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SIRUP PUMP

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Fig. 1.

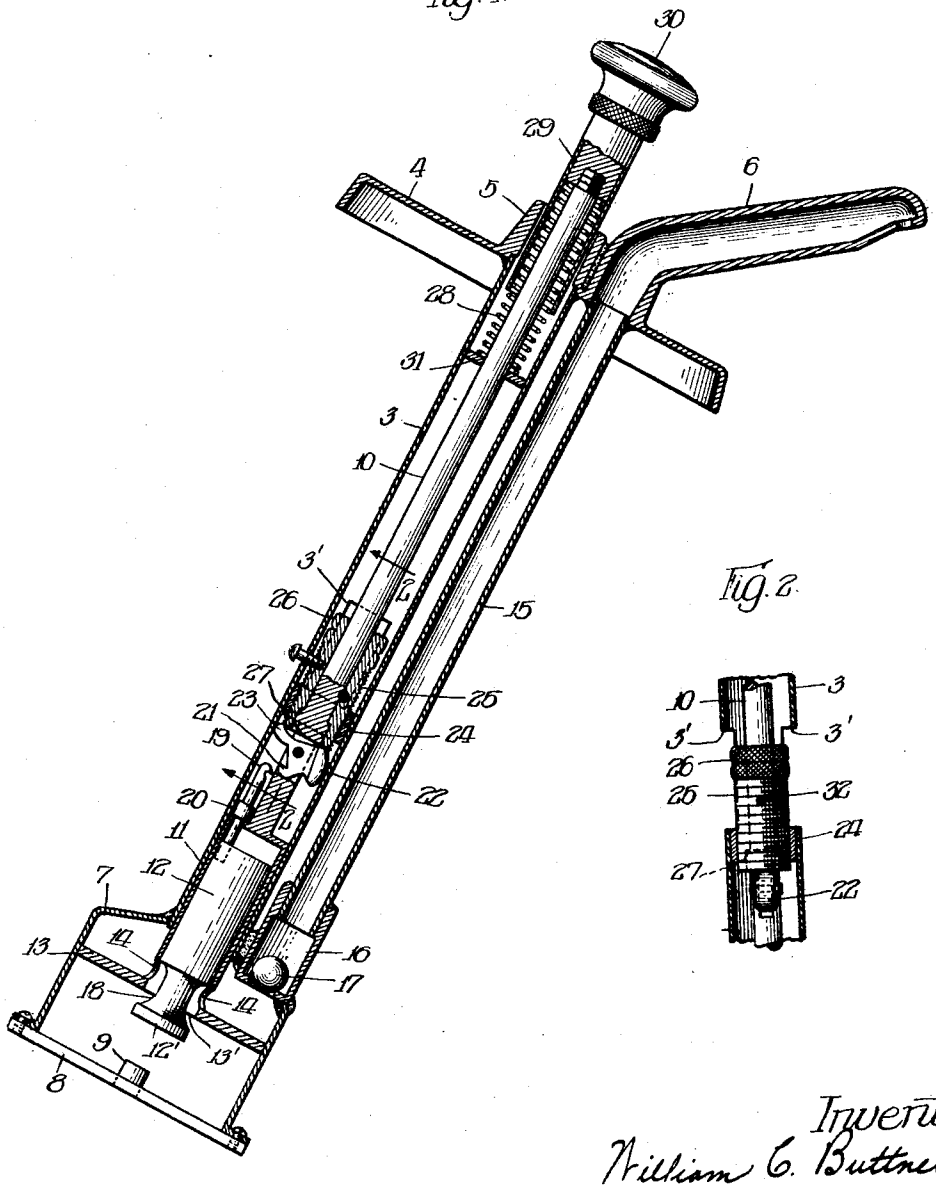


Fig. 2.

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SIRUP PUMP

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This invention relates to sirup pumps and its object is to provide a pump of novel and simple construction which will deliver an exact predetermined charge of sirup at each operation.

Another object of the invention is to provide a sirup pump which cannot be manipulated without delivering an exact predetermined charge of sirup.

And another object of the invention is to provide adjusting means for regulating the charge of sirup to be delivered by the pump and to construct and arrange said means so that they can not be surreptitiously manipulated.

And a further object of the invention is to provide the pump with a novel valve mechanism which will insure the discharge of an exact predetermined charge of sirup at each operation of the pump.

