July 18, 1933. T. H. SCHUTT 1,919,173

DISPENSING PUMP

Filed July 21, 1930 2 Sheets-Sheet 1

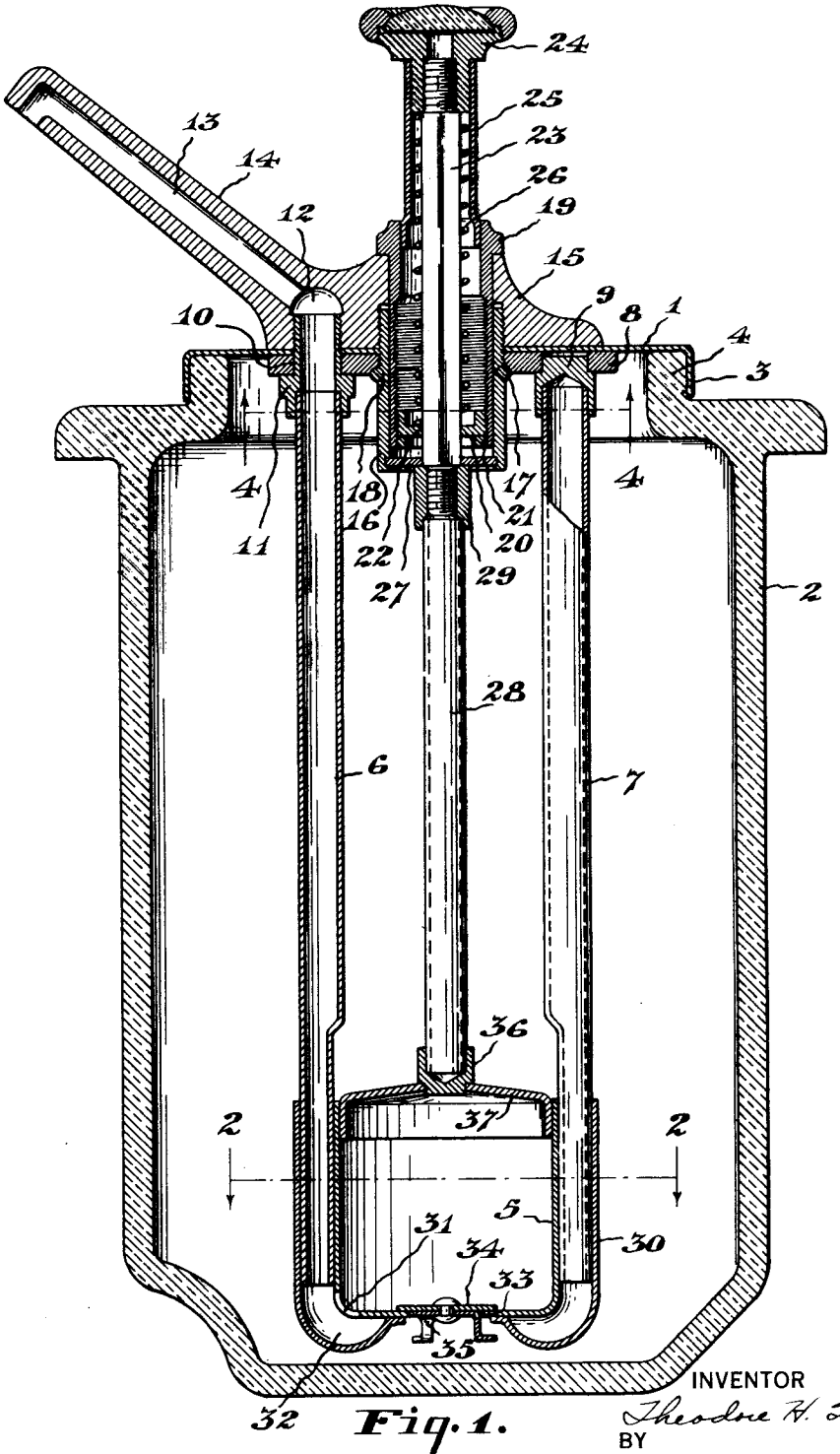



Fig. 1.

