July 4, 1939. E. P. EDWARDS 2,164,315

COMBINED CLOSURE AND DISPENSING DEVICE

Filed April 15, 1938 2 Sheets-Sheet 1

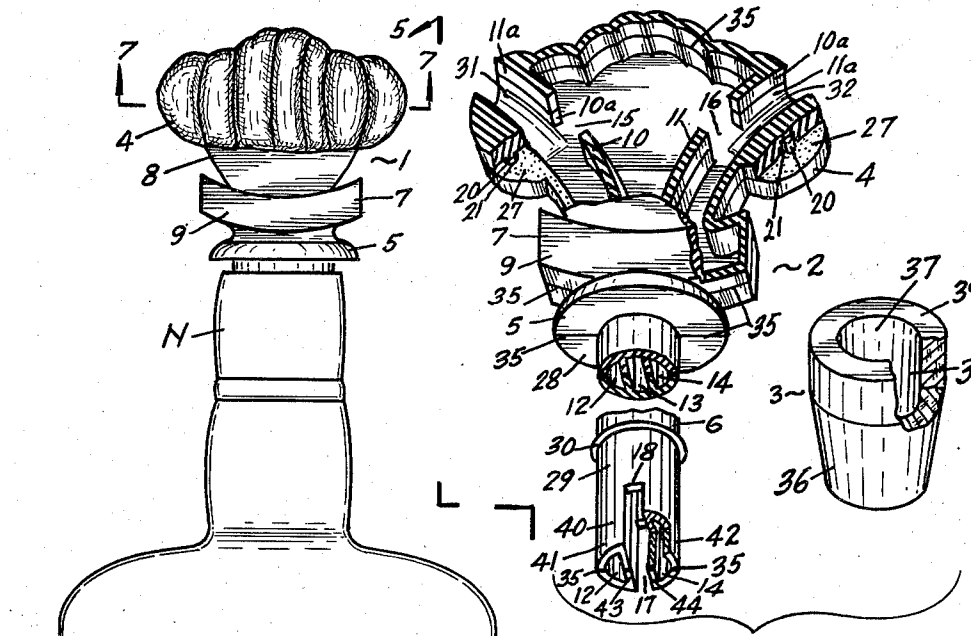


FIG. 2

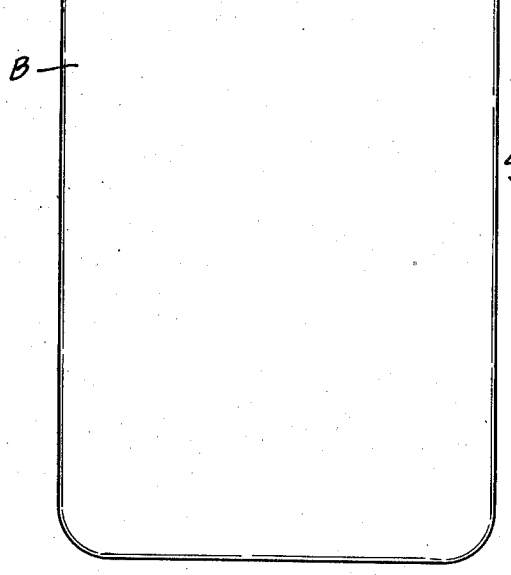


FIG. 1

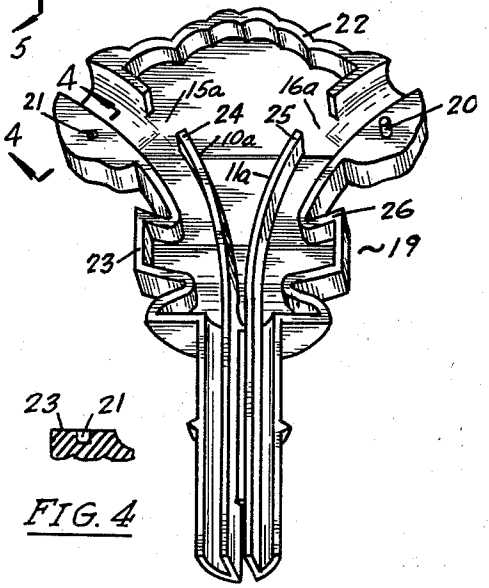


FIG. 3

FIG. 4

