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J. A. MAXWELL

2,603,389

SIRUP DISPENSING UNIT FOR SODA FOUNTAINS

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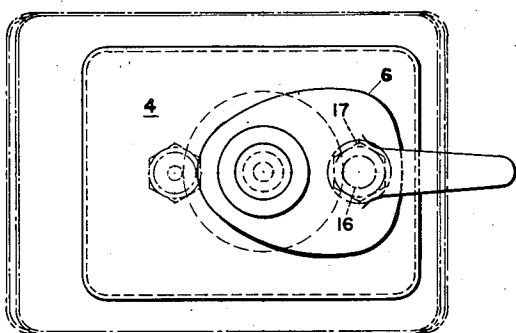


FIG. 2

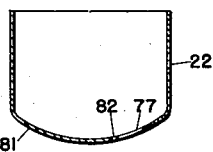
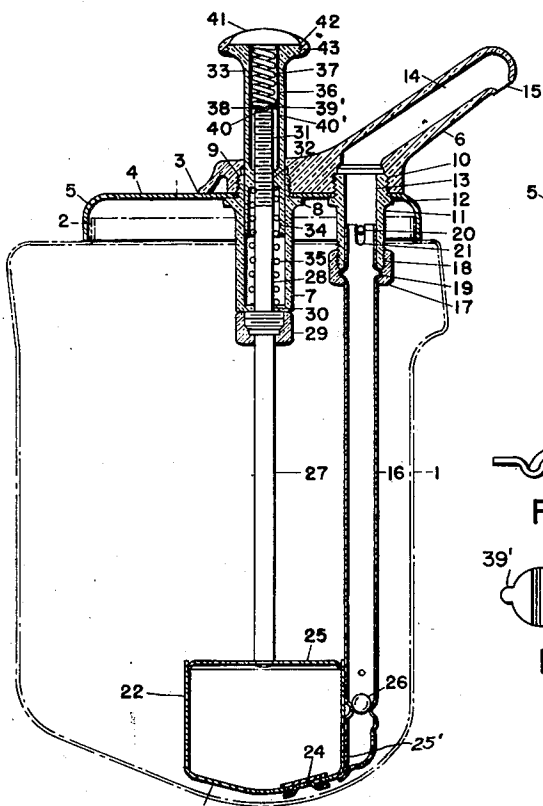


FIG. 10

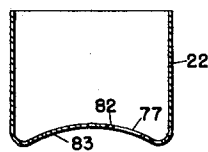


FIG. 13

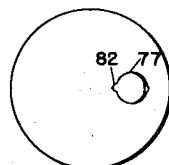


FIG. 11

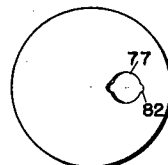


FIG. 14



FIG. 5

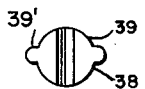


FIG. 4

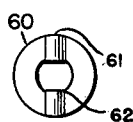


FIG. 6

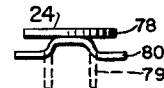


FIG. 9



FIG. 12



FIG. 15

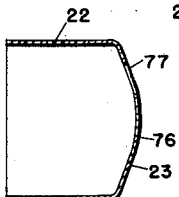


FIG. 7

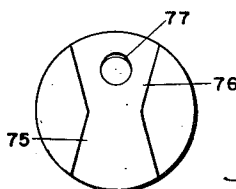


FIG. 8

INVENTOR

John A. Maxwell.

BY

Harness, Dickey & Purce.

ATTORNEYS.

UNITED STATES PATENT OFFICE

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SIRUP DISPENSING UNIT FOR SODA
FOUNTAINS

John A. Maxwell, Detroit, Mich.

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7 Claims. (Cl. 222-309)

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This invention relates to sirup dispensing units for soda fountain cabinets.

It is conventional to mount the pump assembly of sirup dispensing units on the cover of the sirup container. The usual practice is to fasten the pump assembly to the cover by two tubes in such manner that one of the tubes can be used to convey the sirup from the pump cylinder to the dispensing nozzle. In these conventional assemblies the pump cylinder is closed at the bottom by a threaded disk which offers the only means of access to the inside of the pump cylinder, and, as a result, the pump is seldom, if ever, opened for proper cleaning.

An important object of the invention is to associate the pump assembly with the cover in such manner that it is readily disassembled for cleaning and can be easily assembled.

Another object of the invention is to form all the parts of a corrosion resistant metal, particularly stainless steel.