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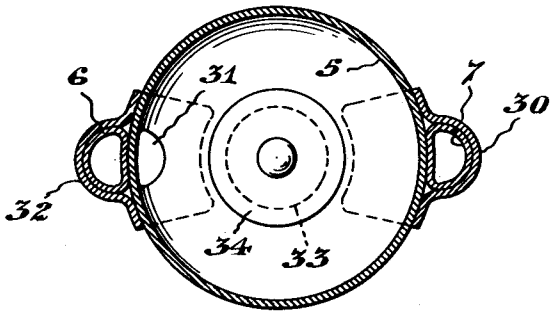



Fig. 2.

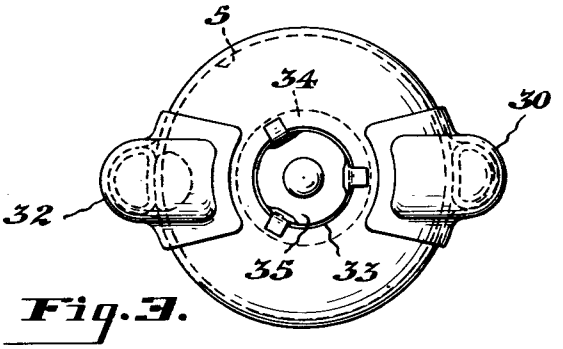



Fig. 3.

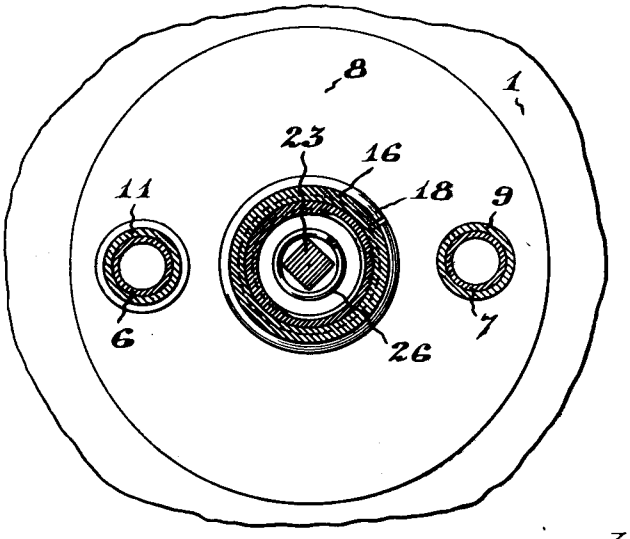



Fig. 4.

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# UNITED STATES PATENT OFFICE

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## DISPENSING PUMP

Application filed July 21, 1930. Serial No. 469,335.

This invention relates to dispensing pumps and more particularly to the type of dispensing pump used in soda fountain equipment for dispensing syrups and the like.

It is very desirable to employ a pump for dispensing liquids, such as syrups, constructed of such metal that will provide long lasting and nonwearing bearing surfaces, particularly for the piston and piston housing, and which in addition will not have a decolorizing effect on any colored syrup. Heretofore pumps of the character used for dispensing syrups have frequently been constructed of tin, aluminum and aluminum alloy castings and it has been found that such metals contain elements which act with the ingredients thereof and change the color. In certain kinds of syrups, such as those containing acid, the acids act on these metals and cause the same to be eaten away.

One of the objects of the present invention is to provide a liquid dispensing pump of improved construction which can be economically manufactured and assembled.

Another object is to provide a liquid dispensing pump which can be manufactured of a metal that will not so affect the liquid being dispensed as to decolorize and destroy the quality of the same.

Another object is to provide a liquid dispensing pump having a piston and piston housing stamped from sheet metal to cup-shaped form to provide telescoping bearing surfaces.

A further object is to provide a liquid dispensing pump embodying a telescoping cup-shaped piston housing and piston member, each of which is stamped from a sheet of Monel metal to provide efficient nonwearing bearing surfaces.

With the above and other objects in view which will be apparent from the following detailed description, the present invention consists in certain features of construction and combinations of parts which will be apparent to those skilled in the art to which the invention appertains.

In the drawings which illustrate a suitable embodiment of the present invention,

Figure 1 is a vertical section of a liquid dispensing pump showing the same mounted in a syrup jar;

Fig. 2 is a section taken on the line 2—2 of Fig. 1 showing the cup-shaped piston housing, and the means for securing the pump supporting rods to the piston housing;

Fig. 3 is a bottom plan view of the piston housing of the syrup pump shown in Fig. 1; and

Fig. 4 is a transverse section taken substantially on the line 4—4 of Fig. 1.

