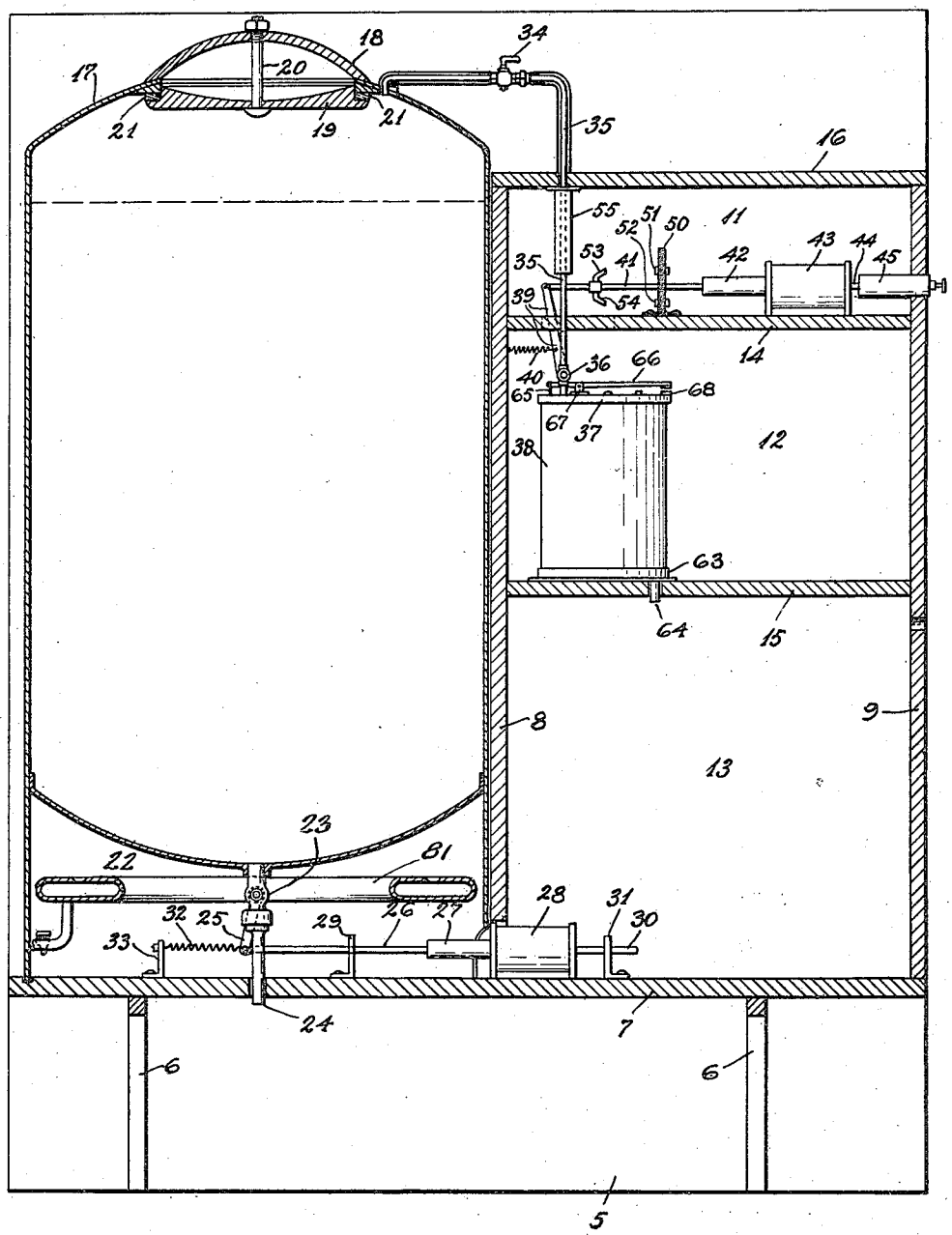


FIG. 1

WITNESS

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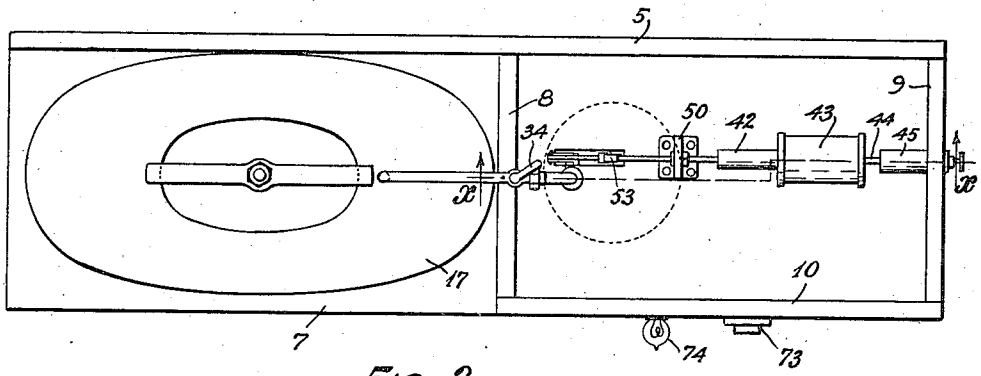
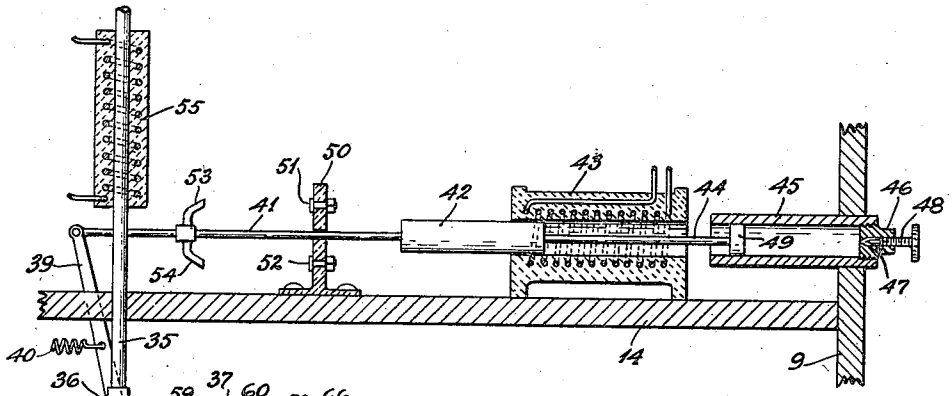