In the drawings:

Figure 1 is a vertical sectional view of a sirup dispensing unit embodying the invention and particularly showing the manner in which the pump is assembled for easy cleaning and illustrating its relation to the sirup container;

Figure 2 is a top plan view thereof;

Figure 3 is a vertical sectional view of a modified form of the invention having novel means for adjusting the stroke of the pump plunger;

Figures 4 and 5 are plan and side elevational views respectively of a spring detent member which comprises a part of the pump assembly shown in Figure 1;

Figure 6 is a plan view of a spring detent member which comprises a part of the modified pump assembly shown in Figure 3;

Figures 7 and 8 are longitudinal sectional and bottom plan views respectively of the pump cylinder employed in the form of the invention shown in Figure 1;

Figure 9 is a side elevational view of a flap valve particularly adapted for use with the pump cylinder shown in Figures 1, 7, and 8;

Figures 10 and 11 are longitudinal sectional and bottom plan views respectively of a modified form of pump cylinder;

Figure 12 is a side elevational view of a flap valve particularly adapted for use with the pump cylinder shown in Figures 10 and 11;

Figures 13 and 14 are longitudinal sectional and plan views respectively of still another modified form of a pump cylinder, and

Figure 15 is a side elevational view of a flap valve particularly adapted for use with the pump cylinder shown in Figures 13 and 14.

The sirup dispensing unit comprises a sirup container 1 preferably made of stainless steel,

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having a top opening and an upstanding flange 2 around the opening which flange retains a cover unit 3. This cover unit comprises a cover plate 4 having a down-turned flange 5 which fits over the flange 2. Surmounting the cover plate 4 is a nozzle casting 6, and the latter is fastened securely by a tubular spring container 7 which has a radial flange 8 below the cover and an externally threaded portion which extends upwardly through the cover into an internally threaded opening 9 provided in the under surface of the casting. Screwed into an internally threaded opening 10 provided in the casting 6 at one side of the opening 9 is a tubular pump supporting member 11 which has a radial flange 12 disposed to clamp the cover plate 4. Aligned with the internal bore 13 of member 11 is a passage 14 which extends through the casting 16 and terminates in a downwardly directed port 15 for discharging sirup into a glass.

A vertical tube 16 is arranged in the container 1 with the upper terminal portion extending into the bore 13, and the latter is clamped solidly to member 11 by a nut 17 which is screwed on threads 18 and clamps a bulge 19 formed in the tube 16 against the bottom of member 11. The rotative position of tube 16 in the member 11 is determined by a transverse pin 20 which registers with a slot 21 in the tube.

Fixed to the lower terminal portion of tube 16 and arranged laterally thereof is a pump cylinder 22 which has a closed bottom 23. As clearly shown in the drawing, the bottom 23 is provided with a one-way flap valve which permits a sirup from container 1 to enter the cylinder on the stroke of a plunger 25 in the cylinder. Sirup in the cylinder 22 enters tube 16 through an aperture 25'. In tube 16 there is provided a ball check valve 26 which permits sirup to flow upwardly through tube 16 but prevents return flow into cylinder 22.

Plunger 25 is operated by a plunger rod 27 which extends upwardly therefrom and is connected to a push rod 28 by a nut 29, which nut engages container 7 to limit upward movement of the plunger. Push rod 28 extends upwardly through a hole 30 in the lower end of container 7 and the upper portion thereof is provided with external threads 31 which engage the internal threads 32 in a push piece 33. In the lower end of push piece 33 is a countersink 34 which receives the upper part of a spring 35 located in the spring container 7. Push piece 33 also is counterbored at the top as shown at 36. Located in counterbore 36 is a spring 37 bearing against spring detent member 38. Spring detent member 38 (Figs. 4 and 5) is generally in the form of a disk and has a downwardly pressed ridge 39 which fits into a slot 40 in the top of rod 28. To prevent the spring detent member from turn-

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ing in the push piece 33 it is provided with radial projections 39' which fit into vertical grooves 40' in the sides of counterbore 36.

The upper end of spring 37 is confined by a porcelain button 41 which is held in place by a clamping nut 42 mounted on the threads 43 on the head of push piece 33. The lower end of spring 37 bears downwardly against and is confined by the detent member 38. Thus the stroke of plunger 25 can be regulated or adjusted by tightening or loosening push piece 33 on rod 28, and spring 37 and detent member 38 coact to maintain the adjustment. This adjustment is made with the cover unit removed from the container and the plunger 25 and plunger rod 27 held manually against rotation. The detent 38 rotates with the push piece 33 and on the upper end of push rod 28. During initial rotation of the push piece 33 the ridge 39 is forced out of the slot 40 and the ridge drops back into the slot each half revolution of the push piece. The operator can distinctly feel the detent each time the ridge 39 drops into the slot 40, and this apprises the operator of how much adjustment is being made. Also, interlocking engagement between the ridge 39 and slot 40 holds the push piece 33 in the selected adjusted position.

