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F. H. HECKER.

SODA FOUNTAIN SYRUP PUMP.

APPLICATION FILED NOV. 17, 1905.

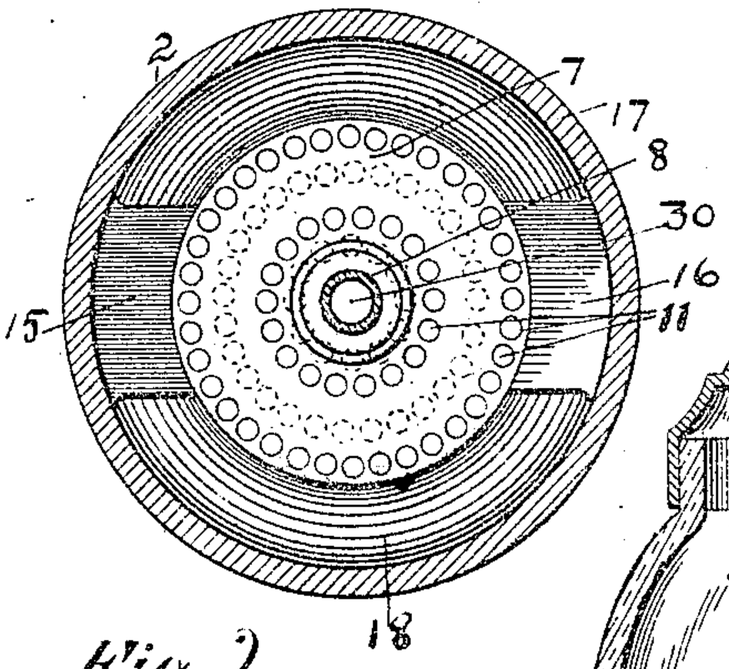


Fig. 2.

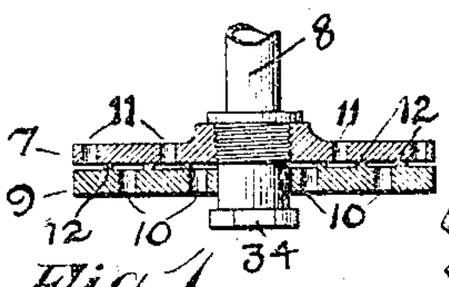


Fig. 4.

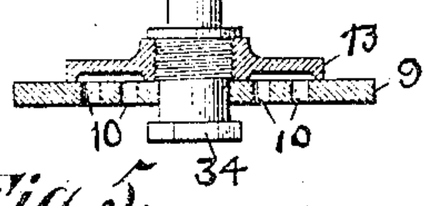


Fig. 5.

