Feb. 14, 1950 J. W. MUENZE 2,497,134

LIQUID DISPENSING DEVICE

Filed April 25, 1946

Fig. 1.

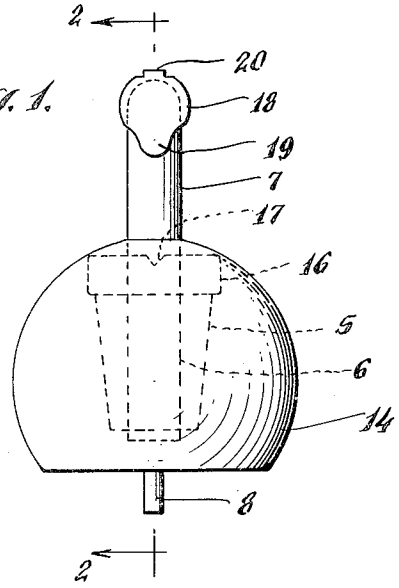


Fig. 4.

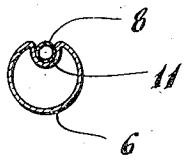


Fig. 3.

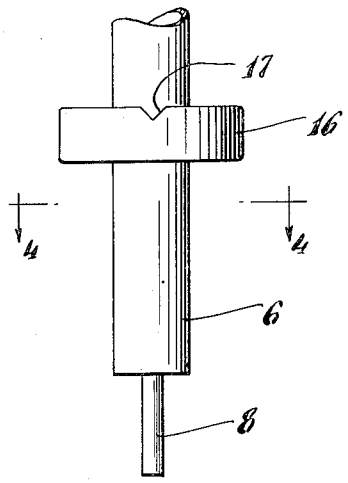
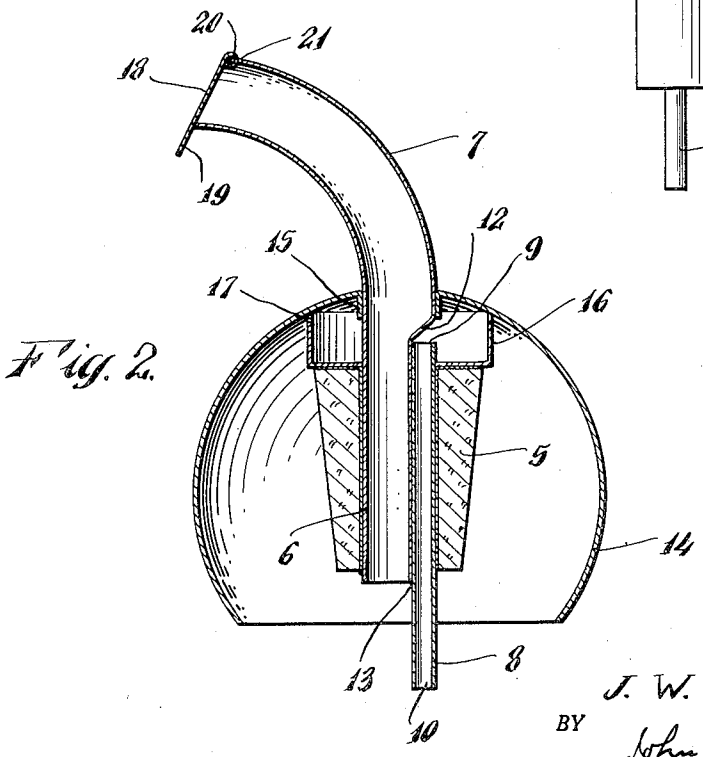


Fig. 2.



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LIQUID DISPENSING DEVICE

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4 Claims. (Cl. 215—79)

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This invention relates to pouring devices for containers, such as liquor bottles, said devices consisting of a pouring spout mounted in a stopper engageable in the pouring opening of a container and an air vent tube mounted exteriorly of the pouring spout and communicating with the interior of the container and the atmosphere to permit a free flow of the contents of the container through the pouring spout by displacing the contents of the container with air from the atmosphere.

It is an object of the invention to provide pouring devices of this character with a shield which enhances the appearance of the device and prevents dirt from entering the air vent tube.

It is another object of the invention to provide a novel mounting of the pouring spout and air vent tube in the bore of a tubular stopper without weakening the wall of the stopper.

It is a further object of the invention to provide a spacer member between the stopper and shield having air vents and in which spacer member the air inlet end of the vent tube terminates, whereby the air intake is through the shield and spacer member to remove dirt and dust from the air.

