March 26, 1957 C. D. DUSHEK ET AL 2,786,606

LIQUID CONTAINER AND DISPENSER

Filed June 29, 1955 2 Sheets-Sheet 1

Fig. 1

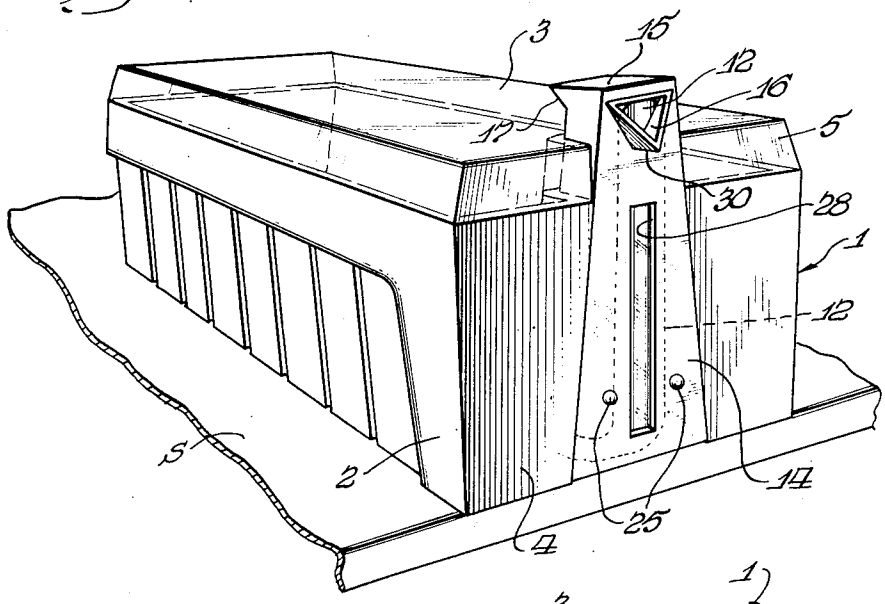
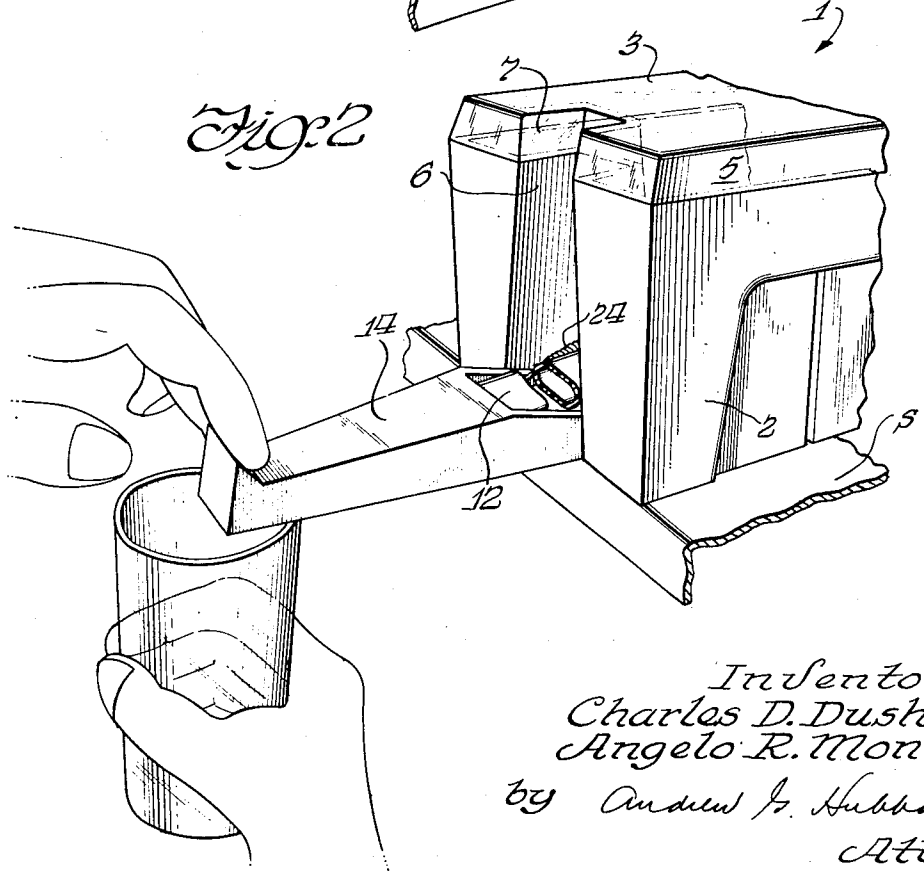