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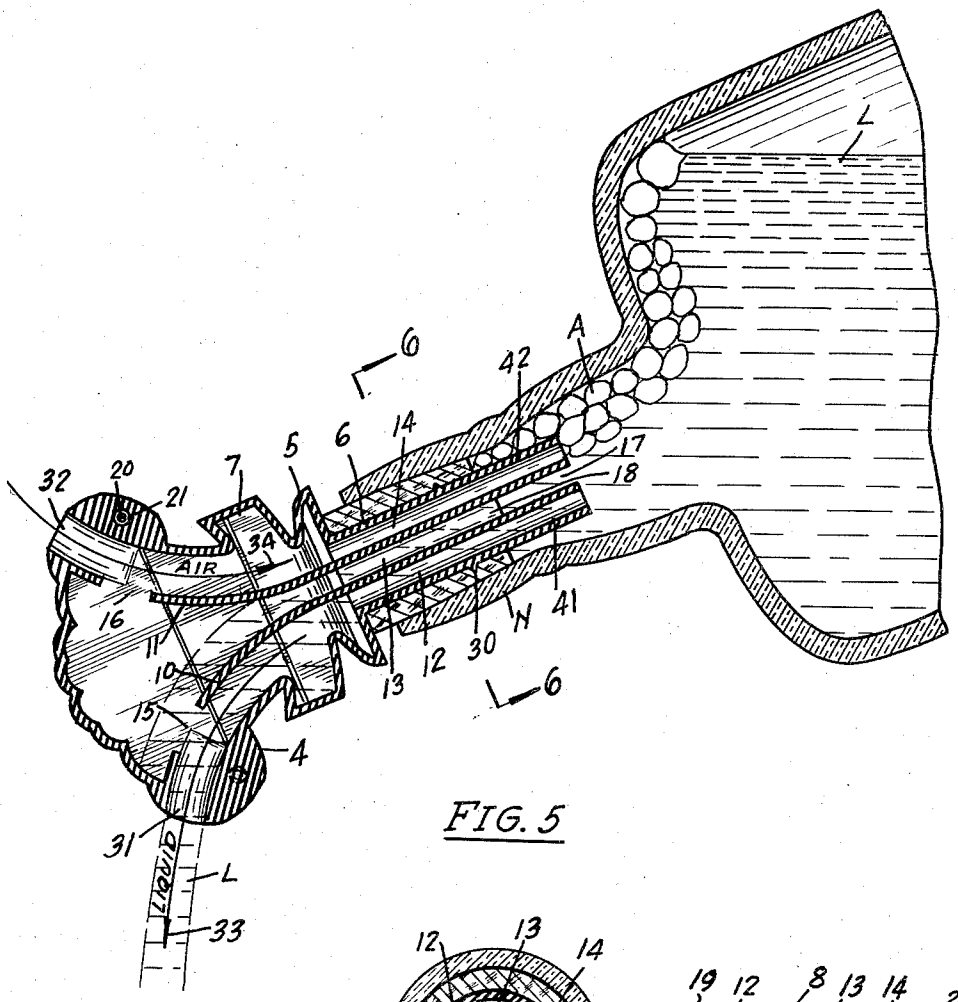


FIG. 5

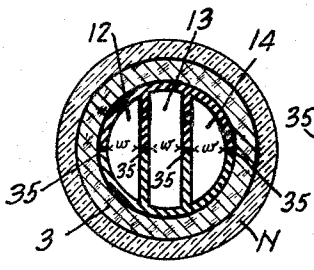


FIG. 6

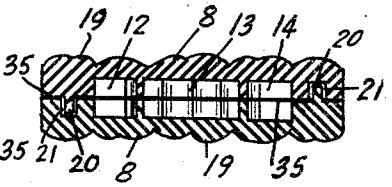


FIG. 7

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COMBINED CLOSURE AND DISPENSING DEVICE

