

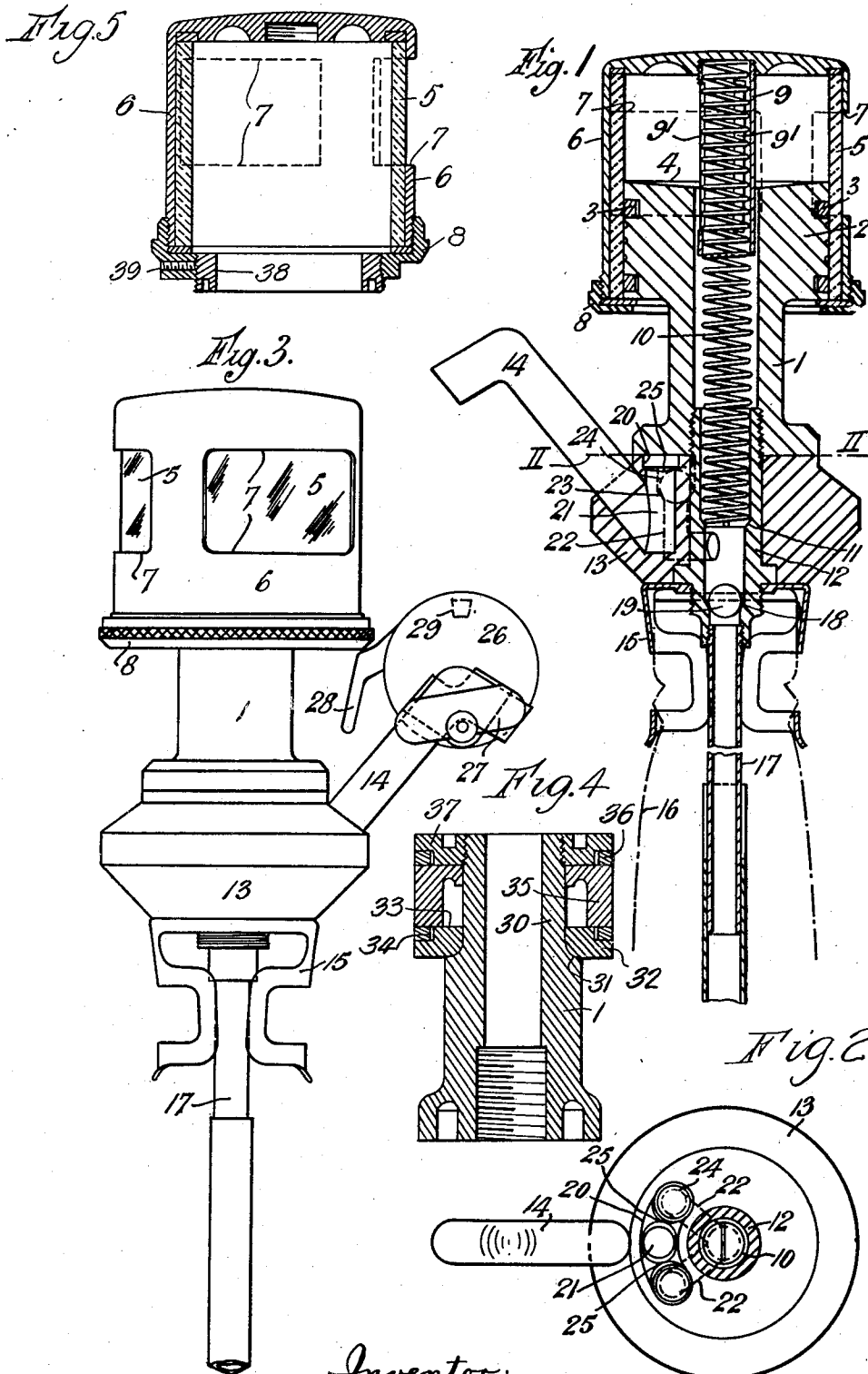
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PUMP FOR DELIVERING MEASURED QUANTITIES OF LIQUID

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PUMP FOR DELIVERING MEASURED
QUANTITIES OF LIQUID

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10 Claims. (Cl. 225—22)

This invention relates to improvements in pump or syringe apparatus for delivering measured quantities of wines, spirits or like liquids from a bottle or like container.

5 According to the present invention, the apparatus comprises in combination a piston, means for fitting the piston to a bottle or like container, a pump barrel slidably mounted on said piston, means actuating said barrel whereby
10 normally it is filled with said liquid and a delivery nozzle on said piston. The barrel of the pump is preferably formed of transparent material, such as glass, but it may be of metal or other suitable material, whilst the pump and
15 plunger are normally moved relatively to one another, whereby the pump barrel is normally filled with liquid. Preferably also the pump barrel is housed within a casing which with the pump barrel constitutes the reciprocating
20 member of the pump.

