Dec. 27, 1949 E. J. MILLER 2,492,309

LIQUID AERATOR AND DISPENSER

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Fig. 1.

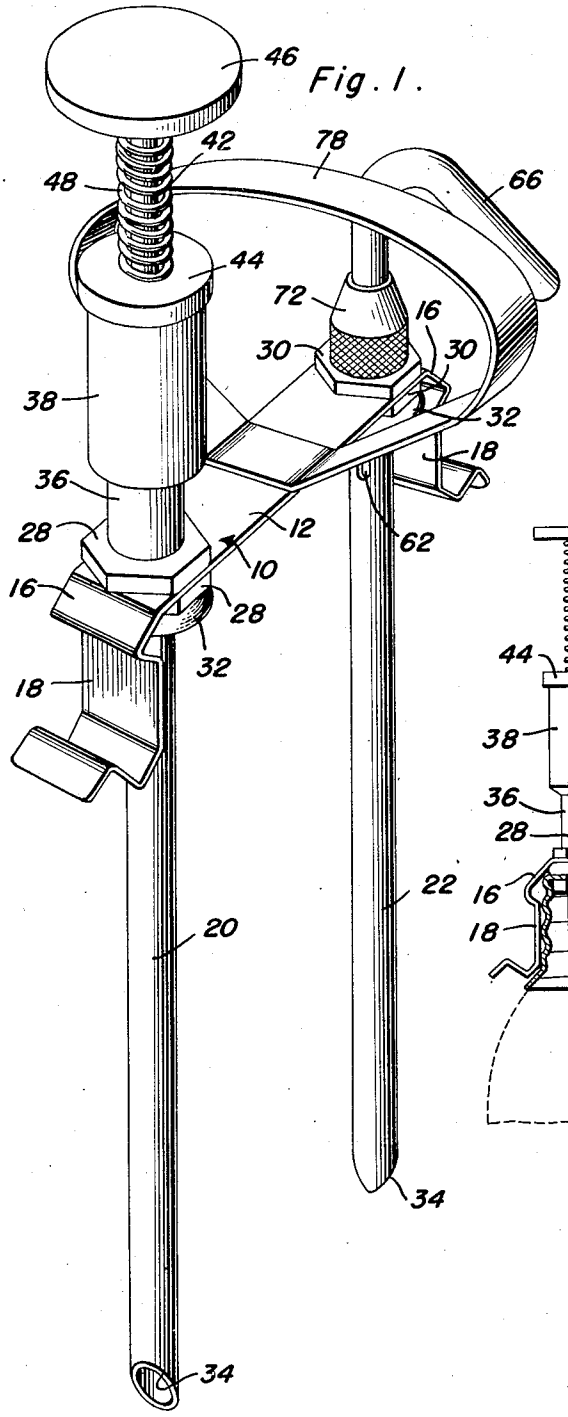

Fig. 4.

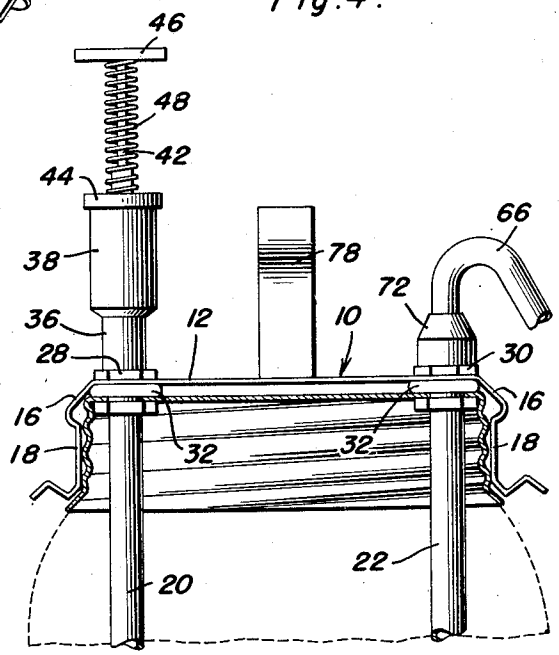

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Fig. 2.