To assemble the pump, tube 16 is inserted in passage 13 so that slot 21 registers with pin 20 and union 17 is tightened. Rod 27 will then be aligned with push rod 28 so that union 29 can be tightened. Moreover, it will be readily apparent that cylinder 22 and plunger 25 can be easily separated for cleaning when tube 16 and rod 27 are disconnected.

In Figure 3 there is shown an alternate method of adjusting the length of the plunger stroke. Nozzle casting 50 is the same as nozzle casting 6 except that there is provided a downwardly extending spring container portion 51 passing through a hole 52 in cover plate 4 and clamped thereto by nut 53. The pump support member 11 and pump supporting tube 16 are connected to the cover plate 4 in the same way as shown in Figure 1.

Push piece 54 has an internal thread 55 which turns on thread 56 on push rod 57 which projects through a hole 58 in the bottom of the spring container portion 51 of the nozzle casting 50. Push rod 57 is provided with a flattened section 59 over which fits a spring detent member 60 (Figs. 3 and 6) having an upwardly pressed ridge 61. This spring detent member 60 has a hole punched therein with flattened sides 62 which fit over the flattened section 59 of push rod 57 to prevent the spring detent member from rotating.

To assemble the pump shown in Figure 3, push rod 57 is passed through hole 58 and the plunger rod 27 is fastened to it by nut 63. Tube 16 is connected to the pump support member 11 by the nut 17 as previously described. Spring 64 is then inserted in the spring containing portion 51 of the nozzle casting 50 and the spring detent member 60 is placed on top of the spring. Push piece 54 is then screwed on the threads 56 on push rod 57 and presses against detent member 60. In the bottom of push piece 54 is a notch which corresponds to and receives the upwardly pressed ridge 61 of the spring detent member 60. This ridge normally positions push piece 54, and it will be readily apparent that the notch in push piece 54 and the ridge 61 function generally in the same manner and

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serve generally the same purpose as the ridge 39 and slot 40 hereinabove described. By holding rod 27 push piece 54 can be turned against the force of the spring detent member 60 and screwed down on threads 56 to regulate the stroke of plunger 25. While the plunger rod 27 is held and push piece 54 is turned, the operator can distinctly feel the turning against the detent operating between the rod and push piece when each half revolution has been made. Push piece 54 is provided with a porcelain button 41, having the name of the particular sirup flavor, which is positioned by clamping nut 42 as previously described in Figure 1.

In the forming of the parts out of stainless steel, according to one of the objects of this invention, a particular problem is the drawing of the pump cylinder 22 so as to accommodate the flap valve 24 located in the bottom of the cylinder. In Figure 1 cylinder 22 is formed according to Figures 7 and 8 wherein the bottom 23 is formed with two flattened sections 75 and 76 having a hole 77 punched in one of the flattened sections. The flap valve 24, Figure 9, is formed of a round, flat disk 78 of stainless steel. To the bottom of this disk is fastened, as by spot welding, a U-shaped stainless steel wire 79. Disk 78 is larger than hole 77 and the U-shaped wire is inserted in the hole 77 from inside the cylinder and the ends bent over as shown at 80.

It has been found that this squared bottom section requires a secondary operation in manufacture, whereas by making the bottom of the cylinder in a round or preferably oval shape 81 shown in Figures 10 and 11 this secondary operation can be eliminated. In this form the flap valve 24 is stamped to have a curvature 78' (Figure 12) to conform with the curvature of the bottom 81 of cylinder 22 as shown in Figure 10. If the curvature of this bottom is other than spherical the valve has to be positioned so as always to conform with the curvature of the bottom of the cylinder. In this form two indentures 82 are formed on opposite sides of hole 77 and the U-shaped stainless steel wire 79 is formed so as to fit into these indentures 82 and maintain the valve curvature 78' in alignment with the curvature of bottom 81. After insertion of the U-shaped wire in these openings the ends are bent over as shown at 80 and described above.

It has also been found that by drawing the cylinder 22 having a concave bottom 83 (Figures 13 and 14) that this secondary operation can be omitted. In this modification the indentures 82 are also formed on opposite sides of hole 77 to maintain the valve curvature 78'' (Figure 15) in alignment with the curvature of the bottom 83 as described above. After the U-shaped steel wire 79 is inserted into these indentures 82 the wire is bent over as shown at 80.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the size, shape, and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the appended claims.

Having thus described the invention, I claim:

1. In a sirup dispensing unit of the type having a container, a cover unit including a cover plate, means for adjusting the amount of sirup dispensed per operation of said unit comprising a nozzle mounted on the cover plate, a tube connected to said nozzle and coactive therewith to

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discharge sirup from the container, a pump including a plunger and cylinder for forcing sirup into said tube, a reciprocable rod for operating said plunger, said rod having a radial shoulder, a stop engageable with said shoulder for limiting the upward movement of the rod, a spring for urging the shoulder of said rod upward against the stop, a detent member confining one end of the spring and constrained to rotate with said rod, and a push piece rotatably threaded on said rod and coacting with said detent member, whereby said push piece is restrained from rotating on said threads during normal operation of the pump, but can be so rotated against the force of said detent when it is desired to adjust the amount of sirup dispensed.

