Dec. 12, 1933. W. C. BUTTNER 1,938,892

LIQUID DISPENSER

Filed April 11, 1932

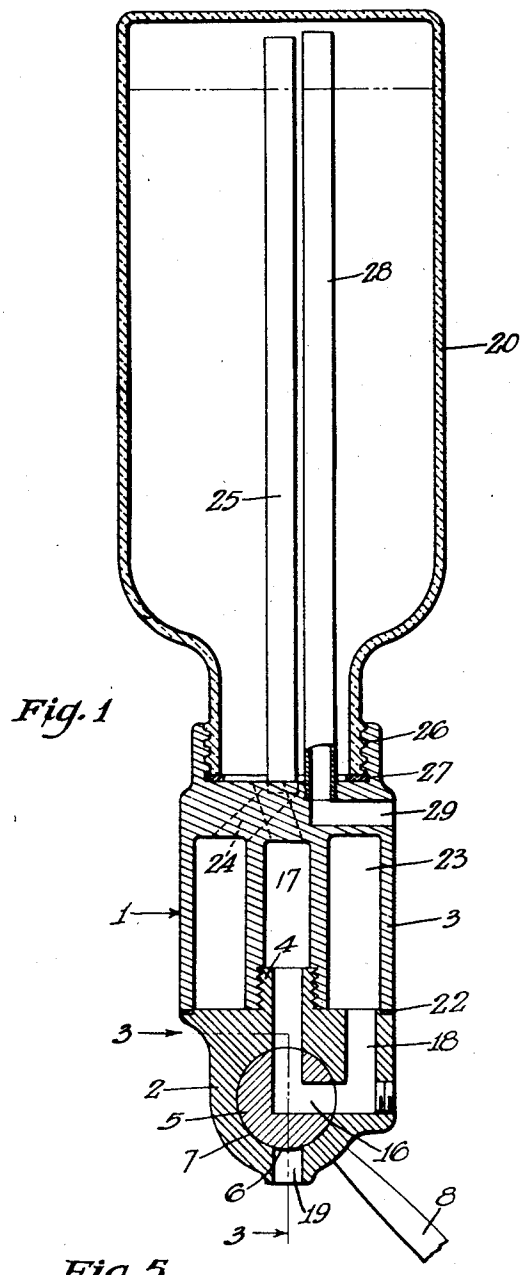


Fig. 1

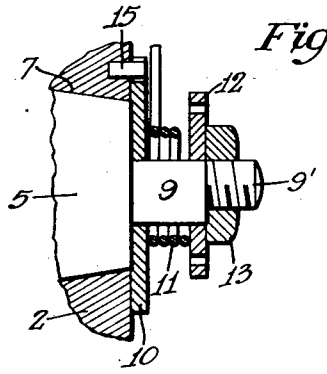
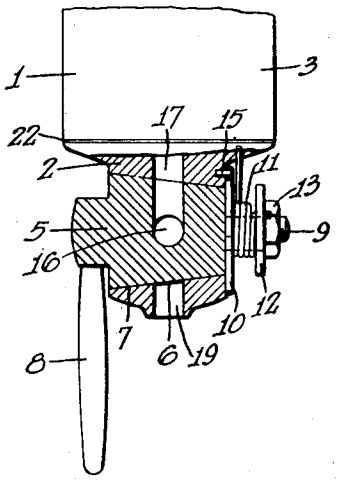


Fig. 2

Fig. 3



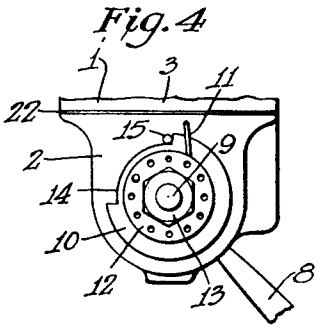


Fig. 4

Fig. 5

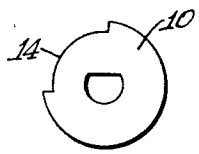


Fig. 6

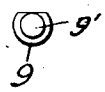
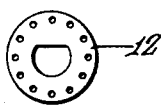


Fig. 7



Inventor:
William C. Buttner
By: Wm. O. Belk
Atty.

