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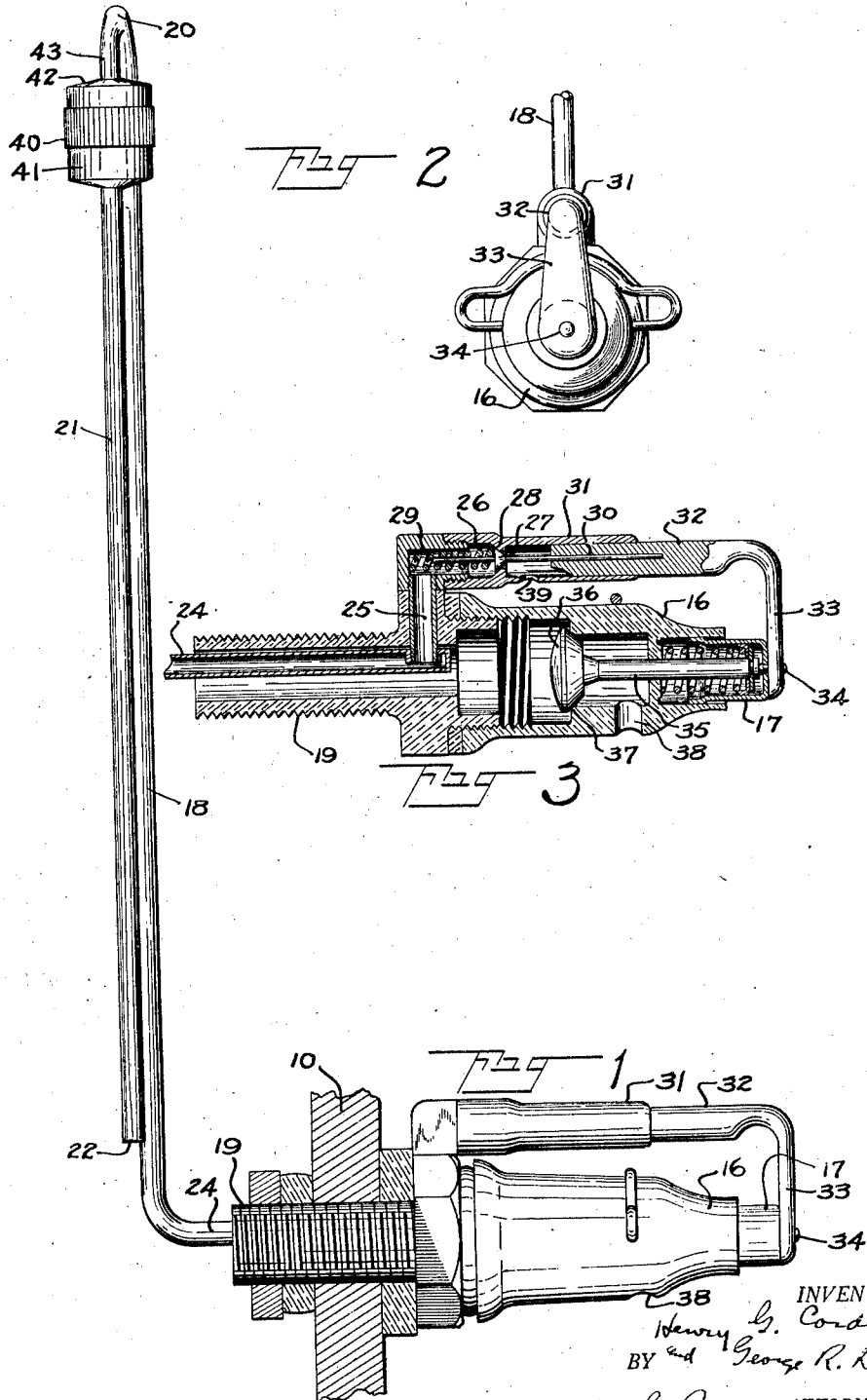
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AERATOR FOR LIQUID DISPENSING DEVICES