FIG. 2



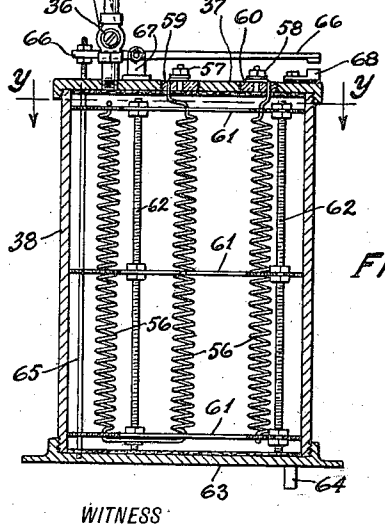


FIG. 3

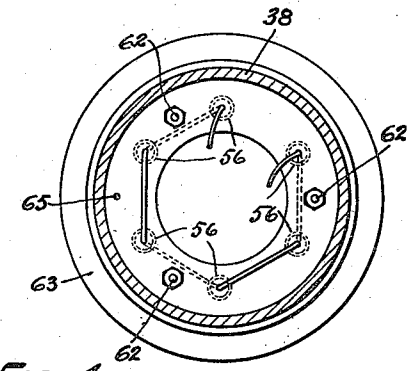


FIG. 4

WITNESS

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3 SHEETS—SHEET 3.