In the accompanying drawings I have illustrated a selected embodiment of the invention and referring thereto,

Fig. 1 is a sectional view of the pump.

Fig. 2 is an enlarged detail sectional view showing the adjusting means on the line 2—2 of Fig. 1.

In the drawings 3 is a tubular pump casing and 4 is a cap or facing plate mounted on the upper end of the casing and provided with a collar 5 and a discharge spout 6. A charge chamber or plunger chamber 7 is mounted on the lower end of the casing and it is provided at its bottom with a cross bar 8 having a centrally disposed stud 9 within the chamber. A plunger stem 10 is arranged to operate through the casing and the collar and its lower end 11 is tubular and enlarged to slidably fit within the casing. This enlarged lower end of the valve stem provides a cylindrical valve chamber for the valve 12, which slidably fits therein, and it is provided at its lower end with a plunger 13 which operates in the charge chamber 7. The plunger has an opening 13′ which registers with the valve chamber 11 and side openings 14 are provided in the valve chamber just above the plunger. A discharge tube 15 is supported at its lower end in a small casing 16 mounted on the valve chamber 7 and it contains a check valve 17 which forms a communication between the charge chamber and the discharge tube. The upper end of the discharge tube is secured in the cap or facing plate at the lower end of the spout. The lower end 12′ of the valve 12 fits and closes the opening 13′ at the lower end of the valve chamber and a groove or recess 18 is formed in the valve slightly spaced above its lower end to permit the flow of sirup through the openings 13′, 14 into the charge chamber above the plunger. A hook 19 is fastened to the upper end of the valve and it projects through the upper end of the valve chamber into the space between the stem and the casing 3. A collar 20 on this hook engages the top of the valve chamber to limit the downward movement of the valve and to hold it in normal position in the chamber projecting below the plunger with communication open from the space below the plunger through the valve recess or groove 18 and openings 13′ and 14 into the charge chamber space above the plunger. A latch 21 is pivotally mounted on the stem to engage the hook 19 and this latch is weighted at 22 and it has an arm 23. A tubular collar 24 interiorly threaded is secured in the casing 3 and a sleeve 25 is arranged on the stem and threadedly engages the collar 24. The casing is cut away on opposite sides at 3′ to permit access to the sleeve and the sleeve is knurled at 26 to enable it to be adjusted. The sleeve and the stem are shouldered at 27 to limit the up movement of the stem and plunger. A spring 28 is housed within the upper end of the casing 3 and the lower end of a sleeve 29 on the handle 30, said sleeve 29 operating in the collar 5 and casing 3. The handle is mounted on the upper end of the stem and one end of the spring engages the handle and its other end engages a stop collar 31 fastened in the casing. A set screw 32 operates through the regulating sleeve 25 and engages the stem 10 to lock the sleeve in adjusted position. The arm 23 swings in the space between the stem 10 and the casing 3 and engages the lower end of the sleeve 25.

In practice the spring 28 holds the handle, the stem, the valve and the plunger in nor-

mal up position with the valve open as shown in Fig. 1. The pump is submerged in the sirup in a sirup jar with the cap fitting at the top of the jar and the sirup flows through the valved openings 13′, 14 filling the space above the plunger. The handle is depressed to deliver a charge of sirup and this involves a downward movement of the stem and the plunger, the valve being carried along with the stem and plunger until it engages the stud 9 whereupon the movement of the valve is stopped while the plunger continues its downward movement, thereby closing the valve passage 13′, 14. Then the chamber above the plunger is filled with sirup and when the handle is released the spring returns the stem and plunger to normal up position and at the same time discharges the sirup through the check valve 17 into the discharge tube and an exact predetermined charge of sirup is delivered from the spout. When the valve 12 engages the stud 9 the stem and plunger may continue downward until the lower end of the handle sleeve 29 engages the stop 31 whereupon the downward movement of the stem and plunger will be stopped. At this time the valve hook 19 will be located above the latch 21 and this latch will be swung by its weight 22 into operative engagement with the hook so that on the return movement of the stem and plunger the valve will be carried along therewith until the arm 23 engages the lower end of the sleeve 25 which will disengage the latch 21 from the hook 19 and permit the valve to open, sliding downward in the valve chamber until the collar 20 engages the upper end of said valve. Thereupon the charge chamber will be ready to re-fill on next down stroke of handle. The sleeve 25 may be adjusted to control the up movement of the plunger by engagement of the shoulders 27 and thereby regulate the sirup charge. The screw 32 is employed to lock the sleeve in its adjusted position. Since the adjusting means and all of the control parts of the pump are enclosed within the casing of the pump and submerged within the sirup in the sirup jar there will be no opportunity for surreptitious adjustment. An exact predetermined charge is delivered at each operation of the pump because discharge of the sirup can only be effected upon a full down stroke of the plunger, otherwise the valve will not close and the sirup will not be delivered. It takes a full stroke of the plunger to close the plunger valve and lock it closed so that on the return stroke of the plunger and stem and handle the sirup will be delivered. If the down stroke of the plunger is not complete the plunger valve will remain open and a charge of sirup will not be delivered. The invention therefore provides a safe-guard against careless or improper manipulation of the pump and insures the delivery of an exact predetermined charge of sirup so that the drinks dispensed will always be uniform in the amount of sirup contained therein.