The invention is illustrated in the accompanying drawing in which Figure 1 is a vertical section through the pump or syringe, Figure 2 is a sectional plan on the line II—II, Figure 1
25 and Figure 3 a rear elevation showing a counting mechanism attached to the delivery spout or nozzle.

Figure 4 is a vertical section of a modified form of piston and Figure 5 a vertical section
30 through the pump casing and barrel.

Referring now to Figures 1-3 the pump comprises a main body 1 having an enlarged portion 2 forming the piston provided with piston rings 3. The top of the piston is preferably
35 slightly concave as shown at 4. The piston is encased within a barrel or cylinder 5 formed of transparent material such as glass, that portion of the barrel above the piston serving as a measure of the liquid to be delivered. The
40 barrel 5 is housed within a casing 6 the top surface of which forms the pump actuating mechanism; the casing is cut away as at 7 to enable the liquid within the glass barrel to be seen. If desired, however, printed matter such
45 as advertisements may be positioned between the barrel and the casing. If desired the casing 6 may be formed of moulded glass and in these circumstances the casing forms also the barrel of the pump. The casing is held in position
50 against the barrel 5 by means of a screwed ring 8. The casing 6 carries a tube 9 which forms a guide for a spring 10 biasing the casing 6 in an upward direction, so that normally the space
55 the liquid to be delivered. This tube 9 is pro-

vided with a plurality of slots 9' through which liquid in the barrel may pass to the delivery nozzle.

In place of the tube 9, there may be employed a downwardly depending pin or the like which
60 is cast as one with the casing 6, the spring 10 surrounding the pin or like projection.

The guide 9 and the spring 10 pass respectively into and through a central bore in the piston 2, the other end of the spring 10 being
65 adapted to abut against a shoulder 11 within a tubular member 12 which passes through a base member 13 carrying the delivery nozzle 14, and is externally threaded to engage the body member 1. The lower end of this tubular member 12
70 is externally threaded to carry a spring clip 15 for attachment to a bottle indicated at 16 and is internally threaded to receive a tube 17 which extends into the bottle and which may be made
75 in two or more sections telescoping one within the other so as to be adapted for use with different depths of bottle, the tube 17 being of such length as to extend almost to the bottom of the bottle to which it is fitted. The tubular member 12 is provided internally with a second
80 shoulder 18 which forms a seating for a ball 19 whose upward movement is limited by the lower end of the spring 10. The member 13 is recessed at 20 in which recess is positioned a central bore 21 communicating with the delivery
85 nozzle 14 and also with the tubular member 12 through a V-shaped passage 22 the two arms of which are positioned in the recess 20 one on each side of the central bore 21 the bottom of the passage communicating with an aperture or
90 apertures in the tubular member 12. The upper ends of the two arms of the passage 22 are formed with shoulders 23 which act as seatings for balls 24. The portions of the recess 20 between the three bores is chamfered as at
95 so as to allow easy flow of liquid from the arms of the passage 22 to the central bore 21. As will be seen in Figure 3 a counting mechanism 26 may be provided which mechanism is preferably clamped by a clip 27 to the nozzle 14.
100 The counting mechanism is provided with an arm 28 which is adapted to be actuated by the commencement of the downward movement of the casing 6. The counting mechanism is also provided with a window 29 through which the
105 number of liquid measures delivered can be seen.

The operation of the device is as follows: with the parts in the normal position (Figure 1) the barrel 5 above the piston 2 is full of
110

liquid. In order to deliver this liquid, the top surface of the casing 6 is depressed against the action of the spring 10. The liquid thereupon is forced by the relative movement between the casing 6 and the piston 2 through the slots 9' down the central bore of the piston, through the tubular member 12, thus forcing the ball 19 onto its seating and thence into the V-shaped passage 22. The ball valves 24 are lifted from their seatings and the liquid flows over the chamfered edges 25 in the recess 20 and into the bore 21 to the delivery nozzle 14. At the commencement of this operation, the casing 6 actuates the counting mechanism 26 through the arm 28 to indicate that a measure of liquid has been delivered.

When pressure is removed from the casing 6, it is moved upwardly under the action of the spring 10 thus creating a suction which draws the balls 24 onto their seatings and thus lifts the ball 19, whereupon liquid from the bottle is drawn up the tube 17, through the tubular member 12 into the barrel 5.