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Application April 15, 1938, Serial No. 202,324

10 Claims. (Cl. 215—79)

The present invention relates to combined closure and dispensing devices for liquid containers, and has particular reference to the type of bottle stopper which, in addition to a pouring passage or outlet for the liquid contained in the bottle, is provided with a vent tube or inlet to admit air to the bottle to replace the liquid being poured therefrom. Stoppers of this type are inserted into the necks of bottles in place of the usual corks. These combined closure and dispensing devices are generally referred to and will be hereinafter designated as "pourers".

It is the primary object of the present invention to provide a pourer of such construction that when the bottle is tilted the liquid will issue entirely from the pouring spout and not from the air vent or inlet.

Another object is to provide a device of the foregoing type, which is of symmetrical construction so that both openings in the device are adapted to serve either as the pouring spout or as the air vent or inlet, depending upon whether the bottle is tilted with one opening or the other disposed downwardly.

A further object of this invention is to provide a pourer from which the liquid being dispensed will flow freely and evenly no matter how much or how little liquid is present in the bottle to which the pourer is attached.

A still further object is to provide a device of the foregoing type, which is of simple and rugged construction, which does not require any particular degree of care in its use and which lends itself readily to being manufactured at a relatively small cost on a large commercial scale.

The inventive concept underlying the invention is capable of being embodied in various mechanical forms, one of which is shown in the accompanying drawings for the purpose of illustrating the invention with the particularity and exactness required by the patent statutes.

In said drawings, Figure 1 is an elevational view of a bottle having my novel pourer positioned in the neck thereof.

Figure 2 is an enlarged perspective view of the pourer body and its bushing or adapter dissociated from each other. Portions have been broken away for the purpose of more clearly showing hidden parts.

Figure 3 is an enlarged perspective view of one of the halves of the pourer body before it is joined to an exactly similar half to form my novel pourer body.

Figure 4 is a section of a fragment taken along the line 4—4 of Figure 3.

Figure 5 is an enlarged longitudinal section of the pourer and a fragment of the bottle shown taken along the line 5—5 of Figure 1. The section is to be understood as having been taken just above the line defined by the contacting surfaces of the two body halves. The bottle is shown in a tilted position with the course of the outflowing liquid and inflowing air being indicated by suitably legended arrows.

Figure 6 is an enlarged section taken along the line 6—6 of Figure 5.

Figure 7 is an enlarged section taken along the line 7—7 of Figure 1.

Referring more specifically to the drawings wherein similar reference numerals and reference letters denote similar parts, reference numeral 1 designates the pourer as a unit which consists of a body portion 2 and a bushing or adapter 3 which is mounted upon the neck 6 of the body portion 2.

The body portion 2 comprises a head 4 in the form of a flat plate, an annular flange 5, and a tubular neck 6. The head 4 may be formed to simulate a trade-mark or fanciful design and may also have a fanciful plaque 7 as an integral part thereof. Advertising indicia, such as a trade-mark or trade slogan, may be inscribed upon the faces 8 of the head 4 and particularly upon the faces 9 of the plaque 7.

The body portion 2 is symmetrical about a plane parallel to its axis, is hollow for its entire length, and is separated into three chambers 12, 13, and 14 by the walls 10 and 11. The wall 10 has the opening 15 formed therein near its upper end thus establishing communication between the chambers 12 and 13. Similarly, the wall 11 has the opening 16 formed therein near the upper end thereof thus establishing communication between the chambers 13 and 14. The neck 6 terminates in the forked end 40 formed by the cut-out 17 which is flanked by the two prongs 41 and 42. The prongs 41 and 42 are tubular members which are in fact parts of the chambers 12 and 14. The inner wall 43 of the prong 41 is that part of the wall 10 which extends beyond the lower end 18 of the chamber 13, and the inner wall 44 of the prong 42 is that part of the wall 11 which extends beyond the lower end 18 of the chamber 13. As a result of this structure, the chambers 12 and 14 extend beyond the lower end of the chamber 13.