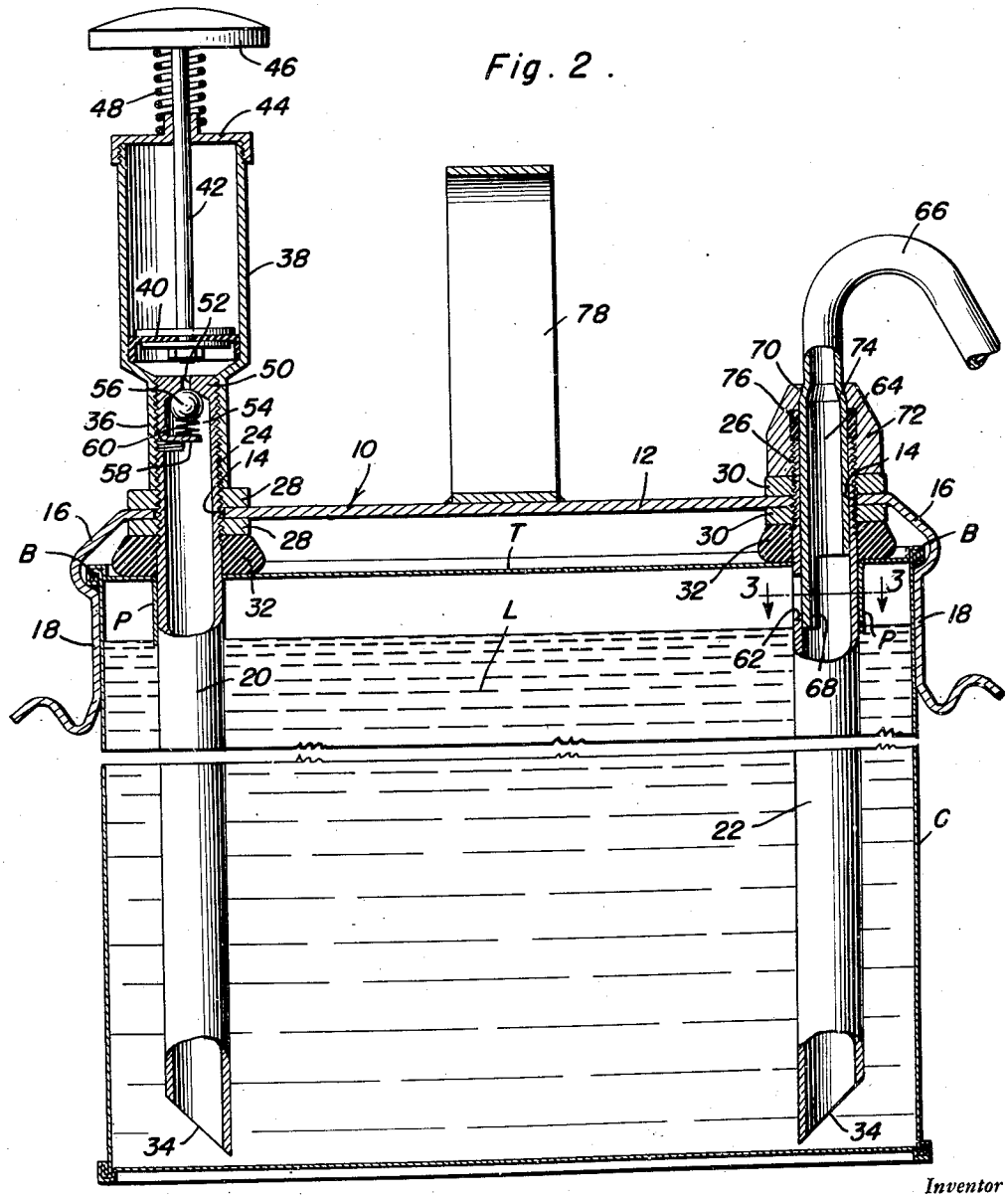

Fig. 3.

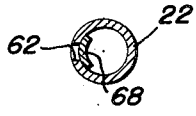

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Fig. 5.

