

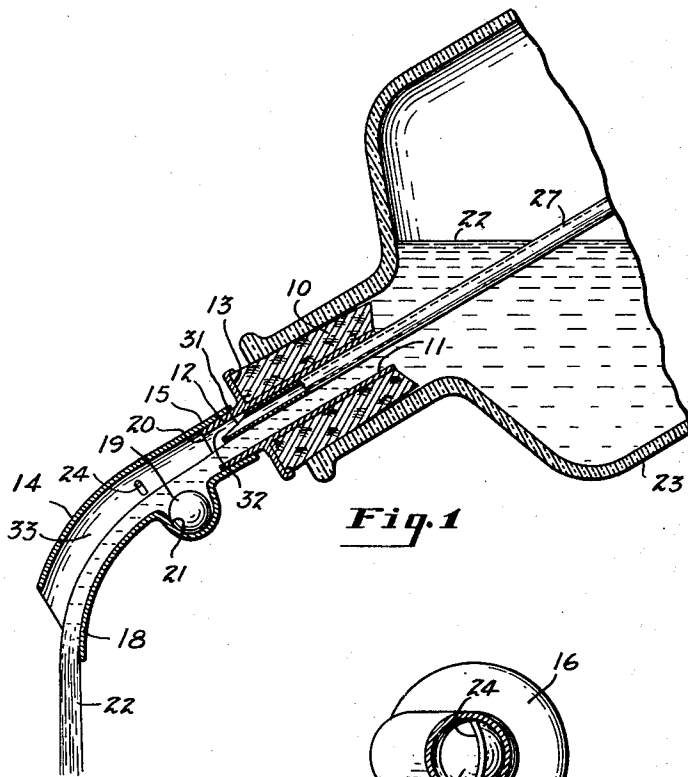
April 5, 1938.

W. GROSS

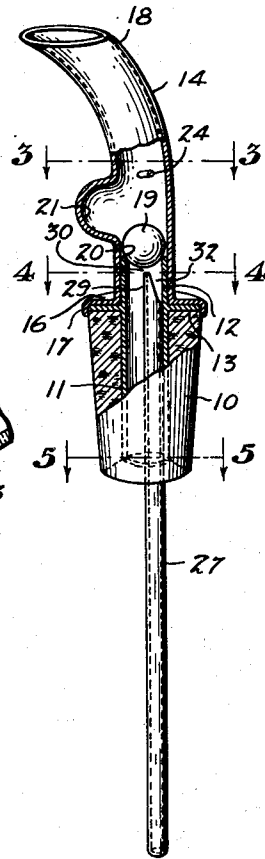
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LIQUID DISPENSER

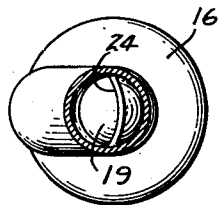
Filed May 14, 1936



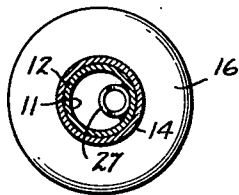
**Fig. 1**



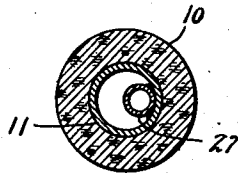
**Fig. 2**



**Fig. 3**



**Fig. 4**



**Fig. 5**

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# UNITED STATES PATENT OFFICE

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## LIQUID DISPENSER

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7 Claims. (Cl. 215-75)

This invention relates to liquid dispensers for attachment to bottles and such containers, and particularly to devices of this character having means for sealing the opening when in a non-dispensing position.

An object of this invention is to provide a device of this character having a liquid discharge tube and an air vent tube, and provided with a valve means for sealing both the discharge tube and vent tube when the container is in an upright position.

Another object is to provide such a device having an air vent tube, which, although not extended to the discharge spout of the device, is adapted to provide a passage for air through the liquid in the container.

A still further object is to provide a device of the character described which is attractive in appearance, simple in construction, which may be readily disassembled, and which can be inexpensively manufactured.

In the drawing is illustrated a preferred embodiment of my invention, in which

Figure 1 illustrates the device dispensing liquid from a container;

Fig. 2 is a side elevation, partly in section, of the device in an upright position;

Fig. 3 is an enlarged section on the line 3-3 of Fig. 2;

Fig. 4 is an enlarged section on the line 4-4 of Fig. 2; and

Fig. 5 is an enlarged section on line 5-5 of Fig. 2.