Fig. 2



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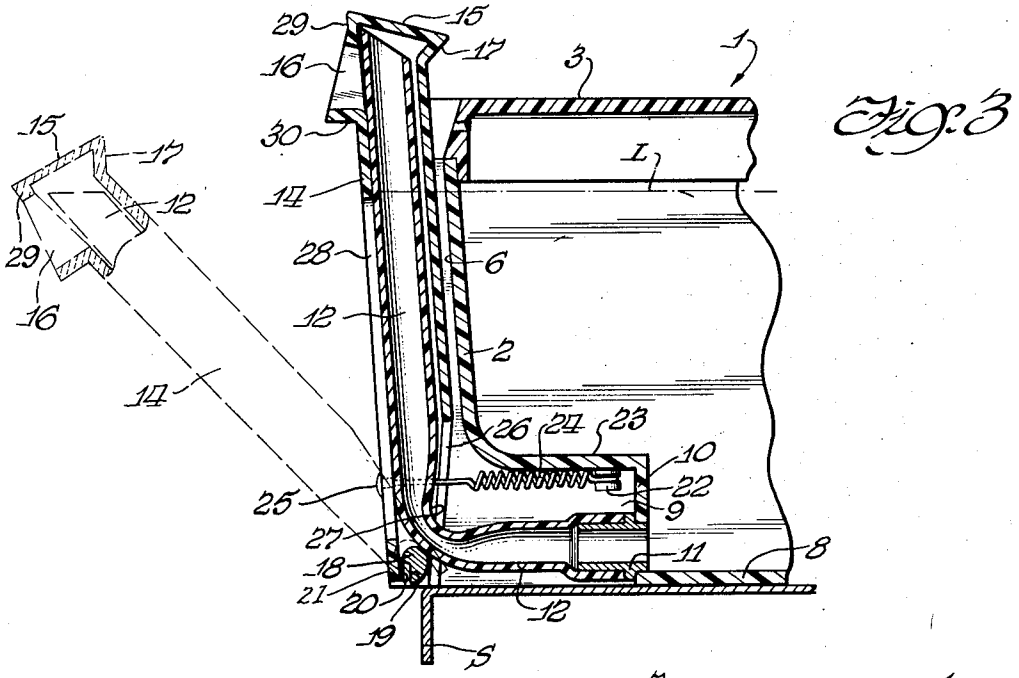


Fig. 3

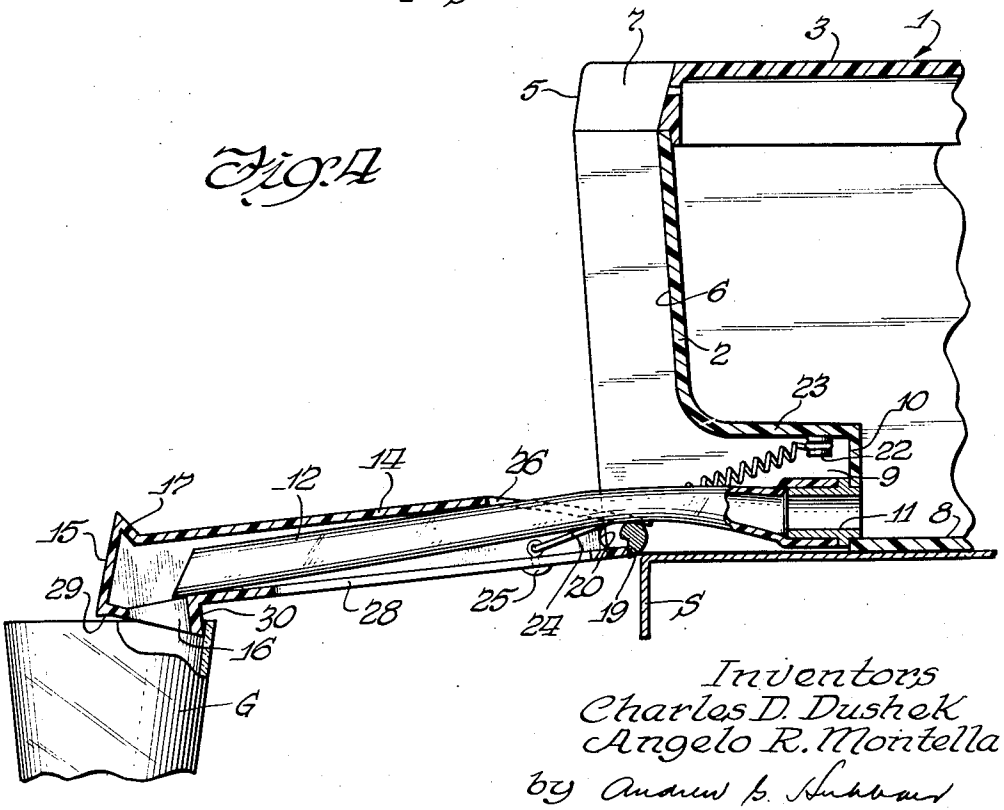


Fig. 4

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United States Patent Office 2,786,606 Patented Mar. 26, 1957