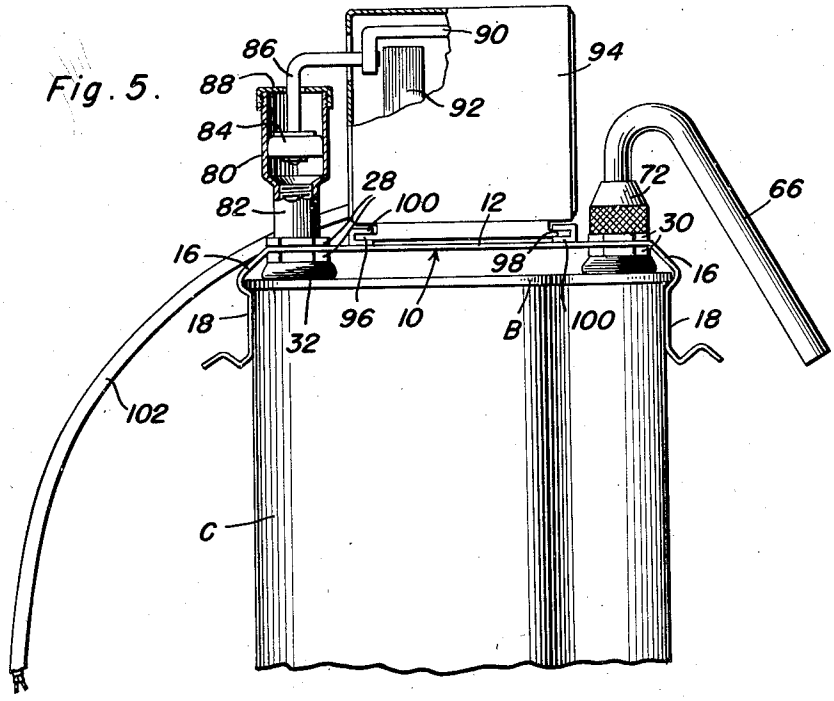
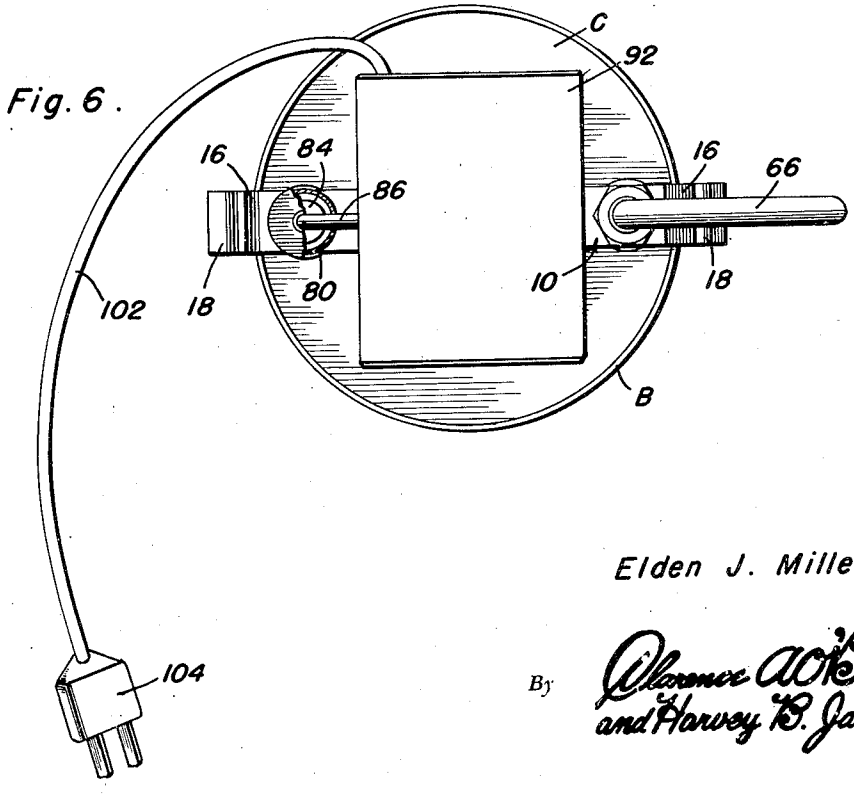


Fig. 6.



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UNITED STATES PATENT OFFICE

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LIQUID AERATOR AND DISPENSER

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Application September 30, 1948, Serial No. 51,954

5 Claims. (Cl. 222—195)

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This invention relates to a liquid aerator and dispenser and has for its primary object to aerate liquids such as fruit juices, vegetable juices or the like while they are retained in a conventional package such as a can.

Another object is to facilitate the dispensing of the liquid from a conventional container without requiring the lifting or tilting of the container.

A still further object is to enable air to be introduced into a conventional juice containing can, near the bottom thereof so that the air will bubble up through the liquid properly to aerate the latter, and selectively to create a head of air above the liquid to cause it to discharge from the container through a suitable spout.

The above and other objects may be attained by employing this invention which embodies among its features spaced vertical tubes each extending through the top of the liquid containing can to a point near the bottom of said can, a port in one of said tubes within the can above the level of the liquid therein, a spout mounted for rotary movement in the upper end of the tube having the port therein, means within said tube selectively to open or close said port as the spout is rotated and a pump at the upper end of the other tube for forcing air through said tube and into the liquid in the can.

Other features include means rigidly connecting the tubes adjacent their upper ends to form a unitary liquid aerating and dispensing device, means at opposite ends of the connecting means to extend part-way down the sides of the can and releasably hold the tubes in place in the can, a handle on the tube connecting means, and a gasket encircling each tube immediately below the tube connecting means to effect a seal between the top of the can and the respective tubes to prevent the escape of air from the can around the tubes.