Another object of the invention is to secure the pouring spout and spacer member to the stopper and prevent displacement of the stopper when the device is removed from the container.

Other objects and advantages of the invention will appear hereinafter.

In the drawing accompanying and forming a part of this application, Figure 1 is a front elevational view of the embodiment of the invention.

Figure 2 is a sectional view, on an enlarged scale, taken on the line 2—2 of Figure 1.

Figure 3 is a fragmentary elevational view of the inlet end portion of the pouring spout, the outlet end portion of the air vent tube and the spacer member mounted on the pouring spout and air vent tube.

Figure 4 is a cross sectional view taken on the line 4—4 of Figure 3 looking in the direction of the arrows and showing the mounting of the air vent tube in a channelled wall portion of the pouring spout.

The embodiment of the invention as illustrated in the accompanying drawing comprises a tubular stopper 5 of suitable resilient material, such as cork or rubber, and usually of tapered formation to facilitate the engagement of the stopper into the pouring opening or mouth of a container, such as a bottle, not shown. The stopper supports a pouring or flow spout in the form of a

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tube having a straight inlet end portion 6 and an arcuate or curved discharge or outlet end portion 7, and the outer diameter of said tube being substantially the same as the diameter of the bore of the tubular stopper, whereby the straight inlet end portion 6 is engaged in said bore with the end of said end portion projecting a short distance from the tapered end of the stopper, as shown in Figures 1 and 2. To prevent displacement of the stopper on the pouring tube portion 6 when the stopper is removed from the pouring opening of the container, a suitable securing medium, such as adhesive, is applied to either or both of the wall of the bore of the stopper and the section of the pouring tube portion 6 engaged in the bore of the stopper before said tube section is engaged in the bore of the stopper.

To assure an even flow of the contents of the container through the pouring spout, it is necessary to provide a continuous and even flow of air into the container to replace the contents being discharged through the pouring spout. This is accomplished by providing an air vent tube 8 mounted in the bore of the stopper 5 in juxtaposed relation with the straight end portion 6 of the pouring spout with the air inlet end 9 projecting from the larger end of the stopper and the air outlet end 10 projecting from the smaller end of the stopper and the inlet end of the pouring spout portion 6. To have the air vent tube juxtaposed to the pouring tube portion 6 without increasing the diameter of the bore of the stopper and weakening the stopper, a section of the wall of the pouring tube portion 6 is arranged with a channel 11 of arcuate formation in cross section conforming to the curvature of the vent tube. The channel 11 extends from the inlet end of said pouring tube portion to a point therein exteriorly of the larger end of the stopper and is of a depth substantially equal to the outer diameter of the air vent tube 8, so that the air vent tube will be within the outer circumference of the pouring tube portion 6 when the air vent tube 8 is engaged in said channel. The air vent tube 8 and pouring tube portion 6 is engaged in the bore of the stopper which is substantially equal to the outer diameter of the pouring tube portion 6. The air inlet end 9 of the vent tube 8 is spaced from the closed end 12 of the channel 11 to provide sufficient space for the intake of air into the air vent tube, as shown in Figure 2. The air vent tube 8 may be secured to the pouring tube portion 6 by any

suitable means, such as solder, as shown at 13 in Figure 2. The channel 11 is in the section of the wall of the pouring tube portion 6 diametrically opposed to the wall section of smallest radius of the curved portion 7 of the pouring tube, whereby the air outlet end 10 of the vent tube 8 will be positioned above the contents of the container entering the inlet end of the pouring tube when the container is in pouring position.

To prevent dirt and dust from entering the air vent tube 8 and enhance the appearance of the device, dome shaped shield 14 is engaged on the straight portion 6 adjacent to the curved portion 7 of the pouring tube by providing the center of the dome of the shield with an opening having an inwardly extending annular flange 15 having an inner diameter substantially equal to the outer diameter of the pouring tube portion 6, whereby there is a tight fit between the flange and the tube portion 6 and the shield is secured to the pouring tube. The shield will encircle the stopper and the portion of the container in which the stopper is engaged with the open end and wall of the shield in spaced relation to the container to permit entrance of air into the shield.

