Oct. 11, 1932. F. M. POTTENGER, JR 1,881,929

COMBINED VALVE AND AIR TIGHT CUSHION FOR BOTTLED WATER DISPENSERS

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Fig. 1

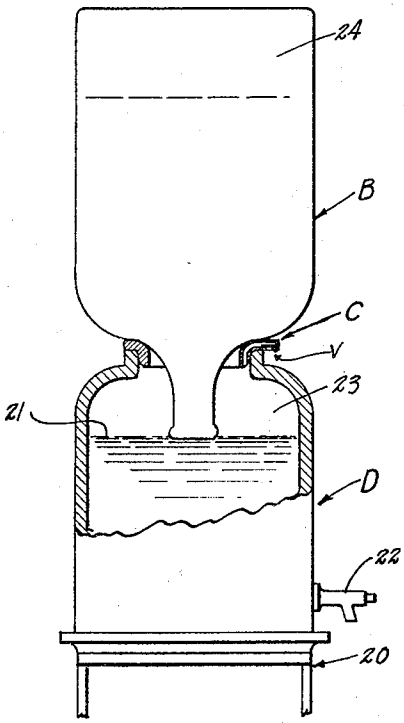


Fig. 2

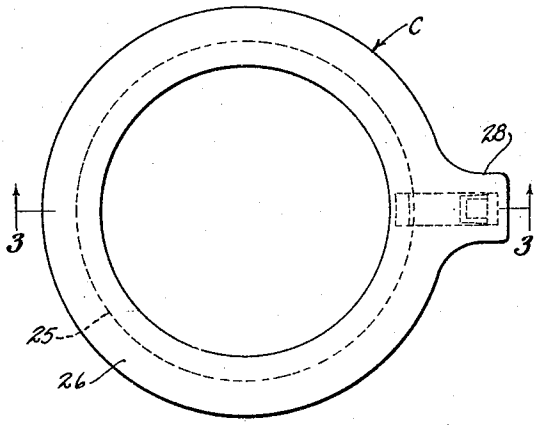


Fig. 3

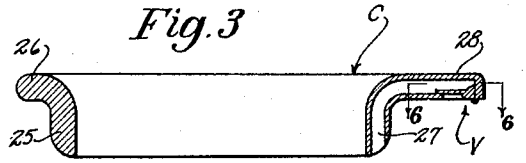


Fig. 5

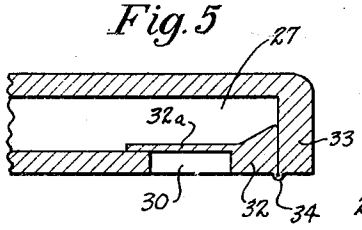


Fig. 6

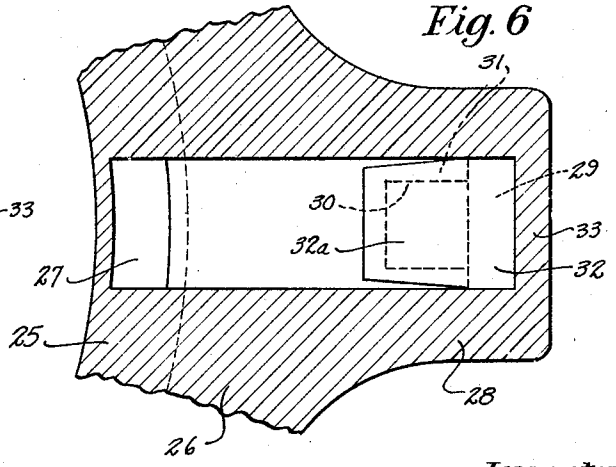
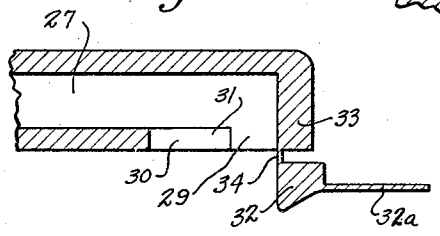