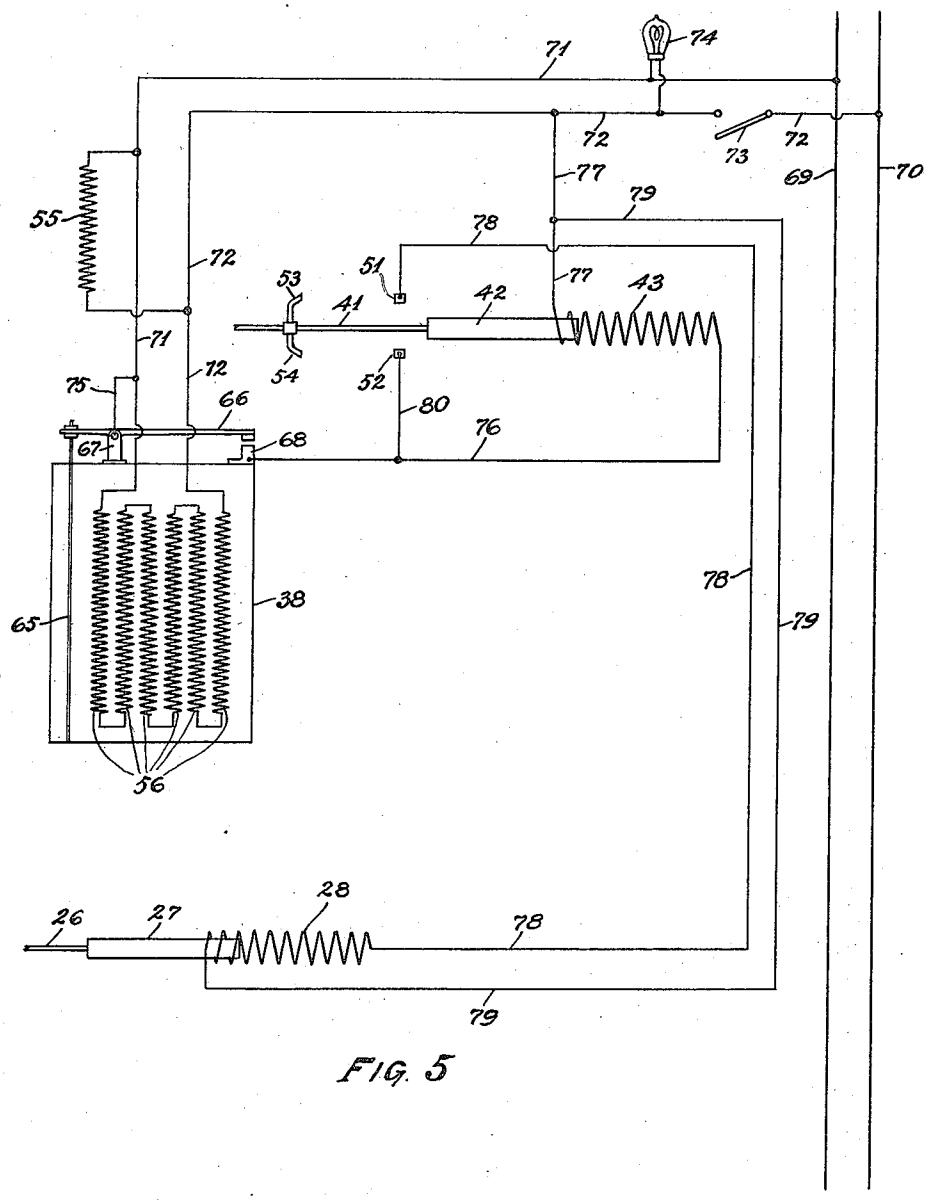


FIG. 5

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UNITED STATES PATENT OFFICE.

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DISPENSING APPARATUS.

1,260,255. Specification of Letters Patent. Patented Mar. 19, 1918.

Application filed October 18, 1916. Serial No. 126,449.

To all whom it may concern:

Be it known that I, LEON CHEVALLEY, a citizen of the United States, residing at Sardis, Province of British Columbia, Dominion of Canada, have invented a certain new and useful Improvement in Dispensing Apparatus, of which the following is a specification.