Filed April 6, 1927

2 Sheets-Sheet 1



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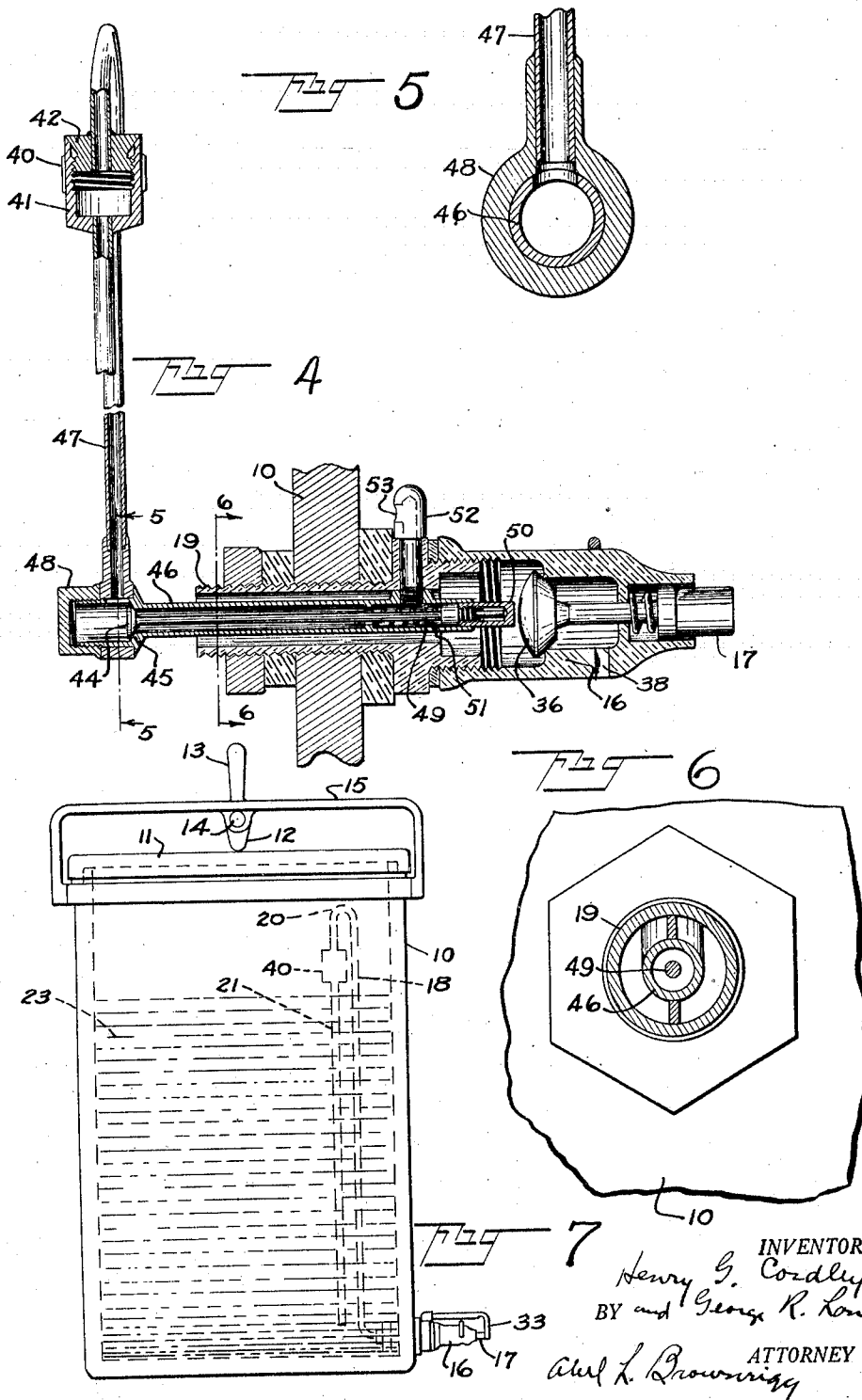
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AERATOR FOR LIQUID-DISPENSING DEVICES.

Application filed April 6, 1927. Serial No. 181,482.

This invention relates in general to a valve structure particularly adapted for use with liquid dispensing apparatus and more particularly to a combined liquid controlling and air supply valve mechanism.