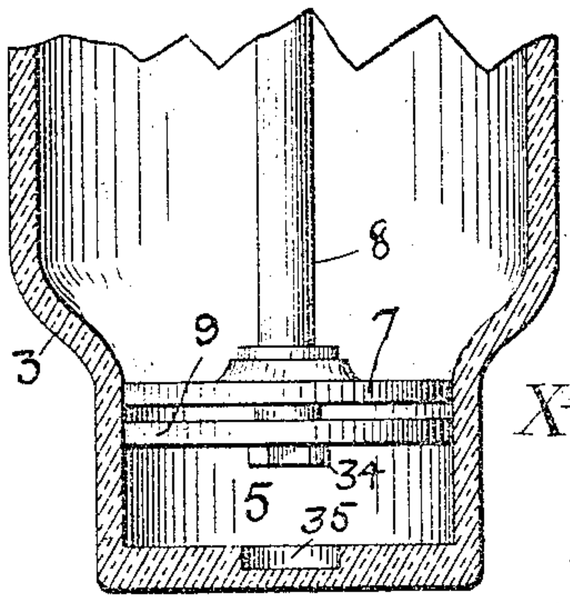
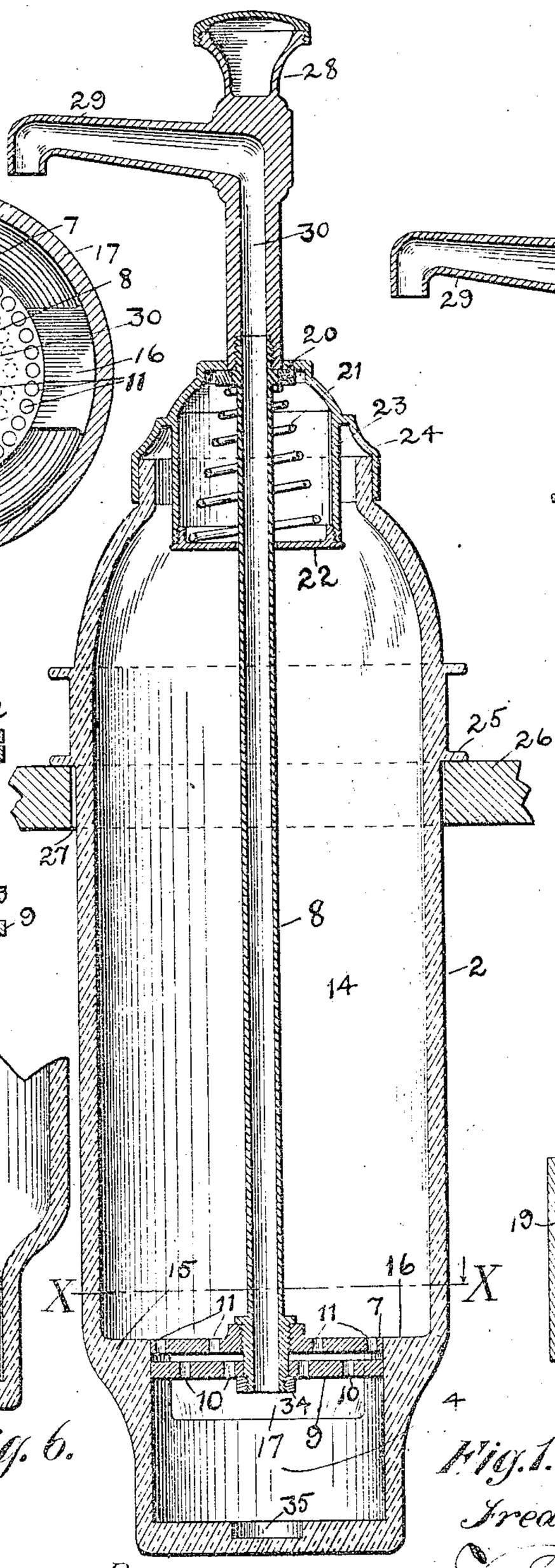


Fig. 6.



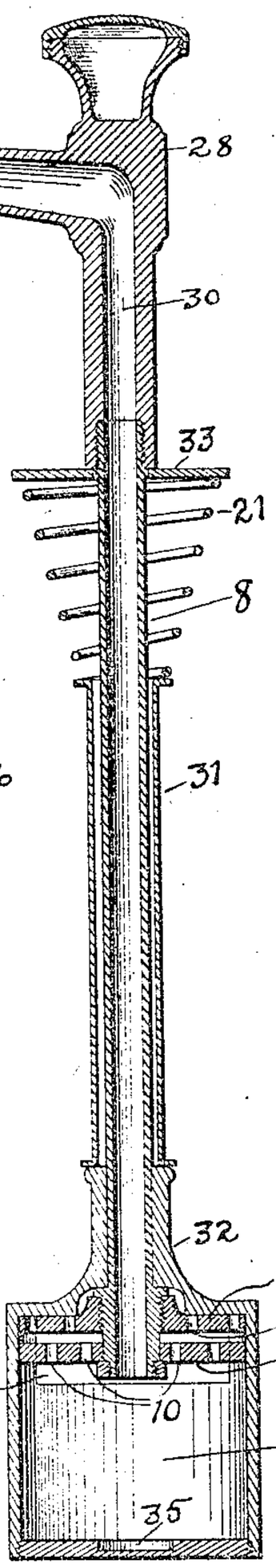


Fig. 3.