My invention relates to improvements in dispensing apparatus and the object of my invention is to provide dispensing apparatus which shall embody a container for liquid together with associated apparatus that shall be adapted to sterilize all air that may be admitted into said container pursuant to the operation of said apparatus, whereby, if said container be tightly closed after being filled with sterilized liquid, as sterilized fresh milk, then, as any quantity of such liquid is drawn from said container through its faucet, sterilized air will be admitted into the top portion of said container to replace the sterilized liquid drawn therefrom, thus to prevent living germs or bacteria from gaining access to the contents of said container.

I accomplish this object by devices illustrated in the accompanying drawings wherein Figure 1 is a view in vertical mid-section of a structure embodying my invention; Fig. 2 is a plan view of the same with the cover of its inclosing case removed to disclose some interior parts; Fig. 3 is a view of parts of the same in vertical section on broken line x, x of Fig. 2; Fig. 4 is a view of details of the same in horizontal section on broken line y, y of Fig. 3; and Fig. 5 is a diagram of electrical circuits which connect certain electrical devices embodied in my invention.

Referring to the drawings, throughout which like reference numerals designate like parts, fastened to a wall-board 5 are bracket arms 6 which serve to support in a horizontal plane a shelf 7 upon one portion of which are disposed the vertical walls 8, 9 and 10 of a cabinet which is divided into compartments 11, 12 and 13 by horizontal partitions 14 and 15 as shown in Fig. 1, the wall-board 5 serving as a rearward vertical wall of said cabinet while a removable cover 16 is disposed to cover said cabinet and the shelf 7 serves as the floor thereof.

Upon another portion of the shelf 7 is disposed a sheet metal container 17 that is adapted to be filled with milk or other liquid that is to be protected from living germs and bacteria which container 17 is shown as oval in form of cross-section, and as having convex bottom and top walls, although such container 17 may be of a desired one of other different forms.

The top wall of said container 17 is provided with an oval opening, and a removable outer cover 18 and an inner cover 19 are releasably clamped by a bolt 20 to said top wall in a position tightly to close said opening, there being a gasket 21 of suitable material disposed between the edge portion of the inner cover 19 and the inner side surface of the edge portion of said top wall.

The bottom wall of said container 17 joins the vertical walls thereof at a suitable distance from the bottom edges of said vertical walls to provide a space 22 between said bottom wall and the shelf 7 for a faucet 23 and parts associated therewith as shown in Fig. 1, said faucet 23 being screwed into and through the central portion of said bottom wall to extend its nozzle 24 downwardly through the shelf 7.

The faucet 23 is adapted to be opened and closed by a lever 25 whose free end portion is articulated to one end of a horizontally disposed rod 26 whose other end portion is connected to the core 27 of a solenoid 28 and which rod 26 is guided in its movements by a guide bracket 29 and a spindle 30 that is connected with the inner end of the core 27 and slidably supported by a guide bracket 31, said solenoid 28 and bracket 31 being disposed on the shelf 7 partially within the cabinet, the bottom end of the vertical wall 8 and the bottom end of the vertical wall of the container 17 being each provided with an opening through which the core 27 extends.

In order to maintain the faucet 23 in a normally closed position I have provided a helical tension spring 32 one end of which is attached to the free end of the lever 25 while its other end is attached to a bracket 33 that is secured to the shelf 7.

Screwed into and through the top wall of the container 17 at a point near the edge of the cover 18 is a cock 34 that may be manually actuated to open and close it, and to the inlet end of said cock 34 is connected a pipe 35 which is provided with a lagging that is non-conductor of heat, and which pipe 35 extends to and downwardly through the cover 16 and through the compartment

11 and partition 14 into the compartment 12 where it connects with a cock 36 that is fixed in the top wall 37 of a hollow cylinder 38, as more clearly shown in Fig. 1, whereby air may be permitted to flow from the interior of said cylinder 38 into said pipe 35.