Referring to the drawings, in which like numerals refer to like parts throughout the several views, the pump structure comprises a supporting cover plate 1 upon which the pump equipment is mounted and which also constitutes a cover for a syrup jar 2 such as customarily used in soda fountain cabinets. The cover plate 1 has a depending flange 3 formed around its edge portions that preferably extends over a suitable upstanding flange 4 formed around the open end of the syrup jar 2 to seal against the possibility of dust or impurities entering the syrup container. The piston housing 5 is supported from the cover plate 1 by tubular members 6 and 7 preferably formed of Monel metal.

A reinforcing plate 8 is secured to the lower side of the cover plate 1 and carries at one side a nipple 9 which receives the upper end of the tubular supporting member 7. The other end of the reinforcing plate is provided with an opening 10 which receives a threaded nipple 11 that receives the upper end of the tubular supporting member 6. The tubular supporting member 6 provides a discharge passageway from the piston housing and communicates through an opening 12 formed in the nipple 11 with the opening 13 in the spout 14. The spout 14 is provided with a base portion 15 which seats on the upper side of the cover plate 1. The base of the drain spout 14 is securely held in place on the cover plate 1 by means of the nipple 11 which is threaded thereinto and by means of a spout locking sleeve 16 which extends through the reinforcing plate and is threaded into the base 15 of the spout, a locking ring 17 being provided to limit the degree of movement which the sleeve 16 may be thread-

ed into the base 15. This ring 17, as shown in Fig. 1, is seated within a groove 18 formed in the locking sleeve and abuts against the lower side of the reinforcing plate 8.

The locking sleeve 16 is positioned coaxial with the piston housing 5 and receives a shouldered stroke adjusting sleeve 19, the shoulder of which abuts against the upper side of the spout base 15. The adjusting sleeve 19 is internally threaded and receives an annular adjusting nut 20, the nut 20 being adapted to be locked in any set position by means of a lock nut 21. The adjusting nut 20 is provided with a squared central opening 22 which receives and guides an upper squared plunger rod 23 that extends upwardly through the adjusting sleeve 19.

A suitable handle member 24 is threaded to the upper end of the plunger rod 23 and is provided with a guide sleeve 25 surrounding the plunger 23 and telescopes with the adjusting sleeve 19, a compression spring 26 being positioned around the upper plunger 23 and having its ends in engagement with the handle 24 within the sleeve 25 and the adjusting nut 20 in order to hold the upper plunger 23 in a normal raised position.

The lower end of the locking sleeve 16 is provided with a strike plate 27 through which the lower end of the upper plunger rod 23 extends. The lower plunger rod 28 which is preferably tubular and of Monel metal carries a threaded sleeve 29 at its upper end into which the lower end of the upper plunger rod 23 is threaded. In operation, the sleeve 29 strikes the plate 27 and limits the upward movement of the lower plunger rod 28.

As shown in Figs. 1 and 2, the lower ends of the tubular supporting members 6 and 7 are flattened at their inner sides to abut against the outer sides of the piston housing 5 and are securely held in place thereon by means of trough-shaped tube socket members 30 which surround the same and which are secured at their edges to the outer surface of the piston housing 5. These socket members 30 are identical in shape and extend downwardly below the bottom of the piston housing and are secured to the bottom thereof. The piston housing is provided with an opening 31 in its bottom at one side which leads into the space provided by the lower portion of the socket member 30 that surrounds the tubular support 6, thereby providing a discharge passageway 32 leading from within the piston housing to the tubular support 6 so that liquid can be discharged through the opening 31 and upwardly through the support 6 to the pump discharge passage 13 in the spout 14.

The piston housing 5 is formed with a central inlet opening 33 which is normally closed by a plate valve 34 which seats at its edges on the inner surface of the bottom of the piston housing 5. A suitable stop member 35 is secured to the lower side of the plate 34 and is provided with projecting prongs that extend beyond the sides of the opening 33 in order to engage the bottom of the piston housing when liquid is being admitted or drawn into the piston housing.

The lower end of the plunger rod 28 carries a plunger tip 36 which is secured to the piston member 37 that telescopes within the piston housing 5. The piston 37 and the piston housing 5 are preferably formed from Monel metal or some other light-weight metal which will not affect and decolorize syrups and the like. The piston and piston housings are stamped to cup-shaped form from a sheet of the metal and are telescoped with each other, as shown in Fig. 1, with their inner surfaces presenting toward each other. The piston 37 has a substantial bearing area with the piston housing 5 and by making the same of Monel metal which is wear-resisting, it is possible to fit the same within the piston housing with a very small clearance which provides a construction in which there will be very little leakage of the liquid being dispensed between the piston and piston housing.