I prefer to form the three chambers 12, 13, and 14 of the size shown in the drawings wherein the chamber 12 is equal to the chamber 14 and the width w of the chambers 12, 13, and

14 is equal for the entire length of the neck 6. If desired, the size of these chambers may be varied within certain limits. In all cases, however, the chambers 12 and 14 are always kept equal in size. The two equal chambers 12 and 14 make it possible to utilize either one or the other as the liquid outlet chamber and the air inlet chamber. The combination of the intermediate chamber 13 in communication with the chambers 12 and 14 results in the free and even flow of the liquid no matter how much or how little liquid is present in the bottle. The combination of the chamber 13 with the chambers 12 and 14 with which it is in communication also functions to cause the liquid to issue from the liquid spout and not from the air spout when the bottle is tilted.

For ease in manufacture and assembly, I form the body portion 2 of two exactly similar halves 19 which are joined together in the manner most suitable for the material used. Each body half 19 has extending therefrom a positioning pin 20 and has formed therein a positioning aperture 21. As is clear from Figures 2, 5, and 7, the positioning pin 20 of any body half 19 is received within the positioning aperture 21 of its companion body half.

Each body half has formed therein as an integral part thereof the dividing walls 10*a* and 11*a*. The wall 10*a* has the aperture 15*a* formed therein and the wall 11*a* has the aperture 16*a* formed therein. It is obvious from an inspection of Figure 2 that when two body halves 19 are joined together to form the body portion 2 the walls 10*a* and 11*a* of one body half 19 combine with the walls 11*a* and 10*a* respectively of the other body half 19 to form the dividing walls 10 and 11 respectively. Similarly, the apertures 15*a* and 16*a* of one body half 19 combine with the apertures 16*a* and 15*a* respectively of the other body half 19 to form the communicating apertures 15 and 16 respectively.

The bushing 3 is in the form of a tube the outer shape of which is preferably tapered for a portion of its length as shown at 36. This taper not only facilitates the insertion of the pourer into the bottle but it also adapts the bushing for use in connection with bottles having necks of somewhat differing size. The outside diameters of the bushing are such as will enable the bushing to be readily inserted and snugly received within the necks N of the bottles B with which the pourer is to be associated. The diameter of the bore 37 of the bushing 3 is such that it will snugly receive the neck 6 of the pourer body portion 2. The frictional contact between the outer surface 29 of the neck 6 and the inner surface 38 of the bushing bore 37 is normally sufficient to hold the bushing 3 upon the neck under service conditions. The neck and bushing engaging force due to frictional contact is supplemented by the cooperative action of the ring 30 formed on the neck 6 and the bushing 3. As is clear from Figure 5, the ring 30 forces itself into the bushing body thereby serving as an additional means to hold the bushing upon the neck.

The bushing 3 may be made of cork or of other resilient or elastic material which is not adversely affected by the contents of the bottle for which the device is intended. Them ain body portion 2 of the pourer may be made of metals, alloys, rubber, or organic plastics of the type that can readily be molded and which will not be adversely affected by the liquid which will pass through the pourer. Among such organic plastics may be mentioned the synthetic resins such as "Bakelite", the cellulose plastics such as cellulose acetate, the protein plastics such as casein, as well as the various rubber substitutes or synthetic rubbers such as "Duprene" or "Neoprene". The body portion 2, if desired, may be made of transparent material so that the flow of liquid can be seen through the device.