The cock 36 is provided with an arm 39 which by means of a spring 40 is normally held in position to maintain said cock 36 closed and to the upper end of said arm 39 is articulated one end of a connecting rod 41 whose other end is attached to the outer end of a core 42 of a solenoid 43 and to the inner end of said core 42 is fixed a rod 44 that is extended out of the solenoid 43 and into a pneumatic dash pot 45 whereby, in response to an electric current in the solenoid 43, the core 42 will be actuated in an obvious manner to move the connecting rod 41 in a direction to open the cock 36 in opposition to the force of the spring 40, the movement of said rod with its attached core being cushioned by the dash pot 45.

As shown more clearly in Fig. 3, the dash pot 45 comprises a tube closed at its outer end by a plug 46 that is provided with an outlet passageway 47 which is controlled by an adjustable needle valve 48, a piston 49 being fixed on the end of the rod 44 whereby the core 42 may be controlled in an obvious manner with respect to the velocity of its inward movement by the rate of flow of air through the passageway 47.

A bracket 50, made of material that is a non-conductor of electricity, is disposed to assist in guiding the connecting rod 41 and mounted on said bracket 50 are two oppositely disposed electrical contact points 51 and 52 that are adapted to be engaged with oppositely disposed integral metal arms 53 and 54, respectively, which are mounted on the connecting rod 41 to form a path for an electric current between said contact points 51 and 52.

Surrounding the pipe 35 within the compartment 11 is an electrical heating element 55 of well known form and within the hollow cylinder 38 of the compartment 12 is disposed a plurality of electrical coils 56, of well known character, which are connected in series with each other to form a heating element whose terminals are connected to binding screws 57 and 58 that are mounted in insulator plugs 59 and 60, respectively, which are fixed in the top wall 37 of said hollow cylinder 38 as shown in Fig. 3, said coils 56 being supported in their positions by annular insulating plates 61 which are secured by bolt-rods 62.

The hollow cylinder 38 embodies a flanged bottom wall 63 through which extends a short air tube 64 whereby air is admitted into said hollow cylinder 38, and within said hollow cylinder 38 is disposed a thermostat rod 65 whose lower end is screwed into the bottom wall 63 to extend upwardly through the top wall 37 where its upper end is attached to one end of a metal lever 66 which is fulcrumed on a bracket 67 and whose other end serves as an electrical contact point that is adapted to engage with another insulated electrical contact point 68 in response to the expansion of the thermostat rod 65 by reason of an increase in the temperature within the hollow cylinder 38.

In Fig. 5 I have shown by a diagram one plan of connecting the several electrically operative devices embodied in the apparatus illustrated by Figs. 1, 2, 3 and 4 and in said Fig. 5 69 and 70 represent conductors that may lead to a generator of electricity, and to the conductor 69 is connected a conducting wire 71 that extends to and connects with one terminal of the heating element formed by the coils 56.

To the conductor 70 is connected a conducting wire 72 which extends to and connects with the other terminal of said heating element comprising said coils 56, there being included in said conducting wire 72 a circuit controlling switch 73.

The terminals of the heating element 55 are connected one to the wire 71 and the other to the wire 72, and an electric pilot lamp 74 is in a like manner connected to said wires 71 and 72. Thus it is obvious that when the switch 73 is actuated to close the circuit therethrough an electric current will flow through the pilot lamp 74, the heating element 55 and the heating coils 56 with the result that the air will be heated within the hollow cylinder 38 and within the tube 35 that is surrounded by the heating element 55.

The lever 66 is in electrical connection with the wire 71 by means of a conducting wire 75 and bracket 67, and the contact point 68 is connected by a conducting wire 76 to one terminal of the solenoid 43 whose other terminal is connected by a conducting wire 77 to the wire 72, whereby when the thermostat rod 65 is lengthened by expansion due to heat generated within the hollow cylinder 38 and the lever 66 is thus caused to make contact with the contact point 68 then the solenoid 43 will be energized to move inwardly its core 42 to open the cock 36 and to cause the integral arms 53 and 54 to form a path for electricity between the contact points 51 and 52 with which said arms 53 and 54 will engage, which engagement will take place only after the cock 36 has been opened for a perceptible length of time by reason of the action of the dash pot 45.