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Fig. 1.

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UNITED STATES PATENT OFFICE.

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SODA-FOUNTAIN SYRUP-PUMP.

No. 860,659. Specification of Letters Patent. Patented July 23, 1907.

Application filed November 17, 1905. Serial No. 287,782.

To all whom it may concern:

Be it known that I, FREDRICK HENRY HECKER, a citizen of the United States, and a resident of Los Angeles, Los Angeles county, California, have invented certain new and useful Improvements in Soda-Fountain Syrup-Pumps, of which the following is a specification.

This invention relates to pumping apparatus and has particular reference to syrup-pumps for soda water fountains. The object of the invention is to overcome prominent defects in prevailing types of syrup pumps in the simplest possible manner.

A part of the equipment of a modern soda-water fountain is a series of syrup bottles or receptacles containing juices or syrups of different flavors designed to meet varying tastes of customers. Instead of pouring the syrup from the mouth of the bottle or receptacle it has been found more convenient to permit the bottles or receptacles to remain in their allotted position and equip them with pumps by means of which the contents are expelled in measured quantities. One of the popular types of pumps comprises a hollow rod or tube terminating in a spout and a valve arrangement whereby a depression or longitudinal movement of the tube itself causes the liquid to flow therethrough and out of its outlet. To this end the tube is equipped with a piston and the receptacle is provided with a piston-chamber and a valve mechanism constructed to either fill the chamber by suction or by gravity flow. The operation of filling the chamber by suction creates a noise or sound which is objectionable to both user and customer and the operation of filling the chamber by gravity flow is wasteful of time as the piston must usually be raised to a point in the chamber where the inlet thereto is uncovered at the end of the upward stroke of the piston. To overcome this delay and at the same time the rushing noise produced by a liquid entering a chamber by force of suction, I have provided a piston which will permit liquid to pass it into the pump-chamber the very moment the return or upward stroke of the piston begins, thus filling the chamber while the piston is moving in its upward or return stroke and making it possible to force liquid from the chamber without waiting for the piston to return to the end of its upward movement and then waiting for the piston-chamber to fill up by gravity.

With the above objects in view my invention consists in the novel syrup pump and in its combination with a syrup receptacle hereinafter described in detail, illustrated in the drawing and defined in the claims.

In the drawing—Figure 1 is a vertical and longitudinal section taken through a syrup receptacle equipped with a pump embodying my invention. Fig. 2 is a horizontal section taken on line X—X of Fig. 1. Fig. 3 is a vertical and longitudinal section through the pump itself equipped with an independent piston-chamber. Figs. 4 and 5 represent vertical or transverse sections through two forms of pistons which are modifications of the piston shown in Fig. 1. Fig. 6 illustrates the lower portion of a modified form of syrup-vessel, or piston-chamber, adapted for all of the several forms of my invention.

Referring in detail to the several views, 2 represents a syrup-receptacle, bottle or vessel and 3 represents another form thereof. The vessels 2 and 3 are equipped with piston-chambers, measuring cups, or trap-chambers 4 and 5, and except for the latter, the forms of the vessels are immaterial.

In Fig. 3 is shown a piston-chamber 6 which makes my invention independent of any form of vessel, including the bottom-portions 4 and 5. In either of the chambers 4, 5 and 6 is arranged a piston consisting of a perforated disk 7, secured to the piston-rod or outlet-tube 8 near its lower end, and a similar perforated disk 9 which has a limited movement along the rod 8. While the two disks 7 and 9 are perforated, the perforations of the upper disk 7 do not register with the lower disk perforations, so that when the two disks lie closely against each other they form, substantially, an imperforate piston, the imperforate portion or portions of one disk covering the perforations of the other disk, as shown in Figs. 1, 3, 4 and 5. Figs. 1 and 3 illustrate one form of upper disk, while Figs. 4 and 5 illustrate two other forms thereof.