In the specific embodiment here shown, the liquid L shown in the bottle B is whiskey, the bushing material is cork, and the body portion 2 is made of synthetic resins such as "Bakelite" or "Lucite".

The pourer body portion 2 and the bushing 3 may be made in any desired manner applicable to the particular material of which these elements may be made. In the specific embodiment here shown the body halves 19 which are made of a synthetic resin such as "Bakelite" or "Lucite" are cemented together in the following manner:

Two layers of felt having an area large enough to easily receive thereon the two body halves 19 are placed on a suitable flat surface preferably of glass or metal. The felt is then saturated with a suitable solvent for the "Bakelite". The body halves 19 are then placed on the felt so that the surfaces 22, 23, 24, 25, and 26 of each body half 19 contacts the saturated surface of the felt. The body halves 19 are then pressed to the felt by hand or any other suitable means to insure that the surfaces 22, 23, 24, 25, and 26, and the surfaces of the pin 20 are wetted by the solvent with which the felt is saturated. The two body halves 19 are then placed together as shown in Figure 2 with the positioning pin 20 of each body half 19 within the positioning aperture 21 of the other body half 19 and with the surfaces 22, 23, 24, 25, and 26 of one body half 19 contacting the surfaces 22, 26, 25, 24, and 23 respectively of the other body half. The two body halves so assembled and positioned are then placed between clamps until the solvent is thoroughly dry. The drying operation is done at room temperature and takes between 15 and 30 minutes depending upon the solvent used. When the drying operation has been completed, the two body halves 19 have been cemented together along their contacting surfaces 22, 23, 24, 25, and 26, and along the contacting surfaces of the positioning pin 20 and the positioning aperture 21. The cement is particles 27 of the synthetic resin which had been dissolved by the solvent and then deposited upon the contacting surfaces as the solvent evaporated. The juncture line of the contacting cemented surface is generically designated by the reference numeral 35.

The solvent used depends upon the material of which the body halves 19 are made. Among the good solvents for "Bakelite" are carbon tetrachloride, ethyl acetate, toluene, and xylene. Among the good solvents for "Lucite" are chloroform and ethyl acetate.

After the body portion 2 has been completed, the bushing 3 is mounted upon the neck 6 thereof in the position shown in Figures 1 and 5 where the lower surface 28 of the flange 5 contacts the upper surface 39 of the bushing 3. Although the frictional force of the contacting surfaces 38 and 29 of the bushing bore 37 and the neck 6 are sufficient to prevent movement of the bushing 3 relatively to the neck 6 under normal service conditions, particularly when the neck 6 is provided with a ring 30, nevertheless this force may be supplemented by cementing the bushing 3 to the neck 6. This is readily accomplished by plac-

ing a slight amount of solvent either on the lower surface 28 of the flange 5 or upon the outer surface 29 of the neck 6 or both. As the solvent dries, the particles of the resin which had been in solution are deposited and serve as a cement to bind the contacting surfaces 28 and 39 or 29 and 38, or both together, depending upon where the solvent had been applied.

It is clearly evident from the foregoing drawings that my pourer 1 is provided with two independent and equal openings 31 and 32. In the pouring operation, one of these openings will serve as the liquid outlet and the other will serve as the air inlet, depending upon which way the bottle is tilted. In Figure 5, the opening 31 serves as the liquid outlet and the opening 32 as the air inlet. (The arrow 33 designates the course of the liquid and the arrow 34 and the bubbles A designate the course of the air.) If the position of the bottle B were changed as by rotating the bottle 180 degrees about its axis, then the opening 31 would move to the position now occupied by the opening 32 and the opening 32 would assume the position now occupied by the opening 31. Under such conditions, liquid would issue from the opening 32 and air would enter through the opening 31.

As has already been indicated, the foregoing disclosures and description are merely illustrative and are not intended to be restrictive of the scope of the invention beyond what is required by the language of the claims and the state of the prior art. It is to be distinctly understood that the essential though and concept which characterize my invention may be combined with other concepts and that the details of the illustrative embodiment may be modified in various ways or replaced by other details without affecting the peculiar results obtained and without departing from the spirit and scope of the invention as defined in the appended claims.