2,786,606

LIQUID CONTAINER AND DISPENSER

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Application June 29, 1955, Serial No. 518,794

5 Claims. (Cl. 222—156)

This invention relates to a liquid container and dispenser for use primarily in household refrigerators.

It is now quite popular to provide domestic refrigerators with drinking water or fruit juice reservoirs and dispensers. Generally speaking, the contemporary devices include a tank arranged for removal for filling and cleaning, and valve means for drawing off the desired amount of liquid. In practice, devices of this type have been subject to the criticism that the valve mechanisms leak, have been difficult to sterilize, and the parts thereof subject to corrosion in use, or distortion during cleaning or sterilization by hot water. With reservoirs used for fruit juices, it has been found that the valve ports and other flow passages may become clogged by reason of the pulp and/or sugar content of the juice. The gauge glasses, float-actuated indicators, or the like, used to disclose the level of the contents of the reservoirs have been subject to leakage or mechanical derangement.

It is an object of the present invention to provide a portable container for liquids having a discharge or draw-off device which is devoid of port-closing devices or other valving mechanisms.

It is another object of the invention to provide a container and dispenser for liquids in which the dispensing mechanism may be sterilized without damage thereto.

It is still another object of the invention to provide a reservoir and dispenser for liquids in which the dispensing device constitutes the liquid level gauge.

It is a further object of the invention to provide a reservoir and dispenser for liquids, in which the discharge opening is effectively shielded against dirt contamination when in non-dispensing position and yet is open for full flow therefrom when brought to dispensing position.

In a presently preferred embodiment of the invention, the front wall of a tank or reservoir and the front wall of a removable cover therefor are formed with relatively deep channels which cooperate to provide a single vertical channel extending the full height of the tank and assembled cover. The channel affords a protective housing for a dispenser casing which is removably pivotally affixed to the tank at the lower front edge portion thereof. The dispenser casing is arranged to be swung between a substantially vertical position in which it is fully contained within the channel in relatively closely fitting relation therewith and a substantially horizontal position representing the maximum liquid dispensing position. A front wall of the casing is provided with a vertically extending slot extending from near the bottom of the casing to a point substantially corresponding with the upper edge of the front tank wall. A flexible tube of transparent material, such as a transparent polyvinyl, is fixed to a discharge spud at the bottom of the front wall of the reservoir and extends freely up through the dispenser casing immediately behind the said vertical opening therein. The level of liquid in the tube is visible through the open slot. The free end of the casing has a capped pouring spout and the open end of the tube reaches up within said capped end to a level well above the maximum possible liquid level of the reservoir when the casing is in its home position within the vertical channel. The roof of the capped opening relatively closely overlies the open end of the tube when the casing is in home position, to protect the pouring edge thereof against dirt.

To draw liquid from the storage tank, it is only necessary for the operator suitably to position a glass relative to the dispenser casing, and, by grasping the casing at its cap portion, rotate it downwardly toward the glass. It is a feature of the invention that during the downward movement of the casing there is a displacement of the casing relative to the tube, whereupon the open end of the tube withdraws from the capped end of the casing to a position within the pouring spout portion thereof. The liquid thus pours freely into the glass. When the desired amount of liquid has been drawn, the operator returns the casing to its home position and, during such return travel, the flow stops as dictated by the level of liquid in the reservoir. With the dispenser in home position, the open end of the tube is again protected within the capped end of the casing.

Other features and advantages will be apparent from the following detailed description of a presently preferred embodiment of the invention, illustrated by the accompanying drawings in which:

Fig. 1 is a front perspective view of a liquid reservoir and dispenser embodying the invention, the dispenser being in home position;

Fig. 2 is a fragmentary perspective view showing the method of drawing liquid from the reservoir;

Fig. 3 is a partial side sectional elevation of the front portion of the reservoir and the dispenser, showing in broken line an intermediate position of the dispenser; and

Fig. 4 is a view similar to Fig. 3, but showing the dispenser in maximum operative position.