The contact point 51 is connected by a conducting wire 78 to one terminal of the solenoid 28, whose action controls the operation of the faucet 23, the other terminal of said solenoid 28 being connected by a conducting wire 79 to the wire 77, while the contact

point 52 is connected by a conducting wire 80 to the wire 76, whereby when the arms 53 and 54 make contact with the contact points 51 and 52, respectively, then the solenoid 28 will be energized to open the faucet 23 to permit the liquid contents of the container 17 to flow out through the nozzle 24, which opening will take place some time after the cock 36 is opened by reason of the operation of the dash pot 45.

Dispensing apparatus embodying my invention may be effectively employed as a reservoir from which portions of its liquid contents may be drawn at different times and into which only sterilized air shall be admitted to replace such portions, thus to prevent living organisms or bacteria from gaining access to any portion of the liquid that still remains within said reservoir. For instance, fresh milk already sterilized may be prevented from becoming sour or tainted and will be maintained fresh and sweet for many days by means of my dispensing apparatus, the operation of which may be described as follows:

The container 17 is completely filled with sterilized fresh milk and then the covers 18 and 19 are clamped by the bolt 20 in the positions tightly to close the container 17 as shown in Fig. 1, whereupon the cock 34 is opened and then the switch 73 is closed to admit current through the coils 56 and the heating element 55 to heat the air within the hollow cylinder 38 and pipe 35 to such high temperature as will sterilize such air.

The high temperature thus produced within the hollow cylinder 38 will act also to expand the thermostat rod 65 thereby to move the lever 66 into contact with the contact point 68 thus to energize the solenoid 43 thus to actuate the core 42 first to open the cock 36 then slowly move against the resistance of the dash pot 45 to cause the arm first to open the cock 36, to let sterilized air into the container 17 through the pipe 35, then slowly to continue its movement against the resistance of the dash-pot 45 to cause the arms 53 and 54 to make contact with the contact points 51 and 52, respectively, thus to close the circuit through the solenoid 28 to energize it to move the core 27 which will actuate the lever 25 to open the faucet 23 to permit milk to flow from the container 17 through the nozzle 24 into a desired receptacle, not shown.

When the required quantity of milk has been withdrawn from the container 17 the switch 73 is opened whereupon the solenoid 43 will release the core 42 and the spring 40 will close the cock 36 and move the arms 53 and 54 from engagement with the contact points 51 and 52 whereupon the solenoid 28 will release the core 27 and permit the spring 32 to close the faucet 23 after which the cock 34 may be closed until more milk is required to be drawn from the container 17.

Thus, it is manifest that after the container 17 has been filled with fresh milk already sterilized and tightly closed a desired quantity of such milk may be withdrawn from said container 17 by actuating the switch 73, and the milk remaining within the container 17 will be always protected from unsterilized air thereby keeping it fresh and sweet for many days.

The time taken for the core 42 to move to its innermost position within the solenoid 43 may be determined by adjusting the needle valve 48 to control the rate of flow of air from the dash pot 45, thus to give ample time for sterilized air to begin to pass through the pipe 35 into the container 17.

Of course, any liquid other than milk may be protected from bacteria and germs in a like manner, and, if it be desired, unsterilized fresh milk may be disposed to fill the container 17 and there sterilized before said container 17 is closed tightly by applying heat from any convenient source such as the gas burner 81, and then tightly closing said container and thereupon permitting the milk and container to become cool for use.

From the foregoing description it will be understood that the solenoids 28 and 43 respectively serve as means for imparting motion to valves 23 to 36 to open the same and in view thereof the term "motor" is used in the claims to cover these elements or any equivalents thereof which may be used in their place.