In the use of liquid dispensing apparatus there are many situations wherein it is necessary or desirable to bring about an aeration of the liquid in the receptacle contemporaneously with the withdrawal of liquid through the dispensing faucet. In many cases it is desired also to pass the supply of air which enters the body of liquid through a chamber containing some substance or agency for acting on the stream of air flowing therethrough in order to affect in some way the liquid within the container. Devices have heretofore been constructed for carrying out an aeration of the liquid in a container in the general manner referred to. These devices included the admission of air through a control port in an otherwise airtight cover for the container. This form of construction is objectionable in that a rise in temperature of the atmosphere surrounding the container tends to expand the contents of the container to a degree such that liquid is forced upwardly into the aerating tube and through the port in the cover member. In the event that a chamber for air treating substances is introduced in the aerating tube, the liquid passes into the chamber and makes direct contact with the substance therein which destroys or tends to destroy the effectiveness of the device.

A general object of the present invention is to provide a liquid aerating device for liquid dispensing apparatus which will be free from the objections referred to and which will insure the automatic aeration of the liquid simultaneously with the operation of the dispensing valve and at the same time prevent interference with the aerating structure by the liquid contents of the container.

The invention includes an air valve structure through which air is drawn into the container to replace the liquid withdrawn therefrom by the operation of the liquid dispensing device, the air valve being arranged to be invariably and simultaneously operated when the liquid dispensing valve is operated.

A feature of the invention resides in the mounting of the air valve structure on the

casing of the liquid dispensing valve and with the actuating member for the air supply valve attached to the actuating member of the liquid dispensing valve for common operation therewith.

A feature of the invention resides in the provision of an aerating tube extending through the inner portion of the dispensing valve which penetrates the wall of the container and which extends upwardly to a position near the upper end of the container where the dispensing tube is folded back on itself and extends downwardly to a point near the bottom of the container.

With this arrangement when the dispensing valve is actuated, the air valve is simultaneously actuated and as liquid is withdrawn through the faucet air is simultaneously permitted to enter the aerating tube and to emerge at the free end of the tube near the bottom of the container and the mass of liquid held therein. It will be seen that with this construction air cannot rise within the open end of the tube because of the volume of air pocketed therein between the open end of the tube and the control valve therefor, so that liquid cannot rise to the bend in the tube in the upper portion of the container.

A feature of the invention resides in the provision in the aerating tube near the uppermost portion or return bend therein of a chamber which can be readily opened and in which any desired substance for treating or filtering the air passing through the tube may be placed.

By providing an airtight cover for the container all the air which enters the container to replace liquid withdrawn therefrom is constrained to pass through the air controlling valve referred to so that the desired control of the aerating process is obtained.

Other features of the invention will be hereinafter referred to.

In the drawings, in which a number of embodiments of the invention have been selected for illustration:

Figure 1 is a view in side elevation and partly in vertical section of a liquid aerating device embodying the invention;

Figure 2 is a view in end elevation of a portion of the device shown in Figure 1;

Figure 3 is a view in longitudinal verti-

cal section of the parts shown in Figure 2;

Figure 4 is a view partly in side elevation and partly in vertical section of a modified form of the invention;

5 Figure 5 is a view in vertical section and on an enlarged scale taken on the line 5—5 of Figure 4;

Figure 6 is a view in vertical section and on an enlarged scale taken on the line 6—6 10 of Figure 4;

Figure 7 is a view in side elevation of a liquid dispensing device equipped with an aerating device embodying the invention.

Referring to the drawings for a more detailed description of the invention, a liquid 15 container structure is shown in Figure 7 of the drawings and comprises an open top vessel 10 having a close fitting cover member 11 which can be clamped into airtight relation 20 with the upper end of the jar through the engagement of a cam member 12 against the upper surface of the cover. The cam member 12 is formed integrally with a handle member 13 pivotally mounted at 14 on a 25 bail-like member 15 mounted on the container structure.

The container 10 is provided near its lower end with a faucet 16 provided with a valve actuating member 17 in the outer extremity 30 thereof.