In operation, the operator depresses the handle member 24, thereby compressing the spring 26, and moves the piston 37 to the bottom of the piston housing 5. When the operator releases the handle member the coil spring which is compressed raises the piston 37 and the suction created by the piston within the piston chamber raises the plate valve 34 from its seat on the bottom of the piston housing, and draws the liquid within the syrup jar into the piston housing. As soon as the piston reaches the upper end of its stroke, the plate valve 34 falls by gravity and encloses the inlet opening 33. Upon a subsequent downward stroke of the piston the liquid is discharged through the opening 31 into the passage 32 provided by the lower end of the tube socket 30 and thence upwardly through the tubular support 6 and out through the passageway 13 formed in the spout 14.

The quantity of liquid to be dispensed is controlled by the position of the adjusting nut relative to the sleeve 25, the nut 20 serving as a stop means which engages the end of the sleeve 25 at the end of the down stroke of the piston. By turning the member 19, the shoulder portion of which is preferably knurled, it will be seen that the nut 20 which is held against rotation by the upper plunger rod 23, will be threaded upwardly or downwardly in the member 19, as the case may be, to change the point at which the sleeve 25 will engage the nut 20 on the down stroke of the piston.

The present invention is of such construction that permits the use of metals, preferably Monel metal, that will not react with

acid-containing syrups and obviate decolorizing and souring of the syrups and disintegration of the piston and piston housing.

The present invention further provides a construction having wear-resisting bearing surfaces.

The tube sockets provide a very advantageous means which permits easy and economical assembly of the pump and the stamped sheet metal cup-shaped piston and piston housing for economical manufacture of dispensing pumps.

Furthermore, it is to be understood that the particular forms of apparatus shown and described, and the particular procedure set forth, are presented for purposes of explanation and illustration and that various modifications of said apparatus and procedure can be made without departing from my invention as defined in the appended claims.

What I claim is:

1. A liquid dispensing pump comprising a tubular piston housing, a piston reciprocable therein, a supporting plate, means guided in said plate for reciprocating said piston, a pair of rod members carried by and depending from said supporting plate and seating against the sides of said housing, and a pair of stamped metal socket members surrounding said rod members and being secured to said housing, whereby to clamp said rod members to said housing.

2. A liquid dispensing pump comprising a tubular piston housing, a piston reciprocable therein, a supporting plate, a discharge spout carried by said plate, a pair of rod members depending from said plate and being seated against opposite sides of said housing, sheet metal socket members secured to said housing and surrounding the lower ends of said rod members, one of said rod members being hollow an in communication with said spout and the interior of said housing.

3. A liquid dispensing pump comprising a tubular piston housing, a piston reciprocable therein, a supporting plate, a discharge spout carried by said plate, a pair of rod members depending from said plate and being seated against opposite sides of said housing, sheet metal socket members secured to said housing and surrounding the lower ends of said rod members, said socket members extending downwardly and being secured to the bottom of said housing in spaced relation, one of said rod members being hollow and in communication with said spout and the interior of said housing through the space provided by the adjacent socket member.

4. A liquid dispensing pump comprising a tubular piston housing, a piston reciprocable therein, a supporting plate, a spout carried thereby, a pair of rod members depending from said plate, said rod members having their lower ends reduced in size and seating against said housing at opposite sides thereof, and sheet metal socket members surrounding said lower ends of said rod members, said socket members being secured to said housing at opposite sides thereof and to the bottom of said housing in spaced relation providing a passageway, said housing having a recess opening into the passageway, provided by one of said socket members, and one of said rod members being tubular providing a discharge leading from said first mentioned passageway to said spout.

5. In a syrup pump having a piston housing provided with a discharge opening and a supporting plate, means for supporting said housing from said plate comprising, a pair of tubular rods depending from said plate, and a sheet metal strip bent around each of said rod members and secured along its edges to said housing, one of said strips having its central portion spaced from said housing to provide a passageway leading from said discharge opening to the adjacent enclosed rod member, said last mentioned rod member serving as a discharge tube.

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