Obviously, changes may be made in the forms, dimensions and arrangement of parts of my invention without departing from the spirit thereof.

What I claim is:

1. A device of the class described including a dispensing receptacle for sterilized liquids having an outlet valve, an air sterilizer open to the atmosphere in communication with said receptacle, means for controlling the flow of air from said sterilizer to said receptacle, and means automatically operated upon the opening of said controlling means for opening said outlet valve.

2. A device of the class described including a dispensing receptacle for sterilized liquids having an outlet valve, an air sterilizer open to the atmosphere in communication with said receptacle, means for controlling the flow of air from said sterilizer to said receptacle, means automatically operated upon the opening of said controlling means for opening said outlet valve. and means for automatically closing said controlling means and said valve.

3. A device of the class describer, including a dispensing receptacle having an

outlet valve, an air sterilizer in communication with said receptacle, means for controlling the flow of air from said sterilizer to said receptacle means for opening said controlling means, means automatically operated upon the opening of said controlling means for opening said outlet valve, and means for atuomatically closing said controlling means and said valve.

4. A device of the class described including a dispensing receptacle for sterilized liquids having an outlet valve, an air sterilizer in communication with said receptacle, means for controlling the flow of air from said sterilizer to said receptacle, means for controlling the rate of movement of the opening of said controlling means, and means automatically operated upon the opening of said controlling means for opening said outlet valve.

5. A device of the class described including a dispensing receptacle for sterilized liquids having an outlet valve, means for normally closing said valve, a source of motive agent supply, a motor operated by said motive agent connected to said valve and adapted to open the same, an air sterilizer in communication with said receptacle, means for controlling the flow of air from said sterilizer to said receptacle, means for normally closing said controlling means, a motor operated by said motive agent connected to said controlling means and adapted to open the same, means for admitting the motive agent to the second-named motor, means for automatically admitting the motive agent to the first-named motor upon the opening of said controlling means.

6. A device of the class described including a dispensing receptacle for sterilized liquids having an outlet valve, means for normally closing said valve, a souce of motive agent supply, a motor operated by said motive agent connected to said valve and adapted to open the same, an air sterilizer in communication with said receptacle, means for controlling the flow of air from said sterilizer to said receptacle, means for controlling the rate of movement of the opening of said controlling means, means for normally closing said controlling means, a motor operated by said motive agent connected to said controlling means and adapted to open the same, means for admitting the motive agent to the second-named motor, and means for automatically admitting the motive agent to the first-named motor upon the opening of said controlling means.

7. A device of the class described including a dispensing receptacle for sterilized liquids having an outlet valve, means for normally closing said valve, a source of electricity supply a motor operated by the electricity connected to said valve and adapted to open the same, an electric air sterilizer in communication with said receptacle, means for controlling the flow of air from said sterilizer to said receptacle, means for normally closing said controlling means, a motor operated by the electricity connected to said controlling means and adapted to open the same, means for admitting the electricity to said sterilizer, thermostatic means associated with the sterilizer and adapted to admit the electricity to the second-named motor, and means for automatically admitting the electricity to the first-named motor upon the opening of said controlling means.

8. A device of the class described including a dispensing receptacle for sterilized liquids having an outlet valve, means for normally closing said valve, a source of electricity supply, a motor operated by the electricity connected to said valve and adapted to open the same, an electric air sterilizer in communication with said receptacle, means for controlling the flow of air from said sterilizer to said receptacle, means for controlling the rate of movement of the opening of said controlling means, means for normally closing said controlling means, a motor operated by the electricity connected to said controlling means and adapted to open the same, means for admitting the electricity to said sterilizer, thermostatic means associated with the sterilizer and adapted to admit the electricity to the second-named motor, and means for automatically admitting the electricity to the first-named motor upon the opening of said controlling means.

In witness whereof, I, hereunto subscribe my name this 6th day of October, A. D. 1916.

LEON CHEVALLEY.

Witnesses:
FRANK WARREN,
GEO. BLAIR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."