The invention herein has to do with an aerating structure and a control valve therefor which are closely associated with the dispensing faucet structure 16 referred to. 35 The aerating structure includes a vertical tube 18 which rises from the inner end 19 of the faucet structure 16 and is bent back on itself at 20 near the upper end of the container. The return branch 21 of the tubular member terminates at 22 at a point near the 40 lower end of the container and also near the lowest point of the mass of liquid 23 which is held in the receptacle or container 10.

The aerating tube 18 has a horizontal extension 24 which extends through the cylindrical portion 19 of the faucet 16 which penetrates the side wall of the container 10. The horizontal branch tube 24 communicates with a vertical tube section 25 which opens 45 into a valve chamber 26 which is controlled by a valve member 27 normally held against an annular seat 28 by the pressure of a spring 29 thereagainst. The valve member 27 is provided with a stem 30 which extends 50 forwardly through a tubular housing 31 and is anchored in an actuating member 32 which is provided with a downwardly extending arm 33 attached at 34 to the outer end of the actuating member 17 of the dispensing 60 faucet 16. The actuating member 17 which is in the form of a push button or push member bears against the stem 35 of a valve member 36 which normally occupies seated engagement with a shoulder or seat 37 in the 65 faucet structure. The valve member 36

controls the flow of liquid through a discharge port 38 while the valve 27 controls the flow of air through an inlet port 39 and thereby through the aerating tube 18 into the interior of the mass of liquid in the 70 container.

With this structural arrangement operation of the dispensing faucet 16 to withdraw liquid from the container 10 is invariably accompanied by the simultaneous opening or 75 unseating of the air valve 27 from the seat 28 so that as liquid is delivered from the container through the port 38 air enters the container through the port 39 to replace the liquid withdrawn from the container. It 80 will be seen therefore that the admission of air to the container is completely controlled and is automatically brought about through the operation of the dispensing faucet.

In order to filter the air thus drawn 85 through the aerating tube into the liquid in the container 10 or to otherwise treat the air as it is passed into the body of liquid, a chamber 40 is inserted into the aerating tube structure at an elevated point near the up- 90 permost part 20 of the tube. The chamber 40 includes a cup member 41 carried at the upper extremity of the tube branch 21. The cup member 41 is arranged to have threaded engagement with a cover member 42 carried 95 by the return portion 43 of the aerating tube 18 so that the chamber can be readily opened for inspection or to replace the contents thereof. Any desired substance or material 100 may be placed in the chamber 40 depending upon the treatment that it is desired to produce in connection with the air entering the liquid in the container.

In a modified form of the invention shown in Figure 4 of the drawings, the control 105 valve structure for the aerating device is mounted almost wholly within the faucet structure. By reference to Figure 4 it will be seen that an air control valve 44 is mounted for normal engagement with a seat 110 45 mounted at the outer end of a horizontal branch tube 46 which occupies a position extending from the inner end of the faucet barrel 19. The valve 44 is mounted at the junction of the horizontal tube branch 46 115 with a vertical branch 47 of the aerating tube. A removable cap member 48 is provided to give access to the valve 44 and adjacent parts.

The valve 44 is provided with an actuat- 120 ing stem 49 which extends through the tube branch 46 and terminates in an actuating member 50 adapted to be directly engaged by the valve 36 of the dispensing faucet structure. A spring 51 normally holds the 125 parts in condition to hold the seat 44 in engagement with the seat 45.

The branch tube 46 communicates by means of a tubular member 52 with an air inlet port 53 through which air enters the 130

aerating system to find its way into the interior of the mass of liquid in the container 10.

With either form of the invention shown and described it will be seen that a complete and automatic control of air supply to a liquid dispensing container for providing aeration of the liquid in the container simultaneously with the withdrawal of liquid therefrom is provided. In addition, means are provided for treating in any desired manner the air supplied to the aeration device so that the liquid may in turn be subjected to any desired treatment.

What we claim is:

1. In a liquid dispensing device, an airtight container for liquid, a liquid dispensing faucet connected with the container, an air inlet opening into the container below the normal liquid level thereof arranged to permit ingress of air into the water to aerate the same when the pressure within the container is reduced but arranged to prevent outflow of water by gravity, a valve for controlling the supply of air to the container, and means connecting the air controlling valve with the faucet whereby when the faucet is open to permit the flow of liquid therethrough the air control valve will be open to permit the flow of air into the container.