Fig. 1 illustrates the reservoir and dispenser in form suitable for placing on the shelf S of a refrigerator or the like. The dimensional relationships of width to height and length are not important; for example, a narrower, higher receptacle would adapt itself to support on the inner liner of the refrigerator door (not shown) or on an inner side wall of the refrigerator cabinet (not shown). In any event, the reservoir comprises a rectangular tank 2 of suitable capacity—for example, two quarts—having a snug-fitting ventilated cover 3. Advantageously, the tank and cover are moulded from suitable plastic materials and the cover, at least, is preferably of a transparent plastic. The front wall 4 of the tank and the front wall 5 of the cover are each provided with an inwardly directed channel, respectively 6, 7; and as clearly appears in Fig. 2, when the cover is in position on the tank, the two channels align to provide a continuous channel. The front of the bottom wall 8 of the tank 2 is configurated to provide a pocket 9 which, as shown in Figs. 3 and 4, comprises a rearwardly extending branch of channel 6.

The lower front wall 10 of the tank 2 is provided with a tubular spud 11 which is cemented or otherwise permanently secured to the reservoir at a low point thereof. Said spud 11 receives a transparent, flexible, plastic tube 12 in liquid tight relationship therewith. Desirably, the tube 12 and, of course, the spud 11, are oval in shape with the major axis of the oval extending parallel to the bottom wall 8 of the tank. The free end of tube 12 is slidably contained within a hollow dispenser casing 14. The casing 14 is essentially a hollow rectangular structure of such shape and dimensions as to enable it snugly to fit within the respective channels 6 and 7 when the tube is in its vertical home position, as illustrated in Fig. 1. The casing is thus adequately protected against damage when not in use. The upper end of the casing 14 is

capped as at 15, and immediately below said cap, is provided with a preferably triangular pouring spout 16. As best shown in Fig. 3, the casing 14 extends above the top of the cover and is provided with a rearwardly extending portion 17 which the operator may grasp to move the casing relative to the tank.

A pivot pin extends between the side walls of the channel 6, and is non-rotatably secured thereto. Said pin preferably has a cylindrical upper portion 18 and a rib 19 extending downwardly therefrom. The forward surface of the rib, considered with respect to the wall 10 of the tank, is slightly forward of the axis of the upper portion 18. The bottom of each side wall of casing 14 is formed with an open-ended arcuate slot 20, by means of which the casing is rotatably supported on the cylindrical portion 18 of the pivot pin. The front transverse wall portion 21 of the casing extends downwardly relative to the pivot pin to a point that when the casing 14 is rotated downwardly through a brief arc—for example, the first thirty degrees of its movement to dispensing position, the bottom edge of the wall portion 21 will engage the surface 19, providing a new pivot point which will displace the casing a fraction of an inch forwardly of the tank as it is brought to dispensing position. There is thus a relative displacement of the casing 14 and tube 12 to withdraw the open end of the tube from the concealment of the cap 15 to a free pouring position at the pouring spout.

A stud 22 is fixed to the wall 23 of the pocket 9, near each side wall of channel 6. Each stud anchors a spring 24, which extends to a hook 25 carried by the front wall of casing 14 near the side edges thereof.

As indicated in Fig. 1, the tube 12 has aproximately the width of the inside wall-to-wall dimension of the upper portion of the dispenser casing 14, and the hook members 25 are positioned relatively closely on each side of the tube near the lower portion of the casing. The front end portions of the spring 24, as viewed in Fig. 3, serve to limit any sideward displacement of the tube 12. When the casing 14 is to be assembled to the tank, the tube 12 is passed through the open end 26 of the casing, the casing placed on the pivot rod 18, and the springs extended and hooked to the respective hook elements 25. The springs are designed to be relatively "soft" so as to exert only enough effort on the casing 14 to hold it in its home position.

As the oval tube 12 bends during the upward rotation of the casing 14, the tube will tend to collapse in approximately the area indicated at 27. The restriction afforded by such contraction is advantageous. For example, if the device has been removed from the refrigerator and filled to the maximum level indicated by the line L, Fig. 3, there is the possibility that the liquid may slosh about within the tank as the device is being returned to the refrigerator. The liquid, of course, occupies the tube 12 to the level L. The restriction at 27 minimizes the spurting of liquid from the tube 12 which might otherwise occur by reason of surging in an unobstructed tube. When the casing is in its home position, the front wall opening 28 thereof exposes the transparent tube 12, whereby the liquid in the tank is readily ascertainable. The cap 15 of said casing and, particularly the overhanging end 29 thereof, protects the open end of the tube 12 against dirt contamination.

