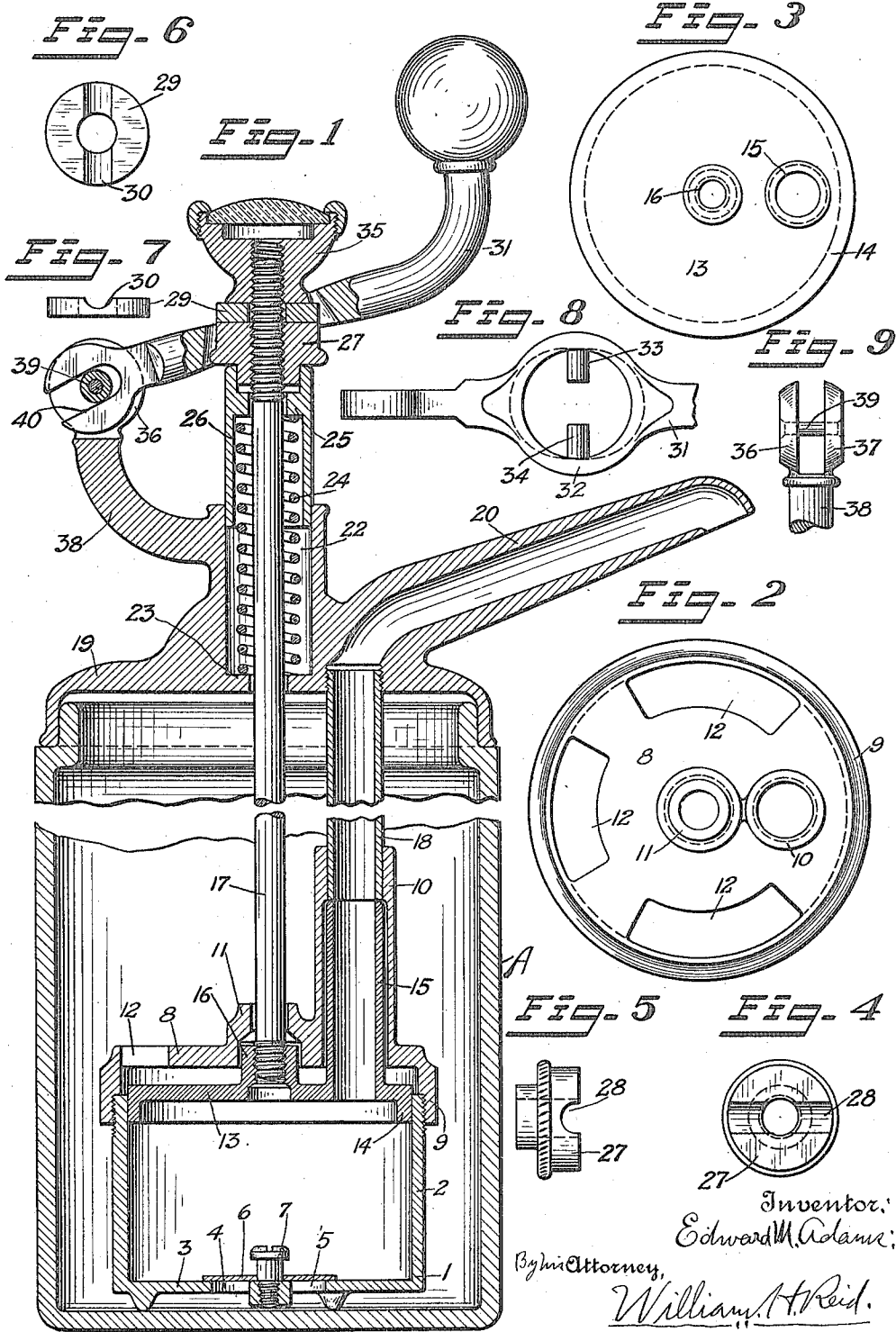


E. M. ADAMS.
DISPENSING PUMP.
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UNITED STATES PATENT OFFICE.

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DISPENSING-PUMP.

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To all whom it may concern:

Be it known that I, EDWARD M. ADAMS, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Dispensing-Pumps, of which the following is a specification.

The object of the present invention is to provide an improved form of pump that is especially adapted for use with soda water syrups, in which the piston and cylinder portions are placed in the lower portion of the container, and are operated by means located at the top of a suitable cap or cover for the container, by which arrangement the pump tube rigidly connects the cylinder with the cover, while another member is employed to reciprocate the piston.

Another object of the invention is to provide guiding means for the piston in the cylinder, that forms a part of the supporting tube connection for the cylinder.