A stopper 10 of a suitable material, such as cork, comprises the body portion of the device. It is centrally apertured to receive a liquid conducting tube 11, which has a portion 12 extending above the stopper and may be provided with a flange 13, which seats against the stopper. A pouring tube 14 has one end 15 telescopically and frictionally engaging the extended portion 12 of the liquid tube as shown in Fig. 1. If desired, it may have a disk-like flange 16 carried by this same end to seat against the flange 13 of the liquid tube, and the edges 17 of the disk 16 may be bent over to provide a snap fit with the flange 13, so as to prevent the pouring tube from becoming disengaged from the liquid conducting tube as shown in Fig. 2. The opposite end of the pouring tube is formed into a suitable spout 18.

A ball 19 is positioned within the pouring tube and is free to move therein. This ball is of slightly larger diameter than the interior of the liquid tube 11, so that when the device is in an upright position, such as shown in Fig. 2, the ball 19 will seat against the end 20 of the liquid tube 11 to effectively seal the opening therein.

A recess or pocket 21 is provided in the side of the pouring tube 14 to receive the ball 19 when the device is dispensing liquid from a container

23. As shown in Fig. 1, when the ball 19 is positioned in the recess or pocket 21 the pouring tube 14 and liquid tube 11 form a continuous and unobstructed passage for the flow of liquid 22 out of the container 23.

A pin 24, or any other suitable means, is positioned transversely of the passage in the pouring tube 14 to retain the ball 19. As shown in Fig. 3, it is preferable that the pin 24 be arcuately curved upwards, so that the liquid from the container will have an unobstructed area through which to flow.

An air vent tube 27 is positioned within the liquid tube 11, one end extending a substantial distance into the container 23 and the opposite end 29 terminating just short of the end 20 of the liquid tube 11, so that when the ball 19 is seated against the end 20 of the liquid tube 11 there will be a slight clearance 30 between the ball 19 and the air tube 27.

One side of the end 29 of the air tube 27 is cut off to provide a beveled or chamfered portion 31, so that the end 29 is separated from the wall of the liquid tube 11 by a space 32.

As shown in Fig. 4, the cross-sectional area of the liquid tube 11 available for the flow of liquid is substantially less than the cross-sectional area of the pouring tube 14, so that for equal velocity of flow in the tubes the liquid tube 11 may be completely filled with the flowing liquid and the pouring tube 14 will not be completely filled. Thus, there is a space 33 above the liquid 22 flowing through the pouring tube 14 for the passage of air to replace the liquid dispensed. As such air reaches the end 12 of the liquid tube, the cross-sectional area of which is substantially all occupied by the flowing liquid, it enters the air vent tube 27 and passes freely into the interior of the container 23. By providing the beveled end 31 on the air tube 27 the entrance of the air into the tube 27 is facilitated and the tendency of air to bubble through the liquid flowing through the tube 11 is substantially prevented.

It will be seen that the recess 21 is positioned in the pouring tube 14 so that it is adjacent the end 20 of the liquid tube. Thus, the ball 19, which serves as a valve for closing the opening into the container 23 to which the device is applied, has only a short travel from open to closed position.

Since the pouring tube 14 and liquid tube 11 may be disassembled, the device can be readily taken apart for cleaning. Care should be exercised in assembling the device to see that the air tube 27 is on the side of the liquid tube opposite that on which the recess 21 in the pouring tube 14 is positioned, so that when the device is in the pouring position, as shown in Fig. 1, the air tube will be at the top of the liquid tube 11, so as to receive the air flowing through the portion 33 of

the pouring tube and conduct it into the interior of the container 23.

It will thus be seen that I have provided a liquid dispensing device through which the liquid may be dispensed from a bottle containing the same in a smooth flowing stream, so that it is convenient to pour out a small quantity of liquid into a receptacle without spilling any of the liquid. Also, it will be seen that when the bottle containing the liquid is standing in upright position the ball will effect to seal the same and prevent any evaporation of the contents of the bottle or loss of flavor or aroma.

Although a single embodiment of the invention has been herein shown and described, it will be understood that numerous details of the construction shown may be altered or omitted without departing from the spirit of this invention as defined in the following claims.

What I claim is:

1. A liquid dispenser comprising an apertured container stopper having a tube therein for the passage of liquid, a pouring tube arranged as a continuation of the liquid tube, an air tube having one end positioned within said liquid tube adjacent the wall thereof, an annular ball receiving seat formed on the liquid tube, said seat positioned adjacent, but slightly spaced outwardly from, the end of the air tube, a ball within the pouring tube and having seating engagement with the seat when the dispenser is in a non-dispensing position to seal both the liquid and air tubes from communication with the atmosphere, and means for retaining the ball in the dispenser.