When the user wishes to draw a quantity of liquid into a glass or the like, he holds the glass G at the notch 30 at the base of the triangular pouring spout 16, and with the free hand grasps the end of the casing 14 and draws it downwardly. As the casing rotates about pin 18, the engagement of the end of wall portion 21 with leg 19 moves the casing forwardly relative to the tank 1 and the tube 12, as shown in Fig. 3. This movement, plus the displacement of tube 12 within the casing, withdraws the open end of the tube from the capped end of the casing. As the open end of the tube 12 reaches the level L of the contents of the tank, as indicated in broken line in Fig. 3, the displacement of the tube 12 relative to the closed end of the casing is such that liquid commencing to pour from the tube will flow cleanly through the pouring spout into the glass G. Continued downward movement of the casing may bring the casing and tube to the Fig. 4 position, in which the full flow of liquid through the tube is attained. After the desired quantity of liquid has been drawn, the user returns the casing to its home position, preferably maintaining the glass in position beneath the pouring spout.

It is obvious that the device may be thoroughly cleaned. The passage of hot water through the tube 12 has no damaging effect thereon, for there are no valve parts to become distorted by the elevated water temperature. Also, there are no mechanisms which may be corroded by sterilizing fluids. A bristle brush (not shown) may be passed through the tube without difficulty. If necessary, the casing 14 may be detached from the tank to permit the interior of the casing to be sanitized.

While there has ben described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

We claim:

1. A liquid container and dispenser, comprising a tank having a removable cover, a front wall of said tank and said cover each being provided with a relatively deep channel which come into mutual alignment to provide a continuous channel when the cover is placed on said tank, a hollow casing member pivotally mounted at one end within said channel at the base thereof for movement between an upright position in which said casing member substantially completely fills said channel and a dispensing position in which said casing member projects angularly forward of said tank, the free end of said casing member being closed and the front of said casing member having wall means defining a pouring spout portion beneath said closed end, the length of said casing member being such that with said casing member in upright position within said channel the closed end of said casing member is well above the maximum liquid level in said tank, a flexible, open-ended, tube secured to said tank in communication with the bottom portion thereof rearwardly of said channel, said tube passing slidably through said casing whereby said tube is moved by said casing between upright and dispensing positions, the length of said tube being such that with the casing in its upright position the open free end of said tube is enclosed by the closed end of said casing and above the maximum liquid level in said tank, and means for effecting the withdrawal of said open free end from said closed end of the casing into the pouring spout portion thereof for discharge of liquid therethrough as the casing and associated tube are rotated into dispensing position.

2. A liquid container and dispenser according to claim 1, in which said tube has a transparent front wall and the adjacent front wall of said casing has a longitudinal slot behind which said transparent tube wall is visible, whereby when the casing is in its said upright position, the level of liquid in the tank is ascertainable by observation of the liquid level in said tube.

3. A liquid container and dispenser, comprising a tank, a hollow casing member pivotally mounted at one end to said tank at the base thereof for movement between an upright position and a dispensing position in which said casing member projects angularly forward of said tank, the free end of said casing member being closed and the front wall of said casing member having a pouring spout immediately below said closed end, the length of said casing member from the pivot point to the closed end thereof being such that said closed end is above the

maximum liquid level of said tank when the casing member is in upright position, means establishing a first and a second pivot relationship between said casing and said tank, said second relationship becoming effective after said casing has traversed a portion of its swing between upright and dispensing positions, said second pivot relationship displacing said casing forwardly of said tank, and a flexible, open-ended tube secured to said tank in communication with the bottom portion thereof rearwardly of said casing member, said tube passing slidably through said casing member for movement thereby between upright and dispensing positions, the length of said tube being such that with the casing in its upright position, the open free end of said tube is enclosed by the closed upper end of said casing member and the amount of displacement of said casing member being such during its aforesaid movement that the open end of said tube is brought from within said closed end into position to discharge through said pouring spout.

4. A liquid container and dispenser according to claim 3, in which said first pivot comprises a cylindrical pivot bar engaged by arcuate wall portions of said casing member, and said second pivot comprises a rib below said bar and forwardly thereof, said rib being engageable by a transverse wall portion of said casing member as said casing member is rotated downwardly about said pivot bar.

5. A liquid container and dispenser according to claim 3, having spring means connected respectively to said tank and said casing member to urge the latter into an upright position relative to said tank.

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