I claim:

1. A pourer for a liquid container—said pourer comprising a hollow body member; two partitions positioned within said hollow body member and dividing said hollow body member into a central chamber closed at its upper end and two substantially equal flanking chambers, each of said partitions having an opening formed therein near the upper end thereof thereby establishing communication between the closed upper end of said central chamber and each of said flanking chambers, each of said three chambers being provided with an opening near the lower end thereof for establishing communication between each of said three chambers and the container in association with which the pourer is to be used and each of said flanking chambers being further provided with an opening near the upper end thereof for establishing communication between each of said flanking chambers and the atmosphere.

2. A pourer for a liquid container—said pourer comprising a hollow body member; two partitions positioned within said hollow body member and dividing said hollow body member into a central chamber closed at its upper end and two substantially equal flanking chambers, each of said partitions having an opening formed therein near the upper end thereof for establishing communication between the closed upper end of said central chamber and each of said flanking chambers, each of said three chambers being provided with an opening of substantially equal width near the lower end thereof for establishing communication between each of said three chambers and the container when the pourer is positioned upon said container and each of said flanking chambers being further provided with an opening of substantially equal area near its upper end for establishing communication between each of said flanking chambers and the atmosphere when the pourer is positioned upon said container.

3. A pourer for a liquid container—said pourer comprising a hollow body member terminating in a neck at its lower end; a bushing mounted on said neck; two partitions positioned within said hollow body member, extending into said neck portion, and dividing said hollow body member into a central chamber closed at its upper end and two substantially equal flanking chambers each of said partitions having an aperture formed therein near the upper end thereof thereby establishing communication between the closed upper end of said central chamber and each of said flanking chambers, each of said three chambers being provided with an opening of substantially equal width situated in the lower end of said neck portion for establishing communication between each of said three chambers and the container when the pourer is positioned upon said container and each of said flanking chambers being further provided with an opening near the upper end thereof for establishing communication between each of said flanking chambers and the atmosphere when the pourer is positioned upon said container.

4. A pourer for a liquid container—said pourer comprising a hollow body member terminating in a forked lower end wherein each of the prongs of the fork is a hollow tube; two partitions each being a continuation of the inner wall of one of said prong tubes positioned within said hollow body member and dividing said hollow member into a central chamber and two substantially equal flanking chambers each of said flanking chambers being a continuation of one of said prong tubes, each of said prong tubes and said central chamber being provided with an aperture at the lower end thereof for establishing communication between each of said three chambers and the container when said pourer is positioned upon said container and each of said flanking chambers being further provided with an aperture near its upper end for establishing communication between each of said flanking chambers and the atmosphere when said pourer is positioned upon said container.

5. A pourer for a liquid container—said pourer comprising a hollow body member terminating in a tubular neck having a forked lower end wherein each of the prongs of the fork is a hollow tube with the width of the space between the prongs being substantially equal to the internal width of each of said prong tubes; two partitions each being a continuation of the inner wall of one of said prong tubes positioned within said hollow body member and dividing said body member into a central chamber and two substantially equal flanking chambers each of said flanking chambers being a continuation of one of said prong tubes, each of said prong tubes and said central chamber being provided with an opening at the lower end thereof for establishing communication between each of said three chambers and the container when said pourer is positioned upon said container and each of said flanking chambers being further provided with an opening near its upper end for establishing communi-

cation between each of said flanking chambers and the atmosphere.