A further object of the invention is to provide an improved construction of operating means for the piston rod that are carried by the cap member; which means are conveniently assembled by merely placing the parts together and applying screw threaded portions, without the necessity of rivets or pins to hold the parts in assembled position.

Another object is to provide an improved form of actuating means for the spring controlled piston rod.

In the accompanying drawings showing one embodiment of my invention, Figure 1 is a vertical section through the device. Fig. 2 is a plan view of the cylinder head. Fig. 3 is a plan view of the piston. Fig. 4 shows in plan, and Fig. 5 in side elevation the lower bearing member for the handle. Fig. 6 shows in plan, and Fig. 7 in side elevation the upper bearing member for the handle. Fig. 8 is a plan view of a portion of the handle; and Fig. 9 is an end elevation of the handle fulcrum.

As shown in the drawings I provide a receptacle A in which is located a pump device comprising a cylinder having side portions 2 and an integral base 3. The cylinder has a suitable valve-controlled opening in its lower portion, shown as having openings 4 and 5 in the base 3, that are controlled by

a disk valve 6. The latter has a central opening engaging a bolt 7 that is screwed into a central threaded hole in the base.

The cylinder is provided with a head 8 whose internally threaded flange portion 9 is screwed on the externally threaded upper portion of the cylinder sides 2. The head 8 is provided with a tubular extension 10 at an aperture therein forming an outlet for the cylinder. At its center the head is shown provided with an aperture, at which is a boss 11, adapted to receive the piston rod for the cylinder. The head is also provided with openings 12 therein to permit the free entrance and exit of the liquid to be dispensed, as shown in Fig. 2.

In the cylinder 1 slides the piston 13, that may have a flanged margin 14 tightly fitting in the cylinder. The piston 13 is shown as provided with a tubular extension 15 leading from an aperture therein, and this extension is externally fitted into the tubular extension 10 of the cylinder head 8 to slide therein as the piston is reciprocated in the cylinder, as indicated in Fig. 1. The piston 13 is provided with a threaded boss 16 to receive the threaded extremity of the piston rod 17, which rod slides in the boss 11 of the piston head. The upper end of the tubular extension 10 of the piston head is adapted to have the pump tube 18 secured therein by suitable means, such as being inserted a short distance into the extension and secured thereto by soldering.

With this form of device, when the piston and piston rod are moved upwardly from a lower position, the valve 6 will rise and permit the entrance of the fluid in which the cylinder is immersed. When the piston rod is lowered the piston will descend in the cylinder and at once close the disk valve 6. Since the only escape for the confined fluid in the cylinder is through the tubular extension 15, the contents of the cylinder will be forced upwardly through the extension 15, and through the pump tube 18. This will result from each reciprocation of the piston rod and piston, and therefore the fluid will be forced up through the pump tube 18.

To form an outlet for the liquid from the pump tube, and at the same time to suitably operate and guide the piston rod, I provide a support, shown in the form of a cap mem-

ber 19 for the receptacle A provided with a spout portion 20 leading from a bore in the cap, and the pump tube 18 is secured in this bore. It will be observed that this pump tube thereby forms a rigid connection or support between the cap member and the head 8 of the cylinder, so that the cylinder is strongly supported from the cap member. The cap 19 is also provided with a central bore through which projects the piston rod 17, and the extremity of this rod is connected with suitable operating means. As shown the bore in the cap has a contracted portion forming a shoulder 23 at the lower end. On this shoulder rests a coil spring 24, whose upper end engages an internal flange 25 carried by a sleeve or bushing 26, that is slidable in the enlarged bore 22 of the cap.

The upper extremity of the piston rod 17 is shown as screw-threaded, and has adjustable thereon a threaded bearing member 27, or nut, whose upper face contains a diametral slot 28, as shown in Fig. 5. Coöperating with this bearing member is another bearing member or disk 29, having a diametral slot 30, (Fig. 6) that when the bearing members are brought together, will cause these slots to register and form a kind of journal bearing on each side of the rod 17. The lower face of the bearing member 27 is caused to engage the upper end of the sleeve 26, and being threaded on the rod, will confine the sleeve in the proper position, with the coil spring 24 under tension. To engage this bearing member, I provide a handle or lever 31 suitably fulcrumed at one end and having alining pins or journal members arranged to turn in the two socket portions, in the said registering slots. As shown the lever 31 has an annular portion 32, at which portion pins 33 and 34 project inwardly in alinement. After the lower bearing member 27 is placed in position, the pins 33 and 34 of the handle lever are brought to engage the slotted portions 28 of the lower bearing member, the space between these pins being sufficient to clear the threaded rod. Thereupon the upper bearing member 29 is placed on the rod and turned until its slotted portion 30 engages the pins 33 and 34. To secure the upper bearing member in position, I provide a head 35 having a threaded bore that is screwed on the extremity of the rod 17, until it clamps the upper bearing member in position.