Discs or washers of definite thickness and diameter may be provided for insertion into the pump barrel, so that the pump can be adjusted accurately to deliver any desired quantity, four out, five out, or six out, for example. This arrangement is shown specifically in Figures 4 and 5 in which the main body 1 in place of the enlarged head 2 (shown in Figure 1) is provided with an upward projection 30 of smaller external diameter than the main body, thus forming a shoulder 31 with which is adapted to engage a collar 32 having a raised portion 33 around which is placed a piston ring 34. A disc member 35 is assembled over the projection 30 above the piston ring 34 and over the member 35 is positioned a second piston ring 36 which is secured in position by a similar collar 37 which is screwed on to the projection 30, thus clamping all the parts on to the main body 1. The disc member 35 is of such a depth that it displaces a definite quantity of liquid, e. g. four out. If it be desired to deliver five out, for example, the member 35 is replaced by another having a greater displacement, or a washer may be interposed between the member 35 and collar 37.

In order to obtain an accurate adjustment of the length of travel of the reciprocating member of the pump, the bottom of the screwed ring 3 is internally threaded to receive a washer or ring member 38, the upper surface of which is adapted to bear against the bottom of the collar 32 of the pump plunger. This member 38 can be locked in any desired position by means of a grub screw 39, passing through the ring 3.

There may be associated with the actuating mechanism a catch or suitable device which normally locks the parts against operation, the catch being adapted to be actuated to unlock the parts, by means of a coil inserted into a convenient slot, such as is normally employed in coin-freed apparatus.

It will be noticed that with the apparatus constructed in accordance with this invention, the parts are readily detachable one from the other so that cleaning is greatly facilitated.

70 What I claim is:—

1. Apparatus for delivering measured quantities of liquid comprising a pump, a pump barrel, a plunger within said pump barrel, a casing which constitutes the reciprocating member of the pump and within which the pump barrel is

housed, a guide member carried by said casing, a spring one end of which is housed within said guide member, and a liquid container to which said apparatus is adapted to be detachably secured, the pump being adapted to draw a predetermined quantity of liquid from the container and deliver it into a receptacle, the pump and plunger being normally moved relatively to one another against the action of said spring, so that the pump barrel is normally filled with the liquid to be delivered.

2. Apparatus for delivering measured quantities of liquid comprising a pump, a pump barrel, a plunger within said pump barrel, a casing which constitutes the reciprocating member of the pump and within which the pump barrel is housed, a guide member carried by said casing a spring, one end of which is housed within said guide member, and a liquid container to which said apparatus is adapted to be detachably secured, the pump being adapted to draw a predetermined quantity of liquid from the container and deliver it into a receptacle, the pump and plunger being normally moved relatively to one another against the action of said spring, so that the pump barrel is normally filled with the liquid to be delivered, the plunger, forming the main body of the apparatus, being bored centrally to allow liquid from the container to be drawn into the pump barrel therethrough.

3. Apparatus for delivering measured quantities of liquid comprising a pump, a pump barrel, a plunger within said pump barrel, a casing which constitutes the reciprocating member of the pump and within which the pump barrel is housed, a tubular member secured to the lower end of said plunger, a base portion carried by said tubular member, a delivery nozzle and valve mechanism carried by said base portion, and a liquid container to which said apparatus is adapted to be detachably secured, the pump being adapted to draw a predetermined quantity of liquid from the container and deliver it into a receptacle, the pump and plunger being normally moved relatively to one another so that the pump barrel is normally filled with the liquid to be delivered.

4. Apparatus for delivering measured quantities of liquid comprising a pump, a pump barrel, a plunger within said pump barrel, a casing which constitutes the reciprocating member of the pump and within which the pump barrel is housed, a guide member carried by said casing, a spring, one end of which is housed within said guide member, a tubular member secured to the lower end of said plunger, a base portion carried by said tubular member, a delivery nozzle and valve mechanism carried by said base portion, and a liquid container to which said apparatus is adapted to be detachably secured, the pump being adapted to draw a predetermined quantity of liquid from the container and deliver it into a receptacle, the pump and plunger being normally moved relatively to one another against the action of said spring, so that the pump barrel is normally filled with the liquid to be delivered, the plunger, forming the main body of the apparatus, being bored centrally to allow liquid from the container to be drawn into the pump barrel therethrough.

5. Apparatus for delivering measured quantities of liquid comprising a pump, a pump barrel, a plunger within said pump barrel, a casing which constitutes the reciprocating member of the pump and within which the pump barrel is

housed, a tubular member secured to the lower end of said plunger, a base portion carried by said tubular member, a delivery nozzle carried by said base portion, an inlet valve carried by said tubular member, and a liquid container to which said apparatus is adapted to be detachably secured, the pump being adapted to draw a predetermined quantity of liquid from the container and deliver it into a receptacle, the pump and plunger being normally moved relatively to one another so that the pump barrel is normally filled with the liquid to be delivered.