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UNITED STATES PATENT OFFICE

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LIQUID DISPENSER

William C. Buttner, Chicago, Ill., assignor to The Bastian-Blessing Company, Chicago, Ill., a corporation of Illinois

Application April 11, 1932. Serial No. 604,457

5 Claims. (Cl. 215—58)

This invention relates to liquid dispensers of a simple type which are adapted to be used at soda fountains and other places for dispensing liquid from a container for fountain and other drinks, and the primary object of the invention is to provide a novel and improved device, simple in construction and efficient in operation, which will uniformly dispense a predetermined quantity of liquid at each operation.

Another object is to provide a valve adapted to be secured over the open mouth of a container substantially filled with the liquid to be dispensed and which container is then inverted and supported in position with the valve suspended therefrom in convenient position for operation to discharge a predetermined quantity of the liquid into a receptacle disposed below the valve.

And a further object of the invention is to prevent the liquid from becoming air bound in the container.

In the accompanying drawing illustrating a selected embodiment of the invention.

Fig. 1 is a sectional view of the valve and container.

Fig. 2 is an enlarged sectional fragmentary view of the return mechanism.

Fig. 3 is a view partly in section on the line 3—3 of Fig. 1.

Fig. 4 is an elevation of the lower end of the dispenser.

Fig. 5 is a detail view of the stop collar.

Fig. 6 is a detail view of the stud on the end of the valve plug.

Fig. 7 is a detail view of the retaining collar.

Referring to the drawing, the casing 1 comprises a valve body 2 and a head 3 secured together by threaded engagement between the head and a lug 4 on the valve body. The valve body 2 has a tapered valve plug 5 extending therethrough and the engaging surfaces are ground to provide a snug working fit. A handle 8 is rigidly mounted on the large end of the plug 5 and a stud 9 is secured on the small end of the plug and extends beyond the valve body and has a reduced threaded end portion 9'. A stop collar 10 is rigidly mounted upon the stud 9. A coil spring 11 is mounted on the stud 9 and has one end thereof fastened in the casing 1 and the other end engaged with a retaining collar 12. The collar 12 is fixedly mounted on the stud 9 and has a plurality of holes therein for selectively receiving one end of the coil spring 11 to provide any desired tension. The collar 12 is held on the stud by a nut 13 on the threaded end portion. A stop 15 is mounted on the casing and a recess 14 is provided in the periphery of the collar 10 to receive the stop. The stop and recess limit the extent of rotation of the valve plug. The plug is provided with a passage 16 which is adapted to register with a passage 17 and a passage 18 or with the passage 18 and a discharge passage 19 in the valve body. The passage 17 extends through the lug 4 on the valve body and the head 3 to the container 20. A gasket 22 is interposed between the head and the valve body at the periphery thereof to prevent leakage. A measuring chamber 23 in the head communicates with the passage 18 in the valve body and through a passage 24 in the head with a standpipe 25 which is secured to the head and is open at its outer end and extends near the bottom of the container. The container is inverted when in dispensing position and is threadedly engaged with the head 3 at 26, and a gasket 27 is interposed between the container and the head to prevent leakage. A vent pipe 28 is mounted on the head and has its upper end open near the bottom of the inverted container 20 and its lower end in communication with the atmosphere through the vent passage 29 in the casing. The coil spring 11 acts to retain the plug normally in the position shown in the drawing and also acts to wedge the plug into the valve body thereby eliminating leakage around the ground surfaces 6 and 7. To assemble the valve with a container substantially full of liquid, the operator first locks the air in the vent pipe 28 by placing his thumb over the outer end of the pipe 29 and then immersing the vent pipe and the stand pipe in the liquid and screws the head on the container, all the while maintaining the air passage closed. Then the container is inverted and the air normally in the neck of the container rises to the bottom of the container which is then in up position and the operator removes his thumb to establish communication between the air in the container and the atmosphere through the vent. As soon as the air in the container rises to the bottom of the container in its up position and establishes communication through the stand pipe 25 and the measuring chamber, the liquid in the container will flow through the passage 17, forcing the air therefrom into the measuring chamber and from the measuring chamber and from the measuring chamber through the passage 24 and stand pipe 25 until the chamber is filled with liquid. The liquid in the stand pipe 25 will always seek the level of the liquid in the container. To operate the valve the operator rotates the plug 5 by means of the handle 8 as far as the stop 15 will permit. The

plug will then establish communication between the passage 18 and the discharge passage 19 and allow the liquid in the measuring chamber to discharge. The liquid in the passage 17 is prevented from flowing because the plug has closed the passage. When the operator removes his hand from the handle 8 the spring 11 returns the valve plug to the position shown in the drawing cutting off communication between the measuring chamber and the discharge passage and re-establishing communication between the container and the measuring chamber and allowing the liquid to flow into the measuring chamber in preparation for the next operation.