Fig. 4



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COMBINED VALVE AND AIR TIGHT CUSHION FOR BOTTLED WATER DISPENSERS

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Fig. 7

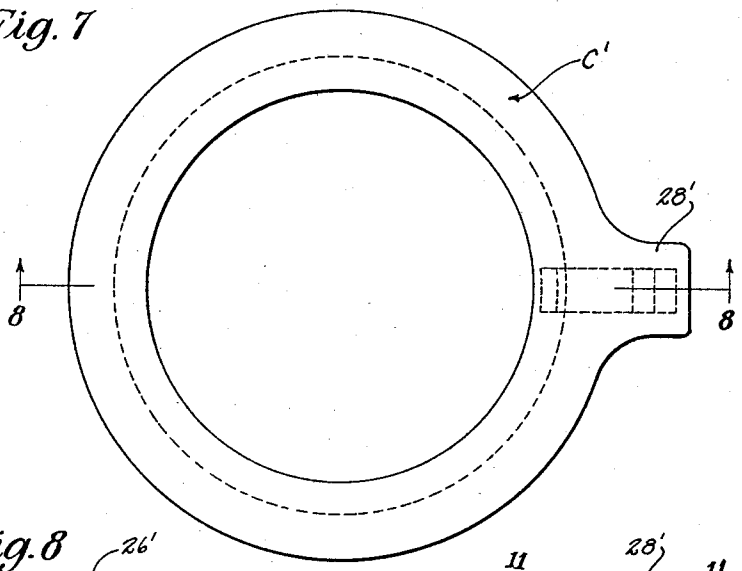


Fig. 8

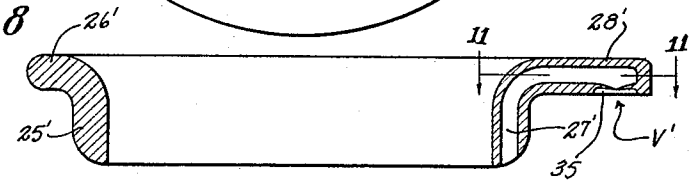


Fig. 9

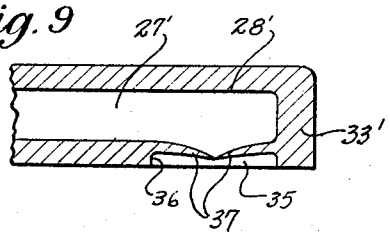


Fig. 10

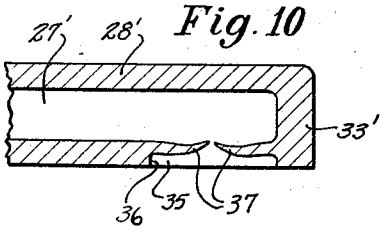
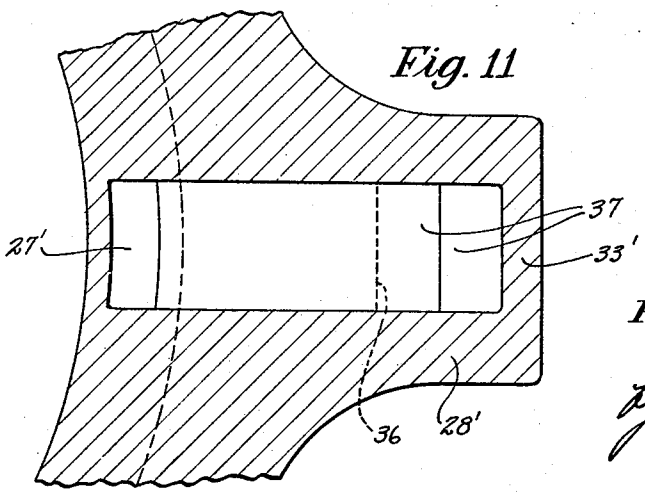


Fig. 11



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Patented Oct. 11, 1932 1,881,929

UNITED STATES PATENT OFFICE

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COMBINED VALVE AND AIR-TIGHT CUSHION FOR BOTTLED WATER DISPENSERS

Application filed December 9, 1930. Serial No. 501,012.