2. In a liquid dispensing device, an airtight container for liquid, a liquid dispensing faucet connected with the container, a valve for controlling the supply of air to the container, an air supply pipe extending from the valve into the container to deliver air into the interior of the container below the normal liquid level thereof, said pipe being so arranged as to extend above the top of the liquid at one point, and means connecting the air supply valve with the faucet whereby when the faucet is open to permit the flow of liquid therethrough the air supply valve will be open to permit the flow of air through the tube into the liquid in the container.

3. In a liquid dispensing device, an airtight container for liquid, a liquid dispensing faucet mounted on a lower portion of the container, an air supply tube extending from the inner end of the faucet to a position near the upper end of the container and thence downwardly to deliver air into a lower portion of the liquid in the container, a valve for controlling the passage of air through the air supply tube, said valve being mounted on the faucet structure, and means connecting the air supply valve with the actuating means for the faucet, whereby the operation of the faucet simultaneously produces an operation of the air supply valve whereby air passes through the tube to aerate the liquid in the container

during the act of withdrawing liquid therefrom.

4. In a liquid dispensing device, an airtight container for liquid, a liquid dispensing faucet mounted in a lower portion of the container, a valve device mounted on the faucet structure, an air supply valve leading from the valve device through the inner portion of the faucet structure and leading upwardly to the upper portion of the container, said tube being bent back upon itself and leading downwardly to discharge air in a lower portion of the container, said faucet member having an actuating member of the push button type mounted in its outer extremity, and an actuating member for the air supply valve extending from the valve device and attached to the actuating member for the faucet whereby actuation of the faucet is accompanied by simultaneous actuation of the air supply valve with the result that the withdrawal of liquid through the faucet is accompanied by aeration of the liquid in the container.

5. In a liquid dispensing device, an airtight container for liquid, a liquid dispensing faucet mounted on a lower portion of the container, an air supply valve mounted on the faucet, an air supply tube leading from the valve through the inner portion of the faucet and upwardly to an upper portion of the container, a return bend in the tube providing a downward extension of the tube opening in the lower portion of the container, a chamber formed in the tube near the uppermost extension thereof, said chamber being adapted to hold material for treating the air passing therethrough, and means connecting the air supply valve with the actuating member for the faucet whereby the actuation of the faucet is accompanied by an actuation of the air supply valve with a resulting aeration of the liquid by air treated by the material in the chamber.

6. In a liquid dispensing device, a container for liquid, a removable cover for the upper end of the container, means for clamping the cover in airtight relation to the container, a liquid dispensing faucet mounted on a lower portion of the container, a valve for controlling the supply of air to the container, an air supply tube extending from the valve through the inner portion of the faucet into the container, said tube extending upwardly to an upper portion of the container and having a return bend, a branch extending from the return bend downwardly to a lower portion of the container whereby to discharge air in a lower portion of the body of liquid therein, a chamber mounted in the tube adjacent the upper end thereof, said chamber being adapted to be opened to place material therein for treating the air passing therethrough, and an operating con-

nection between the air supply valve and the actuating member for the faucet whereby simultaneously with the discharge of liquid through the faucet air is passed into the container and through the treating chamber for aerating liquid in the container.

7. In a liquid dispensing device a container for liquid, a liquid dispensing faucet mounted on a lower portion of the container, a valve for controlling the supply of air to the container, an air supply tube extending from the valve into and to the top of the liquid container, an opening into said container below the normal liquid level thereof, a chamber connecting with said tube adapted to receive material for treating the air passing through the tube and an operating connection between the air supply valve and the

actuating member of the faucet whereby simultaneously with a discharge of liquid through the faucet air will be admitted into the container and through the treating chamber.

8. In a liquid dispensing device an airtight container for liquid, a liquid dispensing faucet mounted on the lower portion of the container, an air supply tube extending through the faucet into the container said tube extending upwardly to an upper portion of the container and having a return bend with a branch extending from the return bend downwardly to a lower portion of the container whereby to discharge air in a lower portion of the body of liquid therein.

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