2. A liquid dispenser comprising an apertured container stopper having a tube therein for the passage of liquid, a pouring tube arranged as a continuation of the liquid tube, an air tube having one end positioned within said liquid tube adjacent the wall thereof, an annular ball receiving seat formed on the liquid tube, said seat positioned adjacent, but slightly spaced outwardly from, the end of the air tube, a ball within the pouring tube and having seating engagement with the seat when the dispenser is in a non-dispensing position to seal both the liquid and air tubes from communication with the atmosphere, a recess in the pouring wall of the tube adjacent the seat for receiving the ball when the dispenser is in a dispensing position, whereby the opening in the tube will be substantially unobstructed, and means for retaining the ball in the dispenser.

3. A liquid dispenser comprising an apertured container stopper having a tube therein for the passage of liquid, an air tube having one end positioned within said liquid tube adjacent the wall thereof, an annular ball receiving seat formed on the liquid tube, said seat positioned adjacent, but slightly spaced outwardly from, the end of the air tube, a ball having seating engagement with the seat when the dispenser is in a non-dispensing position to seal both the liquid and air tubes from communication with the atmosphere, and means for retaining the ball in the dispenser, said means comprising an arcuate pin disposed diametrically across the opening in the liquid tube between the pouring end and the ball and having its concave side disposed adjacent the normal path of liquid being dispensed.

4. A liquid dispenser comprising an apertured container stopper having a tube therein for the passage of liquid, an air tube having one end positioned within said liquid tube adjacent the

wall thereof and of substantially less diameter than the liquid tube, said end having a portion normally adjacent the wall of the liquid tube removed to provide a beveled end on the air tube spaced from the wall of the liquid tube and an opening into the air tube from said space, an annular ball receiving seat formed on the liquid tube, said seat positioned adjacent, but slightly spaced outwardly from, the end of the air tube, a ball within the liquid tube and having seating engagement with the seat when the dispenser is in a non-dispensing position to seal both the liquid and air tubes from communication with the atmosphere, and means for retaining the ball in the dispenser.

5. A liquid dispenser comprising a stopper for a liquid container, said stopper apertured to provide an opening for a liquid tube, a liquid tube in said aperture, a pouring tube associated with one end of the liquid tube to provide a continuous passage for the flow of liquid from the container, an air tube positioned within the liquid tube and of greater length than the liquid tube, one end of said air tube terminating within the liquid tube and short of the end of the liquid tube associated with the pouring tube, a ball retained within the pouring tube and having seating engagement with the end of the liquid tube outwardly from the end of the air tube disposed within the liquid tube when the dispenser is in a non-pouring position, thereby closing the aperture in the stopper to seal both the liquid and air tubes from communication with the atmosphere.

6. A liquid dispenser for bottles and the like comprising an apertured stopper, a liquid tube in the aperture, a detachable pouring tube enclosing one end of the liquid tube, a ball in the pouring tube, said ball having seating engagement with an annular seat formed on the enclosed end of the liquid tube when the dispenser is in a non-dispensing position, a recess in the wall of the pouring tube adjacent the enclosed end of the liquid tube for receiving the ball when the dispenser is in a dispensing position, whereby the opening through the device for the passage of liquid is substantially unobstructed, an air tube secured within the liquid tube and terminating short of the enclosed end, whereby seating of the ball against the enclosed end is not obstructed and the ball and annular seat cooperate to seal both the liquid and air tubes, and means for retaining the ball in the pouring tube.

7. A liquid dispenser comprising an apertured container stopper, a liquid tube having a portion within said aperture and a portion without said aperture, a collar carried by said tube and overlying an outer portion of the stopper, an air tube substantially longer than said liquid tube and having one end disposed therein and along one side, a pouring tube enclosing the outer end of the liquid tube and having a circumferential flange seating against said collar, a ball within the pouring tube and having seating engagement with the outer end of the liquid tube when the dispenser is in non-dispensing position, a recess in the pouring tube adjacent the outer end of the liquid tube for receiving the ball when the dispenser is in dispensing position, whereby the flow of liquid through the dispenser is substantially unobstructed, and means for retaining the ball within the dispenser comprising an arcuate pin disposed across the pouring tube outwardly from a normal position of the ball.