I have shown the invention in a selected embodiment satisfactory for achieving the results sought for, but I reserve the right to make all changes or modifications therein which may be necessary or desirable for adapting the invention to different conditions, or for other purposes, and within the scope of the following claims:

I claim:

1. A sirup pump comprising a casing, a chamber at the bottom of the casing, a stem operating in the casing, a plunger carried by the stem and operating in the chamber, said chamber being open to receive sirup below the plunger and said plunger having a passage to permit sirup to pass above the plunger, valved discharge means connected with said chamber above the plunger, said stem and plunger adapted to be depressed manually, a valve for closing said passage on the down stroke of the plunger, and a spring for returning the stem and plunger to initial position.

2. A sirup pump comprising a casing, a chamber at the bottom of the casing, a stem operating in the casing, a plunger carried by the stem and operating in the chamber, said chamber being open to receive sirup below the plunger and said plunger having a passage to permit sirup to pass above the plunger, valved discharge means connected with said chamber above the plunger, said stem and plunger adapted to be depressed manually, a movable valve in said passage, a stop arranged to be engaged by said valve for closing said passage when the plunger reaches the limit of its downward stroke, and a spring for returning the stem and plunger to initial position and effecting delivery of a charge of sirup.

3. A sirup pump comprising a casing, a chamber at the bottom of the casing, a stem operating in the casing, a plunger carried by the stem and operating in the chamber, said chamber being open to receive sirup below the plunger and said plunger having a passage to permit sirup to pass above the plunger, valved discharge means connected with said chamber above the plunger, said stem and plunger adapted to be depressed manually, a movable valve in said passage, said plunger and valve being conjointly movable and said plunger being movable independently of said valve to effect closure of said passage at the completion of the down stroke of the plunger, and a spring for returning the stem and plunger to initial position.

4. A sirup pump comprising a casing, a chamber at the bottom of the casing, a stem operating in the casing, a plunger carried by the stem and operating in the chamber, said chamber being open to receive sirup

below the plunger and said plunger having a passage to permit sirup to pass above the plunger, valved discharge means connected with said chamber above the plunger, said stem and plunger adapted to be depressed manually, a valve in said passage adapted to move with said stem and plunger until near the completion of their downward stroke and then to close said passage and confine a charge of sirup in the chamber above the plunger, and a spring for returning the stem and plunger to initial position and thereby effecting the delivery of a charge of sirup.

5. A sirup pump comprising a casing, a chamber at the bottom of the casing, a stem operating in the casing, a plunger carried by the stem and operating in the chamber, said chamber being open to receive sirup below the plunger and said plunger having a passage to permit sirup to pass above the plunger, valved discharge means connected with said chamber above the plunger, said stem and plunger adapted to be depressed manually and said stem having a valve chamber at its lower end, a valve in said chamber for closing said passage and adapted to move with the stem until near the completion of the downward stroke and then to close said passage and confine a charge of sirup in the chamber above the plunger, and a spring for returning the stem and plunger to initial position and thereby effecting the delivery of a charge of sirup.