My invention relates to dispensers for bottled water, particularly to a cushion commonly used for seating an inverted bottle in such a dispenser, and more particularly, my invention comprises such a cushion that forms a substantially air-tight seat for the bottle and has a valve-controlled vent-passage connecting the interior of the water container with the atmosphere.

The distribution of bottled water is characterized by elaborate precautions to insure the purity of the water delivered to consumers. If the product is a natural water, its purity is usually certified by chemists. Returned bottles are first thoroughly sterilized, and then refilled in a sanitary manner. After a bottle is sealed, commonly the nozzle of the bottle is encased in a protecting cap to prevent contamination enroute to the consumer.

It is the primary object of my invention to carry this high sanitary standard into the construction of the cushion used to seat an inverted bottle in a water dispenser, lest the whole purpose of the distributors' careful attention to hygienic details be entirely thwarted at the point of consumption.

The usual type of cushion has an open channel to serve for a vent. In contradistinction to such an arrangement, whereby the interior of the dispenser is in continuous communication with the atmosphere and continuously exposed to the dust carried by the atmosphere, my cushion makes a substantially air-tight joint between the inverted bottle and the dispenser, and has a normally closed vent-passage through which the interior of the dispenser is only intermittently exposed to the atmosphere. Thus the period of exposure is reduced to a minimum. In offices and places of employment, my device provides a continuous seal against atmospheric exposure during the extensive periods of time outside of business hours. It is during such periods that sweeping and cleaning of buildings vitiate the air. That the interior air space of the dispenser should not be in communication with the atmosphere at such times is highly important, because not only is the air therein in direct contact with the surface of the water, but, also, in the emptying of the bottle the air is bubbled through the water, thereby tending to transfer any foreign bodies carried by the air to the water. By providing a normally closed valve at the outer end of my vent passage, I use means not contemplated in previous devices, to prevent the entrance of insects into the dispenser.

A further feature of my invention is that instead of having a relatively short vent-passage that terminates at the upper surface of the cushion and presents its open end upwardly, it has a relatively long vent-passage terminating outwardly at an under surface of the cushion and presenting its outer end downwardly. It is a well known fact that dust collects on the upper surfaces to a greater extent than on the lower surfaces of exposed objects, and that an upwardly presented opening is virtually a trap to receive foreign bodies, whereas a downwardly presented opening is not. It is a distinctive feature of my invention that the outer end of the vent passage is entirely overhung by the body of the cushion, so that no foreign objects can drop into the passage.

A further object of my invention is to provided a suitable valve operable by external pressure, a valve that is cheap to manufacture and easily assembled. To this end, I provide for a flap-valve that is manufactured integral with the cushion proper. The connection of the valve to the cushion proper is formed to serve as a suitable hinge whereby the valve, preferably consisting of a plug and a flap, may be folded back into the vent-passage way. The passage way is so formed that the plug is secured in its folded position, and, that the flap rests upon complementary surfaces to make an effective pressure-actuated closure. Because of this arrangement the cushion and valve may be molded out of rubber in one piece, and, if the passage way is designed to snugly retain the plug portion of the valve, only the folding action is necessary to assemble the valve for operation. I thus dispense with the separate manufacture of the valve parts, and with the necessity for using cement or for vulcanizing

in assembling the valve. These and other objects and advantages of my invention will be clear from the detailed description to follow, considered with the accompanying drawings, in which—

Fig. 1 is a side elevation of a bottled water dispenser partly in section incorporating my improvement;

Fig. 2 is a plan view of my rubber cushion;

Fig. 3 is a vertical section of Fig. 2 taken along the line 3—3;

Fig. 4 is an enlarged fragment of my cushion in vertical section, showing the relation of the valve parts before assembly;

Fig. 5 is similar to Fig. 4, showing the valve parts folded into their operative position;

Fig. 6 is an enlarged fragmentary horizontal section of Fig. 3, taken as indicated by the line 6—6;

Fig. 7 is a plan view of a modified form of the rubber cushion;

Fig. 8 is a central vertical section taken as indicated by the lines 8—8 of Fig. 7;

Fig. 9 is an enlarged fragment of Fig. 8 showing the two coacting valve lips of the modified form in their closed position;

Fig. 10 is similar to Fig. 9, showing the valve lips open; and

Fig. 11 is an enlarged fragmentary horizontal section of Fig. 8 taken as indicated by the lines 11—11.