6. Apparatus for delivering measured quantities of liquid comprising a pump, a pump barrel, a plunger within said pump barrel, a casing which constitutes the reciprocating member of the pump and within which the pump barrel is housed, a guide member carried by said casing, a spring, one end of which is housed within said guide member, a tubular member secured to the lower end of said plunger, a base portion carried by said tubular member, a delivery nozzle and valve mechanism carried by said base portion, a tube secured to said tubular member and dipping into the liquid in the container, and a liquid container to which said apparatus is adapted to be detachably secured, the pump being adapted to draw a predetermined quantity of liquid from the container and deliver it into a receptacle, the pump and plunger being normally moved relatively to one another against the action of said spring, so that the pump barrel is normally filled with the liquid to be delivered, the plunger forming the main body of the apparatus, being bored centrally to allow liquid from the container to be drawn into the pump barrel therethrough.

7. Apparatus for delivering measured quantities of liquid comprising a pump, a pump barrel, a plunger within said pump barrel, a casing which constitutes the reciprocating member of the pump and within which the pump barrel is housed, a guide member carried by said casing, a spring, one end of which is housed within said guide member, a tubular member secured to the lower end of said plunger, a base portion carried by said tubular member, a delivery nozzle and valve mechanism carried by said base portion, a telescopic tube secured to said tubular member and dipping into the liquid in the container, and a liquid container to which said apparatus is adapted to be detachably secured, the pump being adapted to draw a predetermined quantity of liquid from the container and deliver it into a receptacle, the pump and plunger being normally moved relatively to one another against the action of said spring, so that the pump barrel is normally filled with the liquid to be delivered, the plunger, forming the main body of the apparatus, being bored centrally to allow liquid from the container to be drawn into the pump barrel therethrough.

8. Apparatus for delivering measured quantities of liquid comprising a pump, a pump barrel, a plunger within said pump barrel, a casing which constitutes the reciprocating member of the pump and within which the pump barrel is housed, a tubular member secured to the lower end of said plunger, a base portion carried by said tubular member, a delivery nozzle and valve mechanism carried by said base portion, and a

liquid container, to which said apparatus is adapted to be detachably secured, the pump being adapted to draw a predetermined quantity of liquid from the container and deliver it into a receptacle, the pump and plunger being normally moved relatively to one another so that the pump barrel is normally filled with the liquid to be delivered, a counting mechanism secured to said delivery nozzle, the counting mechanism being actuated by the casing each time this latter is actuated and recording the number of measured quantities of liquid delivered.

9. Apparatus for delivering measured quantities of liquid comprising a pump, a pump barrel, a plunger within said pump barrel, a casing which constitutes the reciprocating member of the pump and within which the pump barrel is housed, a guide member carried by said casing, a spring, one end of which is housed within said guide member, a tubular member secured to the lower end of said plunger, a base portion carried by said tubular member, a delivery nozzle and valve mechanism carried by said base portion, a tube secured to said tubular member and dipping into the liquid in the container, and a liquid container to which said apparatus is adapted to be detachably secured, the pump being adapted to draw a predetermined quantity of liquid from the container and deliver it into a receptacle, the pump and plunger being normally moved relatively to one another against the action of said spring, so that the pump barrel is normally filled with the liquid to be delivered, the plunger, forming the main body of the apparatus, being bored centrally to allow liquid from the container to be drawn into the pump barrel therethrough, and a ring member adjustably mounted within the lower extremity of the casing for regulating the extent of travel of the reciprocating member of the pump.

10. Apparatus for delivering measured quantities of liquid comprising a pump, a pump barrel, a plunger within said pump barrel, a casing which constitutes the reciprocating member of the pump and within which the pump barrel is housed, a guide member carried by said casing, a spring, one end of which is housed within said guide member, a tubular member secured to the lower end of said plunger, a base portion carried by said tubular member, a delivery nozzle and valve mechanism carried by said base portion, a tube secured to said tubular member and dipping into the liquid in the container, and a liquid container to which said apparatus is adapted to be detachably secured, the pump being adapted to draw a predetermined quantity of liquid from the container and deliver it into a receptacle, the pump and plunger being normally moved relatively to one another against the action of said spring, so that the pump barrel is normally filled with the liquid to be delivered, the plunger, forming the main body of the apparatus, being bored centrally to allow liquid from the container to be drawn into the pump barrel therethrough, a ring member adjustably mounted within the lower extremity of the casing for regulating the extent of travel of the reciprocating member of the pump, and a screw for locking the ring member in position in the lower extremity of the casing.

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