6. A sirup pump comprising a casing, a chamber at the bottom of the casing, a stem operating in the casing, a plunger carried by the stem and operating in the chamber, said chamber being open to receive sirup below the plunger and said plunger having a passage to permit sirup to pass above the plunger, valved discharge means connected with said chamber above the plunger, said stem and plunger adapted to be depressed manually and said stem having a valve chamber at its lower end intersecting said passage, a valve for closing said passage and adapted to move with said stem until near the completion of the downward stroke and then to close said passage and confine a charge of sirup in the chamber above the plunger, and a spring for returning the stem and plunger to initial position and thereby effecting the delivery of a charge of sirup.

7. A sirup pump comprising a casing, a charge chamber at the bottom of the casing, a stem operating in the casing and having a valve chamber at its lower end, a plunger carried by the stem in said charge chamber, there being a passage through the plunger at the bottom of the valve chamber and through the side of the valve chamber above the plunger to permit sirup to pass above the plunger, valved discharge means connected with said chamber above the plunger, and a normally open valve in said valve chamber adapted to move conjointly with the stem and plunger on their down stroke, a fixed stop for closing the valve at the completion of the down stroke of the stem and plunger, a spring for returning the stem and plunger to initial position, and means for holding said valve in position closing said passage during the up stroke of the stem and plunger.

8. A sirup pump comprising a casing, a charge chamber at the bottom of the casing, a stem operating in the casing and having a valve chamber at its lower end, a plunger carried by the stem in said charge chamber, there being a passage through the plunger at the bottom of the valve chamber and through the side of the valve chamber above the plunger to permit sirup to pass above the plunger, valved discharge means connected with said chamber above the plunger, and a normally open valve in said valve chamber adapted to move conjointly with the stem and plunger on their down stroke, a fixed stop for closing the valve at the completion of the down stroke of the stem and plunger, a spring for returning the stem and plunger to initial position, means for holding said valve in position closing said passage during the up stroke of the stem and plunger, and means for releasing said valve to open said passage at the completion of the up stroke of the stem and plunger.

9. A sirup pump comprising a casing, a charge chamber at the bottom of the casing, a stem operating in the casing and having a valve chamber at its lower end, a plunger carried by the stem in said charge chamber, there being a passage through the plunger at the bottom of the valve chamber and through the side of the valve chamber above the plunger to permit sirup to pass above the plunger, valved discharge means connected with said chamber above the plunger, and a normally open valve in said valve chamber adapted to move conjointly with the stem and plunger on their down stroke, a fixed stop for closing the valve at the completion of the down stroke of the stem and plunger, a spring for returning the stem and plunger to initial position, a latch device for holding said valve in position closing said passage during the up stroke of the stem and plunger, and means for releasing said valve to open said passage at the completion of the up stroke of the stem and plunger.

10. A sirup pump comprising a casing, a chamber at the bottom of the casing, a stem operating in the casing, a plunger carried by the stem and operating in the chamber, said chamber being open to receive sirup below the plunger and said plunger having a passage to permit sirup to pass above the plunger, valved discharge means connected with said chamber above the plunger, said stem and plunger adapted to be depressed manually, a valve for closing said passage on the up

stroke of the plunger, an interiorly threaded collar secured within the casing, a sleeve on the stem threadedly engaging said collar, interengaging shoulders on the sleeve and stem to control the up stroke of the plunger, and a spring for returning the stem and plunger to initial position.

11. A sirup pump comprising a casing, a chamber at the bottom of the casing, a stem operating in the casing, a plunger carried by the stem and operating in the chamber, said chamber being open to receive sirup below the plunger and said plunger having a passage to permit sirup to pass above the plunger, valved discharge means connected with said chamber above the plunger, said stem and plunger adapted to be depressed manually, a valve for closing said passage on the up stroke of the plunger, an interiorly threaded collar secured within the casing, a sleeve on the stem threadedly engaging said collar, interengaging shoulders on the sleeve and stem to control the up stroke of the plunger, a portion of said sleeve being knurled and said casing having an opening therein to permit access to said knurled portion of the sleeve for turning the sleeve.

12. A sirup pump comprising a casing, a chamber at the bottom of the casing, a stem operating in the casing, a plunger carried by the stem and operating in the chamber, valved discharge means connected with said chamber above the plunger, a passage in said diaphragm to permit sirup to pass above the plunger on the down stroke of the plunger, a valve in said passage for maintaining said passage open during the down stroke of the plunger, means for holding said valve closed during the up stroke of the plunger to effect discharge of the sirup above the plunger, and means for inducing the up stroke of the plunger.

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