In Fig. 1 a continuous cushion C is interposed between a drinking water dispenser D and an inverted bottle B, the cushion serving as a seat for the latter. The dispenser D rests upon a suitable frame or stand 20. The type of dispenser chosen for illustration is the Olla type, made of unglazed pottery. When a filled bottle of water is seated in the dispenser C, as shown, water passes from the bottle into the dispenser until the surface 21 of the water in the dispenser rises to seal the open end of the bottle, thereby preventing further passage of water from the bottle to the dispenser. As water is drawn off from the dispenser through its faucet 22, the surface 21 of the water in the dispenser is lowered from contact with the bottle, and air from the space 23 in the dispenser above the water enters the bottle and bubbles through the water in the bottle to the space 24 at the top of the inverted bottle. The purpose of a vent in the cushion C is to admit air to the space 23 as required for the above described action.

The cushion C may be of any continuous configuration to conform with the shape of the dispenser and bottle, preferably circular. My preferred form consists of a ring portion 25 having an annular outwardly disposed flange 26 integral therewith and at the top edge thereof. The cushion is suitably dimensioned to seat snugly in the top rim of the dispenser D, and is shaped to embrace the inverted bottle B, making in both cases substantially air-tight contact.

A vent passage 27, preferably rectangular in cross-section, opens inwardly at the bottom of ring portion 25 to communicate with space 23 within the dispenser D. It extends upward through the ring portion 25, outward through annular flange 26, and terminally turns downwardly to communicate with the atmosphere at the under surface of flange 26. Preferably, a portion of the annular flange 26 extends radially outward in the form of an overhanging lip 28. The purpose of this lip is to form a body through which the vent aperture 27 may be extended radially from the ring portion and by which the exterior end of the passage may be effectively shielded from above. The lip also serves to desirably extend the length of the vent passage.

Passage 27, preferably near its outer end, is normally sealed by a valve V which automatically opens to admit the passage of air to space 23 as required. Preferably this valve is a flap valve that is opened by external pressure and, as shown in Figs. 4 and 5, may be made integral with the cushion. For this purpose I terminate vent passage 27 in a T-shaped opening in lip 28, the head 29 of the T extending laterally the full width of the passage, and the stem 30 of the T being of less width than the passage in order to form shoulders 31 along both sides of the passage. A laterally positioned plug 32 is formed integral with the extreme end 33 of lip 28, contiguous edges of the plug and the lip being bridged by a thin portion 34, which serves as a hinge by means of which plug 32 may be pivotally turned or folded inwardly. Integral with plug 32 is an extended flap 32*a*. Plug 32 is so dimensioned that when folded inwardly, as shown in Fig. 5, it is snugly received and retained by the head portion 29 of the T-shaped opening. When the plug is so positioned abutting the outer ends of shoulders 31, flap 32*a* overlies shoulders 31 and extends inwardly to entirely seal the stem portion 30 of the T-shaped opening. The flap 32*a* may be lifted by a slight preponderance of external pressure. It is evident that the valve may be cheaply manufactured and quickly assembled to its operative position.

The operation of my invention may be understood from the foregoing description. When water level 21 drops from contact with the bottle, it is restored by water passing from the bottle to the dispenser and air from space 23 passes into the bottle to compensate for the loss of water. When air in space 23 is sufficiently reduced in pressure by such action, atmospheric pressure opens flap valve V to admit additional air.

A modified form C′ of my cushion shown in Figs. 7 to 10, inclusive, is substantially iden-

tical to the preferred form shown above, except in the construction of the valve V'. All other parts have corresponding numerals.