In the drawings:

Figure 1 is a perspective view of a liquid dispensing and aerating device embodying the features of this invention,

Figure 2 is a fragmentary enlarged sectional view through a juice containing can illustrating this improved liquid dispensing and aerating device in position with relation to said can,

Figure 3 is a horizontal sectional view taken substantially along the line 3—3 of Figure 2,

Figure 4 is a side view on a reduced scale of this improved aerating and dispensing device showing it mounted on a conventional screw top jar cover,

Figure 5 is a fragmentary side view of a can

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illustrating a modified form of liquid dispensing and aerating device in place thereon, and

Figure 6 is a top plan view of Figure 5.

Referring to the drawings in detail, a base designated generally 10 comprises a relatively stiff strip of metal 12 provided adjacent opposite ends with openings 14. Opposite ends of the strip or base 12 are provided with downwardly inclined extensions 16 terminating at their outer lower ends in clips 18 which are adapted to engage over the bead B of a conventional juice containing can C which is equipped with a conventional top T.

Extending through the openings 14 in the base or strip 12 are tubes 20 and 22, the upper ends of which are externally screw threaded as at 24 and 26 respectively for a purpose to be more fully hereinafter described. Threaded onto the threaded end 24 of the tube 20 are clamping nuts 28 which engage opposite sides of the strip or base 12, firmly to clamp the tube 20 in position on the strip or base. Similar clamp nuts 30 are threaded onto the threads 26 of the tube 22 to engage opposite sides of the strip or base 12, to hold the tube 22 in spaced parallel relation to the tube 20. A suitable sealing gasket 32 surrounds each tube 20 and 22, and when the device is on place on the top T of a can C as illustrated in Figure 2, these sealing gaskets form a fluid tight seal at the junctions of the tubes 20 and 22 with the top T. The end of each tube 20 and 22 remote from the threaded ends 24 and 26 thereof respectively are bevelled as at 34 to form sharp cutting edges on the tubes which will effectively punch through the top T of the can C. It is to be noted that the inclination of the bevelled portion 34 is outwardly toward the wall of the can C so that the punched out portions P will be turned inwardly on the side of the openings formed by the forcing of the respective tubes 20 and 22 through the top T nearest the side wall of the can C.

Threaded onto the upper threaded end 24 of the tube 20 is the neck 36 of a pump cylinder 38 containing a piston 40 which is connected to a piston rod 42 operating through an axial opening in the head 44 of the cylinder 38. The end of the piston rod 42 remote from the piston 40 is equipped with a handle 46, and surrounding the piston rod 42 and bearing at one end on the head 44 and at its opposite end on the handle 46 is a compression coil spring 48, which yieldingly urges the piston 40 toward the head 44.

Threaded into the internally threaded neck 36 of the cylinder 38 is a valve cage 50 which is provided with an axial passage 52 which opens into the cylinder 38, while the opposite end of

the passage opens into a chamber 54 formed in the cage 50, and contains a ball valve 56. Formed at the end of the cage 50 remote from the passage 52 is an inturned lip 58 supporting one end of a compression coil spring 60, the opposite end of which bears against the ball 56 to hold it upwardly in passage closing position as will be readily understood upon reference to Figure 2. It will thus be seen that as the piston 40 is advanced toward the valve cage 50 against the effort of the spring 48 air within the cylinder will be forced outwardly through the passage 52 and into the tube 20 to be discharged through the bottom thereof into the liquid L within the can C.

As illustrated in Figure 2, the tube 22 is provided with a port 62 which opens into the can C above the level of the liquid L contained therein, and rotatably mounted within the upper end of the tube 22 is the end 64 of a discharge spout 66. An extension 68 is formed at the inner end of the portion 64 of the discharge spout, and in one position is adapted to overlie the port 62 to effectively seal it against the escape of air. As illustrated in Figure 2 the discharge spout 66 is provided with an inclined shoulder 70, and threaded onto the threaded end 26 of the tube 22 is a bushing 72 having an inclined surface 74 which engages the shoulder 70 to hold the spout 62 in proper position in the tube 22. A suitable sealing gasket 76 is seated on the end of the tube adjacent the threads 26 and contacts the extension 64 and bushing 72 effectively to seal the parts against the escape of liquid. A suitable handle 78 is mounted on the base or cross bar 12 to provide convenient means for manipulating the device.