6. A pourer for a liquid container—said pourer comprising a hollow body member terminating in a tubular neck having a forked lower end wherein each of the prongs of the fork is a hollow tube with the width of the space between the prongs being substantially equal to the internal width of each of said prong tubes; two partitions each being a continuation of the inner wall of one of said prong tubes positioned within said hollow member and dividing said hollow member into a central chamber and two substantially equal flanking chambers each of said flanking chambers being a continuation of one of said prong tubes and each of said partitions having an opening formed therein thereby establishing communication between said central chamber and each of said flanking chambers, each of said prong tubes and said central chamber being provided with an opening at the lower end thereof for establishing communication between each of said three chambers and the container when said pourer is positioned upon said container and each of said flanking chambers being further provided with an opening near the upper end thereof for establishing communication between each of said flanking chambers and the atmosphere when said pourer is positioned upon said container.

7. A pourer for a liquid container—said pourer comprising a hollow body member terminating in a tubular neck having a forked lower end and wherein each of the prongs of the fork is a hollow tube with the width of the space between the prongs being substantially equal to the internal width of each of said prong tubes; a bushing mounted on said neck; two partitions each being a continuation of the inner wall of one of said prong tubes positioned within said hollow member and dividing said hollow member into a central chamber and two equal flanking chambers each of said flanking chambers being a continuation of one of said prong tubes and each of said partitions having an opening formed therein thereby establishing communication between said central chamber and each of said flanking chambers, each of said prong tubes and said central chamber being provided with an opening at the lower end thereof for establishing communication between each of said three chambers and the container when said pourer is positioned upon said container and each of said flanking chambers being further provided with an opening of substantially equal area near the upper end thereof for establishing communication between each of said flanking chambers and the atmosphere when said pourer is positioned upon said container.

8. A pourer for a liquid container—said pourer comprising a hollow body member terminating in a tubular neck having a forked lower end wherein each of the prongs of the fork is a hollow tube with the width of the space between the prongs being substantially equal to the internal width of each of said prong tubes; two partitions each being a continuation of the inner wall of one of said prong tubes positioned within said hollow member and dividing said hollow member into a central chamber closed at its upper end and two substantially equal flanking chambers each of said flanking chambers being a continuation of one of said prong tubes and each of said partitions having an opening formed therein near the upper end thereof thereby establishing communication between the closed upper end of said central chamber and each of said flanking chambers, each of said prong tubes and said central chamber being provided with an opening at the lower end thereof for establishing communication between each of said three chambers and the container when said pourer is positioned upon said container and each of said flanking chambers being further provided with an opening near the upper end thereof for establishing communication between each of said flanking chambers and the atmosphere when said pourer is positioned upon said container.

9. A pourer for a liquid container—said pourer comprising a hollow body member terminating in a tubular neck having a forked lower end and wherein each of the prongs of the fork is a hollow tube with the width of the space between the prongs being substantially equal to the internal width of each of said prong tubes; a bushing mounted on said neck; two partitions each being a continuation of the inner wall of one of said prong tubes positioned within said hollow member and dividing said hollow member into a central chamber closed at its upper end and two equal flanking chambers each of said flanking chambers being a continuation of one of said prong tubes and each of said partitions having an opening formed therein near the upper end thereof thereby establishing communication between the closed upper end of said central chamber and each of said flanking chambers, each of said prong tubes and said central chamber being provided with an opening at the lower end thereof for establishing communication between each of said three chambers and the container when said pourer is positioned upon said container and each of said flanking chambers being further provided with an opening of substantially equal area near the upper end thereof for establishing communication between each of said flanking chambers and the atmosphere when said pourer is positioned upon said container.

10. A pourer for a liquid container—said pourer comprising a hollow body member divided into a central chamber closed at its upper end and two substantially equal flanking chambers, each of said three chambers having an opening formed therein near the lower end thereof for establishing communication between each of said three chambers and the container in association with which said pourer is to be used, and each of said flanking chambers having two openings formed therein near the upper end thereof, one of said two openings in the upper end of each of said flanking chambers connecting the flanking chamber in which said opening is formed with the central chamber and the other of said two openings in the upper end of each of said flanking chambers connecting the flanking chamber in which said opening is formed with the atmosphere.

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