In this form, passage 27' terminates outwardly in a downwardly presented and preferably rectangular opening 35, the inner edge of which is defined by a shoulder 36. This rectangular opening is spanned by two coacting valve lips 37, contiguous edges of which mutually impinge to normally seal off the opening. Lips 37 have an inherent tendency to maintain the seal as shown in Fig. 9, but are suitably shaped to be sensitive to external pressure, responding by collapsing inwardly and momentarily separating, as shown in Fig. 10. Preferably the lips are integral with the cushion, one springing from shoulder 36 and the other from the overhanging end 33' of lip 28', but the valve may be formed in a separate rectangular plug designed to be cemented into opening 35. In either case, it is preferred that the lips be permanently sealed along their lateral edges to the sides of rectangular opening 35. Actuated by external atmospheric pressure the valve V' serves the same purpose as valve V in the preferred form. One advantage of the modified form is that the two lips, when momentarily collapsed inwardly as indicated in Fig. 10, tend, because of their inherent elasticity, to return to the normal position indicated in Fig. 9 with a quick, positive movement. This outward flip tends to keep the lips free from dust and effectively discourages the entrance of insects.

I have described the preferred embodiment of my invention in specific detail for the purposes of illustration and disclosure only, and I reserve the right to all other embodiments and modifications within the scope of the claims appended hereto.

Having described my invention, I claim:

1. A cushion adapted to form a substantially air-tight joint between an inverted bottle and a water dispenser, comprising: a continuous rubber member having a lateral passage extending therethrough; and a valve normally sealing said passage.

2. A cushion adapted to form a substantially air-tight joint between an inverted bottle and a water dispenser, comprising: a continuous rubber member having a lateral passage extending therethrough; and a pressure-actuated valve normally sealing said passage.

3. A cushion adapted to form a substantially air-tight joint between an inverted bottle and a water dispenser, comprising: a continuous rubber member having a lateral passage extending therethrough, said passage being downwardly disposed at its outer end; and a valve normally sealing said passage.

4. A cushion adapted to form a substantially air-tight seat for an inverted water bottle in a water dispenser, comprising: a rubber member having a ring portion formed with an integral annular flange at the upper edge thereof, said member having a passage therethrough extending from the bottom of the ring portion through the annular flange; and a valve within said passage normally sealing the outer end of said passage and adapted to be opened by external pressure.

5. A cushion adapted to form a substantially air-tight seat for an inverted water bottle in a water dispenser, comprising: a rubber member having a ring portion formed with an integral annular flange at the upper edge thereof, said member having a passage therethrough extending from the bottom of the ring portion through the annular flange, the outer end of the passage being disposed downwardly; and a valve within said passage normally sealing the outer end of said passage and adapted to be opened by external pressure.

6. In a continuous rubber cushion having a passage therethrough and adapted to form a substantially air-tight seat for an inverted bottle in a water dispenser, a valve comprising a flap integral with said cushion and adapted to be folded into an operative position within said passage.

7. In a continuous rubber cushion having a passage therethrough and adapted to form a seat for an inverted bottle in a water dispenser, a valve comprising: a plug integrally hinged to the cushion; and a flap integral with the plug, said plug and flap being adapted to fold into an operative position within said passage, the passage being formed to secure the plug in the folded position and to present suitable complementary valve surfaces to said flap.

8. In a continuous rubber cushion having a passage therethrough and adapted to form a substantially air-tight seal for an inverted bottle in a water dispenser, a valve comprising a pair of mutually opposed coacting lips normally sealing said passage and adapted to be separated by external atmospheric pressure.

9. In a continuous rubber cushion having a passage therethrough and adapted to form a substantially air-tight seal for an inverted bottle in a water dispenser, a valve comprising a pair of outwardly extending mutually opposed coacting lips normally sealing said passage and adapted to be collapsed inwardly by external pressure, said lips having sufficient inherent elasticity to cause a relatively quick return to their normal positions after being so collapsed inwardly.

In witness that I claim the foregoing I have hereunto subscribed my name this 4th day of December 1930.

FRANCIS M. POTTENGER, JR.