2. The combination of claim 1 further characterized wherein said tube is the sole support for said pump cylinder, a detachable connection between the tube and said nozzle, a fixed connection between the cylinder and said tube, and means associated with said detachable connection for aligning said cylinder and said plunger.

3. The combination of claim 1 further characterized wherein said tube is the sole support for said pump cylinder, a detachable connection between the tube and said nozzle, a fixed connection between the cylinder and said tube, means associated with said detachable connection for aligning said cylinder with said plunger and wherein said rod means comprises a plunger rod connected to said plunger, and a vertically slidable push rod above the plunger rod, and means detachably connecting said plunger rod to said push rod whereby said tube and cylinder and said plunger rod and plunger can be detached from said cover unit, said push piece being threaded on said push rod.

4. A sirup dispensing unit for soda fountains including a container and a cover therefor, a nozzle mounted on said cover having a downwardly extending portion and a discharge passage therethrough, a tube forming a continuation of said passage and extending downwardly into said container, a cylinder located adjacent the bottom of said container and attached to said tube, said tube being the sole support of said cylinder, a plunger in said cylinder and a reciprocating rod means mounted on said cover for operating said plunger, and means for aligning said cylinder and said plunger, said aligning means comprising a bore in said downwardly extending portion parallel to said reciprocating rod means and forming a part of said passage, said bore telescopically receiving the upper end of said tube to vertically align the same, a pin positioned across said bore adapted to be received in a slot in said tube when said cylinder is rotatively positioned to register with said plunger, a radial shoulder on said tube, and screw means to lock said shoulder against said downwardly extending portion and retain said cylinder against axial movement.

5. In a sirup dispensing unit of the type having a container, a cover unit including a cover plate, and means for adjusting the amount of sirup dispensed per operation of said unit having in combination therewith a nozzle mounted on the cover plate, a tube connected to said nozzle and coactive therewith to discharge sirup from the container, a pump including a plunger and cylinder for forcing sirup into said tube, a reciprocal rod for operating said plunger, said rod having a radial shoulder, a stop engageable

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with said shoulder for limiting the upward movement of the rod, a spring for urging the shoulder of said rod upward against the stop, a push piece rotatably threaded on said rod, stop means limiting the downward movement of said push piece and detent means coacting between said rod and said push piece whereby said push piece is prevented from rotating on said threads during normal operation of said pump, but can be so rotated against the force of said detent when it is desired to adjust the amount of sirup dispensed.

6. In a sirup dispensing unit of a type having a container, a cover unit including a cover plate, and means for adjusting the amount of sirup dispensed per operation of said unit the improvement comprising a nozzle mounted on the cover plate, a tube connected to said nozzle and coactive therewith to discharge a sirup from said container, a pump including a plunger and cylinder for forcing sirup into said tube, a reciprocable rod for operating said plunger, said rod having a radial shoulder, a stop engageable with said shoulder for limiting the upward movement of the rod, a spring for urging the shoulder of said rod upward against the stop, a push piece rotatably threaded on said rod, stop means limiting the downward movement of said push piece, a detent coacting between said push piece and said rod to prevent relative rotation therebetween during normal operation thereof, means to constrain said detent means to rotate with said push piece and a spring to cause operative engagement between said detent means and said rod, whereby said push piece can be rotated against the force of said detent when it is desired to adjust the amount of sirup dispensed.

7. In a sirup dispensing unit of the type having a container and a cover plate therefor, means for adjusting the amount of sirup dispensed per operation of said unit comprising a nozzle mounted on the cover plate, a tube detachably connected to said nozzle and coactive therewith to discharge sirup from the container, a pump including a plunger and cylinder for forcing sirup into said tube, a reciprocating rod for operating said plunger slidably mounted on said cover plate and connected to said plunger, a fixed connection between the tube and said cylinder for supporting said cylinder, and pin and slot means associated with said detachable connection for aligning said cylinder and said plunger, said rod having a radial shoulder, a stop engageable with said shoulder for limiting the upward movement of the rod, a spring for urging the shoulder of said rod upward against the stop, a push piece rotatably threaded on said rod, and detent means coacting between said rod and said push piece whereby said push piece is restrained from rotating on said threads during normal operation of said pump, but can be so rotated against the force of said detent when it is desired to adjust the amount of sirup dispensed.

JOHN A. MAXWELL.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
967,251	Schutt	Aug. 16, 1910
1,290,941	Eckert	Jan. 14, 1919
1,918,903	Fletcher	July 18, 1933
1,919,173	Schutt	July 18, 1933