In Figs. 1, 3 and 4 the upper disk 7 is shown provided with perforations 11 which correspond to the perforations 10, but in Figs. 1 and 3 the perforations 10 and 11 are closed against communications with each other by the adjacent faces of the disks 7 and 9 when the latter lie as closely against each other as the annular flanges or ridges 12 in Fig. 4, or the peripheral flange 13 in Fig. 5, permit. The objects of said flanges or ridges is to prevent the disks from sticking together when the piston-rod 8 is raised. Ordinarily the adjacent faces of the disks will not stick together sufficiently to prevent their separation, but for the purpose of rapid operation it may be desirable to reduce the surface contacts by means of the ridges 12 and 13. Said ridges close the disks to each other so that liquid cannot normally pass from the perforations 11 into the perforations 10.

Referring, first, specifically to the construction shown in Figs. 1 and 2, the piston-chamber 4 is formed in the bottom of the vessel 2. The chamber 4 is of less diameter than the chamber 14 in the body of the vessel producing an offset between the two chambers. Two diametrically opposite portions 15 and 16 continue parts of the inner wall of the chamber 4 through the offset portion. These portions are cut away to provide openings 17 and 18 from the chamber 14 into the chamber 4 when the piston is at its highest point as in Fig. 1. In Fig. 3 the chamber 6 corresponds to the chamber 4, with the exception that the chamber 6 is a separate ves-

sel which may be placed in any ordinary syrup-jar or receptacle that will receive it. Openings 19, corresponding to openings 17 and 18, are provided in the upper part of the vessel or chamber 6. In the construction shown in Fig. 6 no openings 17, 18 or 19 are provided for the chamber 5.

The piston-rod 8 provides a tubular passage through which the liquid is forced from either chambers 4, 5 or 6 and at that portion of said rod or tube which is at the top of the jar or vessel 2 is a flange 20 which bears against a spiral spring 21 the lower end of which bears against the bottom 22 of a spring-box 23 forming a part of the cover 24 for the jar 2. The spring 24 therefore tends to hold or return the piston-rod or tube 8 in or to its normally raised position shown in Fig. 1. This arrangement, however, forms no part of my invention and it is immaterial what means are employed for returning the piston-rod to its normal position after it is depressed. A flange 25 upon the jar 2 supports the latter on the counter-top 26 having a perforation 27 for the jar 2. 28 is a knob or handle arranged on the upper end of the piston-rod and tube 8 for convenience in operating the piston. As shown, the spout, or outlet, 29 communicates with the passage in the rod 8 through the handle-portion 28, whereby a continuous passage 30 is formed between the chamber 4 and the mouth of the spout 29, or the chambers 5 or 6 and said spout.

In Fig. 3 where an independent chamber 6 is provided, the lower end of the spring 21 bears against the top of a sleeve 31 which rests on a boss 32 on top of the chamber 6. A disk or flange 33 secured to the upper end of the tube 8 bears against the top of the spring. In the latter construction the sleeve 31 performs the function of the bottom 22 in Fig. 1 and the flange 33 serves in the same capacity as the flange 20 in said Fig. 1. The lower and movable disk 9 is held against dropping off the lower end of tube or rod 8 by means of a nut 34 threaded on the lower end of the member 8. A recess 35 is formed in each of the piston-chamber bottoms adapted to receive said nut so as to permit the piston to move close to the piston-chamber.