The invention provides a liquid dispenser of simple construction adapted for use at soda fountains and similar places which can be easily assembled for use, which can be easily cleansed and maintained in sanitary condition and which is adapted for quick operation to dispense a predetermined quantity of liquid. A dispenser of this kind will be supported above a counter or in some other convenient position to permit a glass to be placed beneath the discharge 19 for receiving the liquid and it is important to prevent the valve from leaking which would result in objectionable dripping from the discharge. For this purpose it is important that the valve plug should at all times operate snugly in its seat and my invention utilizes the return spring 11 for this purpose by causing it to maintain a constant pull on the valve plug to tighten it in its seat.

I have illustrated and described the invention in a simple form suitable for the purpose but it may be desirable to make changes in the form, construction and arrangement of parts to satisfy different conditions and I reserve the right to make any such changes within the scope of the following claims:

I claim:

1. A liquid dispenser comprising a container having an open mouth, a valve casing secured to the container and closing the mouth thereof and having a measuring chamber, a passage communicating with the container, and a discharge passage, a valve plug in the casing and having a passage therein through which communication is established either between the container and the measuring chamber or between the measuring chamber and the discharge passage, said container being arranged in inverted position for operation, said casing having a vent passage therein, and a vent pipe communicating with said passage and extending to the bottom of the container in inverted position to establish communication between the air in the container and the atmosphere.

2. A liquid dispenser comprising a container adapted to be disposed in an inverted position, a valve casing secured to the container and having a head and a valve body, a tapered valve plug operating in the valve body, said casing having a centrally disposed passage therein communicating with the container and with the valve plug, said head having a measuring chamber therein surrounding the centrally disposed passage, said valve body having a passage communicating with said chamber and with the valve plug, a standpipe on the head and extending to the bottom of the container in inverted position, said head having a passage therein communicating with the measuring chamber and with the standpipe, said head also having a vent passage therein, a vent pipe communicating with said vent passage and extending to the bottom of the container in inverted position, said valve body having a discharge passage therein communicating with the valve plug, and said plug having an angular passage therein for normally establishing communication between the passage communicating with the plug and measuring chamber and with the cntrally disposed passage, said plug adapted to be rotated to cut off the centrally disposed passage and to establish communication between said discharge passage and the passage between the plug and measuring chamber.

3. A liquid dispenser comprising a container vented to the atmosphere and adapted to be arranged in an inverted position, a valve casing secured to the container, a single valve plug mounted in the valve casing and having a passage therein adapted for communication with said container, said casing having a chamber therein vented to said container and a passage through which communication is established between the passage in the valve plug and the measuring chamber whereby communication is established between the container and the measuring chamber, said casing having a discharge passage therein adapted to communicate with the passage in said valve plug, means for rotating said valve plug to interrupt the communication between said container and said measuring chamber and for rotating said plug to establish communication between said measuring chamber and said discharge passage through said valve plug, and means for returning said valve plug subsequent to rotation thereof to reestablish communication through the passage therein between said container and said measuring chamber.

4. A liquid dispenser comprising a container, a valve casing secured to the container, a tapered valve plug in the casing and normally positioned to prevent discharge of liquid from the container and movable into a discharge position, a stud on an end of the valve plug extending beyond the casing, a retaining collar fixedly secured to the stud, a spiral spring on the stud between said casing and said collar and having one end thereof connected to the casing, and means adjustably connecting the other end of the spring to the retaining collar whereby said spring acts on the valve plug axially thereof to hold said plug snugly seated to prevent leakage and whereby said spring also tends to rotate said plug from discharge to closed position.

5. A liquid dispenser comprising a container, a valve casing secured to the container, a tapered valve plug in the casing and normally positioned to prevent discharge of liquid from the container and movable into a discharge position, a stud on an end of the valve plug extending beyond the casing, a retaining collar fixedly secured to the stud and having a plurality of spaced openings therein, and a spiral spring on the stud between said casing and said collar and having one end thereof connected to the casing and having the other end thereof selectively seated in an opening in the retaining collar whereby said spring acts on the valve plug axially thereof to hold said plug snugly seated to prevent leakage and whereby said spring also tends to rotate said plug from discharge to closed position, the end of said spring being selectively seated in the openings in the retaining collar to adjust the tension of said spring to thereby vary the effect thereof.

WILLIAM C. BUTTNER.