In the modified form of the invention illustrated in Figure 5, the upper end of the tube 20 instead of being equipped with the cylinder 38 is provided with a cylinder 80 having an internally screw threaded reduced neck 82 for engagement with the tube 20, and mounted for reciprocation within the cylinder 80 is a conventional piston 84 having a piston rod 86 which operates through the cylinder head 88 of the cylinder 80 and is connected to the armature 90 of a conventional vibrator 92 housed within a housing 94 which is provided adjacent its bottom with laterally extending flanges 96 for entrance into the grooves 98 formed in channels 100 which are fixed to the base 10 in place of the handle 76. The vibrator 92 is of conventional electro-magnetic type and has connected thereto a conventional conductor cable or cord 102 which is equipped with a conventional attachment plug 104 so that when the plug is entered into a suitable convenience outlet, the vibrator 92 will be set into operation to cause the armature 90 to reciprocate and reciprocate the piston 84 within the cylinder 80. The neck 82 is equipped with a conventional check valve such as that previously described to assure the introduction of air into the tube 20 when the armature 90 vibrates.

In use it will be understood that the tubes 20 and 22 are forced through the can top T as illustrated in Figure 2 so that their lower ends terminate near the bottom of the can C. Upon reciprocating the piston 40, or the piston 84 within its respective cylinder, air will be introduced into the can through the tube to bubble up through the liquid L contained within the can C into the space in the can above the liquid. When aeration is the only operation to be performed the spout 66 is rotated about the longitudinal axis of

the tube 22 so that the air above the liquid L may escape through the port 62, and the aeration may take place for any length of time desired. When it is desired to dispense the liquid from the can however, the spout 66 is rotated about the axis of the tube 22 so that the tongue 68 overlies the port 62, effectively preventing the escape of air therethrough, and upon reciprocating the piston 40 or 84 as the case may be within its respective pump cylinder, the air will be forced through the tube 20 and will find its way into the space within the can C above the level of the liquid, to create a pressure head on said liquid and force it out through the tube 22 and spout 66 into a suitable receptacle.

While in the foregoing there has been shown and described the preferred embodiment of this invention it is to be understood that minor changes in the details of construction and arrangement of parts may be resorted to without departing from the spirit and scope of the invention as claimed.

Having described the invention, what is claimed as new is:

1. A liquid aerator and dispenser comprising spaced vertical tubes each extending through the top of a liquid containing can to a point near the bottom of said can, a port in one of said tubes within the can above the level of the liquid therein, a spout mounted for rotary movement in the upper end of the tube having the port therein, means within said tube selectively to open or close said port and a pump at the upper end of the other tube for forcing air through said tube and into the liquid in the can.

2. A liquid aerator and dispenser comprising spaced vertical tubes each extending through the top of a liquid containing can to a point near the bottom of said can, a port in one of said tubes within the can above the level of the liquid therein, a spout mounted for rotary movement in the upper end of the tube having the port therein, means within said tube selectively to open or close said port as the spout is rotated, a pump at the upper end of the other tube for forcing air through said tube and into the liquid in the can, and means encircling each tube and resting on the top of the can to seal the junctions of the tube and the can top against the escape of air.

3. A liquid aerator and dispenser comprising spaced vertical tubes each extending through the top of a liquid containing can to a point near the bottom of said can, a port in one of said tubes within the can above the level of the liquid therein, a spout mounted for rotary movement in the upper end of the tube having the port therein, means within said tube selectively to open or close said port as the spout is rotated, a pump at the upper end of the other tube for forcing air through said tube and into the liquid in the can, and means rigidly connecting the tubes adjacent their upper ends, said means extending part way down the sides of the can to releasably hold the tubes in place in the can.

4. A liquid aerator and dispenser comprising spaced vertical tubes each extending through the top of a liquid containing can to a point near the bottom of said can, a port in one of said tubes within the can above the level of the liquid therein, a spout mounted for rotary movement in the upper end of the tube having the port therein, means within said tube selectively to open or close said port as the spout is rotated, a pump at the upper end of the other tube for forcing air through said tube and into the liquid in the can,

means rigidly connecting the tubes adjacent their upper ends, said means extending part way down the sides of the can to releasably hold the tubes in place in the can, and a handle on the tube connecting means.

5. A liquid aerator and dispenser comprising spaced vertical tubes each extending through the top of a liquid containing can to a point near the bottom of said can, a port in one of said tubes within the can above the level of the liquid therein, a spout mounted for rotary movement in the upper end of the tube having the port therein, means connected to said spout and within said tube selectively to open or close said port as the

spout is rotated, a pump at the upper end of the other tube for forcing air through said tube and into the liquid in the can, means rigidly connecting the tubes adjacent their upper ends, said means extending part way down the sides of the can to releasably hold the tubes in place in the can, and a basket encircling each tube immediately below the tube connecting means to effect seals between the can top and the tubes and prevent the escape of air from the can around the tubes.

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No references cited.