The operation of my invention is as follows: The lower disk 9 normally rests on the nut 34 leaving a space between the upper disk 7 and said lower disk 9. The spring 21, or whatever equivalent means is employed, normally holds the piston in the elevated position in which it is shown in Figs. 1, 3 and 6. In this position liquid poured into the vessel 2 will be free to flow through the perforations 11 into the space between disks 7 and 9 and thence through the perforations 10 into the piston-chamber 4, 5 or 6. When the hollow piston-rod 8 is pushed down the disk 9 is forced against the disk 7 by the resistance of the liquid or syrup in the piston-chamber. Forcing the two disks together closes the space between them, which space is the only means of communication between the non-registering perforations 10 and 11. The piston then becomes substantially an imperforate piston which closes the piston-chamber 4, 5 or 6 against the chamber 14. The liquid in the piston-chamber is therefore forced up through the passage 30 and out of the spout 29. The chief advantage of my invention is made apparent in the return stroke of the piston. Instead of it being necessary to move the piston upwardly a definite distance on its return-stroke, for the purpose of uncovering an inlet-port, or for the purpose of refilling the piston-chamber by suction, the very moment the return, or upward, movement of disk 7 begins the disk 9 drops away from closing contact with said disk 7 and permits the liquid to flow into the piston-chamber while the piston—comprising disks 7 and 9—is moving upward. The refillings of the piston-chamber are therefore comparatively noiseless as well as continuous during the upward strokes of the piston and the piston may, at the same time, be stopped at any point short of its highest position without affecting the operation of forcing the liquid through the passage 30. The latter feature is emphasized in Fig. 6 where no openings 17, 18 or 1 , above which the piston may rise, are provided. The comparatively quiet and rapid refilling of the piston-chamber is very important at a busy fountain and where a plurality of glasses are to be supplied with the same syrup for the purpose of filling a single order.

The two disks of the piston need not both fit the piston-chamber. One of the disks may be of any desired form so long as it is arranged to close the openings in the other disk when both disks come together. The same is true of the openings in the disks. The latter may be of any suitable form, the only limitation being that the openings through one disk do not register with the openings in the other disk, or that both disks together have a form which is adapted to close the entrance to the space beneath the piston. Aside from this it is immaterial how much or how little of their combined area each piston-disk or plate covers.

The preferred construction shown in the drawings has, among others, the advantage that the liquid between the disks is, at the moment the disks are forced together, partly forced to the periphery of the piston and there acts as a seal tending to close any opening between the piston and the walls of the piston-chamber. The two disks each extending over the full horizontal area of the piston-chamber and with concentric circles of holes cannot become disarranged so that the upper and lower holes will accidentally register, because each disk may be free to rotate on the axis of the piston-rod without affecting their proper coöperation. Ordinary valves are easily disarranged and made inoperative while the closure between the two disks is, if anything, improved by wear of their adjacent faces produced by their contacts.

What I claim as new and desire to secure by Letters Patent is—

1. The combination with a syrup receptacle, of a measuring chamber in the bottom of said receptacle, a combination piston-rod and outlet-tube, and a piston in said chamber, composed of a plurality of disks each mounted on said tube and separable one from another to constitute a normally open valve adapted to admit liquid to the chamber when the parts are separated.

2. The combination with a syrup receptacle, of a measuring-chamber in the bottom of said receptacle, a piston in said chamber and a hollow piston-rod; said piston being mounted on the piston-rod and consisting of disconnected disks which constitute a valve; said disks constructed and arranged so as to fall apart when the piston is stationary or moved backward and to move together and close communication between said receptacle and chamber when the piston is moved forward.

3. The combination with a syrup-receptacle, of a measuring-chamber in the bottom thereof, a piston operable to force liquid from said chamber, an outlet-tube by means of which said piston is operated, said piston constructed

of sections which are normally separated so as to permit liquid to flow into said measuring-chamber part of said sections being slidably mounted upon said outlet-tube and movable, when the piston is forced forward, to close the measuring-chamber to the syrup-receptacle.

4. The combination with a syrup-receptacle, of a measuring-cup, a piston in said cup, a hollow piston-rod which provides an outlet from said cup, said piston consisting of disks constructed and arranged so as to be normally separated to provide open communication between said receptacle and chamber, said disks having ridges 12 and 13 which prevent adhesion of the adjacent faces of the disks when same are in their closed positions.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

FREDRICK HENRY HECKER.

Witnesses:
E. S. PEARSON,
J. W. BECKSTROM.