The shield 14 is spaced from the larger end of the stopper 5 and the inlet end 9 of the vent tube 8 by a spacer in the form of a cup shaped member 16 having an opening in the bottom wall substantially equal to the bore of the stopper to engage the member 16 on the pouring tube portion 6 and the air vent tube 8 with the bottom wall of the member 16 abutting the larger end of the stopper and the free edge of the side wall of the member 16 abutting the inner surface of the shield 14, as shown in Figure 2. By this construction and arrangement of parts, the inlet end 9 of the vent tube 8 is enclosed by a chamber formed by the member 16 and the portion of the shield 14 circumscribed by said member 16. To provide inlet 9 of the vent tube 8 with access to the atmosphere, the free edge portion of the side wall of the spacer member 16 is arranged with recesses or notches 17 forming with the shield 14 vent openings, whereby air is drawn into the container by the removal of the contents therefrom through the annular space between the container and the shield, through the vent openings 17 into the inlet 9 of the vent tube 8, through the tube 8 and out of the outlet 10 into the container. As the passage of air from the exterior of the shield into the container is in a sinuous path, any dust or dirt in the air will be separated from the air by gravitation and by impact against the side wall of the spacer member 6 when the air is passing through the vents 17. The spacer member 6 is secured to the stopper 5 by applying adhesive to either or both of the outer surface of the bottom wall of the spacer member and the larger end of the stopper.

The outlet end of the pouring tube portion 7 is normally closed by a closure flap comprising a circular plate 18 having an arcuate portion 19 projecting from a peripheral section of the plate to form the plate of heart shape and a knuckle 20 formed from the material of the plate in diametrically opposed relation to the projection 19. Said knuckle 20 is loosely engaged in a perforation 21 in the wall section of greatest radius of the pouring tube portion 7. The outlet end of the pouring tube portion 7 inclines from the wall section of smallest radius, so that the closure flap plate will close the outlet when the container is in upright position, as shown in Figure 2.

Having thus described my invention, I claim:

1. In a liquid dispensing device, a pouring spout adapted to be mounted in the pouring opening of a container, a shield mounted on an intermediate portion of the spout and adapted to encircle the portion of the container in which the spout is mounted, a cup shaped member having notches in the side wall extending inwardly from the edge of said side wall and mounted on the pouring spout within the shield with the edge of the side wall abutting the shield and the notches forming air vents and the member in encircling relation to the spout, and an air vent tube juxtaposed to the portion of the spout within the shield with one end terminating within the cup shaped member.

2. In a liquid dispensing device, a tubular stopper adapted to be engaged in the pouring opening of a container, a pouring tube having a straight end portion engaged in the bore of the tubular stopper and arranged with a channel in the wall thereof forming a passage with the wall of the bore of the stopper and the opposite end portion of the pouring tube extending from the stopper in an arcuate direction, a cup shaped member having an opening in the bottom wall and notches in the edge of the side wall and engaged on the pouring tube with the bottom wall abutting one end of the stopper, a vent tube mounted in the passage with one end portion extending from the end of the stopper opposite the end abutting the cup shaped member and the opposite end portion extending through the opening in the bottom wall of the cup shaped member and terminating within the cup shaped member, and a dome shaped shield having an opening in the center of the dome and engaged on the pouring tube in abutting relation with the edge of the side wall of the cup shaped member and the shield encircling the stopper with the arcuate end portion of the pouring tube projecting from the shield, the notches in the cup shaped member forming air vents for the vent tube and the cup shaped member spacing the shield from the stopper.

3. A liquid dispensing device as claimed in claim 2, wherein the pouring tube is secured to the wall of the bore of the stopper, and the bottom wall of the cup shaped member is secured to the abutting end of the stopper.

4. In a liquid dispensing device, a tubular stopper adapted to be engaged in the pouring opening of a container, a pouring tube having a straight end portion engaged in the bore of the stopper and arranged with a channel in the exterior surface of the wall thereof forming a passage with the wall of the bore of the stopper and the opposite end portion extending from the stopper in an arcuate direction and arranged with a perforation in the convex wall adjacent said end thereof, a vent tube engaged in the passage with the opposite end portions extending from the opposite ends of the stopper, a heart shaped closure plate pivotally mounted in the perforation of the pouring tube to close said tube in the upright position of the container, a dome shaped shield mounted on the pouring tube intermediate the straight and arcuate end portions thereof, and a cup shaped member having notches in the edge of the side wall and an opening in the bottom wall to engage the member on the pouring and vent tubes with the edge of the side

wall abutting the inner surface of the shield and the bottom wall abutting the stopper to space the shield from the stopper and the notches forming air vents for the vent tube.

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