The handle lever 31 is shown provided with a fulcrum that will cause it to swing in a vertical plane, and which also will permit endwise movement of the lever. As shown, I provide a pair of upright portions 36 and 37 on an arm 38 of the cap, between the parallel faces of which extends a pin 39. The end of the lever is provided with a slot 40, and this forked portion fits be-

tween the parts 36 and 37 with the pin 39 located in the slot 40, as shown in Fig. 1. This will insure the vertical movement of the lever, yet permit it to move endwise. The spring 24 will serve to hold the lever in the elevated position as shown, and the piston 13 is held by the rod in the uppermost position. Upon applying pressure to the extremity of the lever 31, its connection with the piston rod will lower the rod, and compress the coil spring. This lowering of the rod will cause the lever to move toward its fulcrum until a horizontal position is reached, and thereafter the lever will have an endwise movement away from its fulcrum. The depression of the rod will force the liquid contained in the cylinder up through the pump tube 18 and out of the spout 20. When the lever is released, the spring will elevate the lever and rod and raise the piston, at which time the liquid will open the valve and flow into the cylinder, to be ejected on the next depression.

It will be observed that the lever 31 can be omitted and pressure applied to the head or nut 35, and the device will act practically the same. But the handle 31 gives an increased leverage and facilitates the operation. With this form of operating means for the pump rod, it will be observed that the parts are very easily and cheaply assembled and that no special machine work is needed. The bearing members or one of them is simply screwed in position to confine the spring and sleeve, and then the lever is placed in its proper position on the fulcrum on the bearing member, and the upper bearing member applied, and then the retaining nut or head screwed down on the upper bearing member. By this simple means all of the parts are locked in operating position and no rivets or screws are needed to secure the parts. It will be further observed that the pump tube 18 forms a rigid connection between the cap and the cylinder carrying the piston and this member is not movable. The piston is operated by means of the rod that has a suitable bearing in the cap and connecting means carried thereby.

The depression of the handle lever 31 to force the piston down in the cylinder, or this movement of the piston effected by the head 35, is limited by the bearing member 27 engaging the upper portion of the cap. But this amount of depression of the piston can be easily varied by first loosening the head 35, and then adjusting the threaded bearing 27 on the piston rod. By this means the amount of fluid that will be forced up at each operation can be varied at will, by the simple adjustment of the threaded members on the upper portion of the rod.

Having thus described my invention, what I claim is:

1. A dispensing pump comprising a cyl- 130

inder provided with a tubular extension at an opening in the top, a pump tube secured to said extension, a piston working in the cylinder and having a tubular extension at an opening therein that is arranged to slide in the said cylinder extension, and a rod secured to the piston and projecting upward through an aperture in the cylinder top and arranged to reciprocate the piston in the cylinder.

2. A dispensing pump comprising a cylinder provided with a tubular extension at an opening in the top, a pump tube secured to said extension, a piston working in the cylinder and having a tubular extension at an opening therein that is arranged to slide in the said cylinder extension, a rod secured to the piston and projecting upward through an aperture in the cylinder top and arranged to reciprocate the piston in the cylinder, the cylinder being provided with apertures in its base, and a valve in the cylinder controlling said apertures to admit fluid to the cylinder but prevent its escape therethrough.

3. A dispensing pump comprising a cylinder provided with a tubular extension at an opening in the top, a pump tube secured to said extension, a piston working in the cylinder and having a tubular extension at an opening therein that is arranged to slide in the said cylinder extension, a rod secured to the piston and projecting upward through an aperture in the cylinder top and arranged to reciprocate the piston in the cylinder, and a cap member provided with a spout portion, said pump tube being secured to the cap to communicate with the spout portion, said cap having a guide portion, said piston rod projecting through the guide portion in the cap and arranged to slide therein to reciprocate the piston.

4. A dispensing pump comprising a cylinder provided with a tubular extension at an opening in the top, a pump tube secured to said extension, a piston working in the cylinder and having a tubular extension at an opening therein that is arranged to slide in the said cylinder extension, a rod secured to the piston and projecting upward through an aperture in the cylinder top and arranged to reciprocate the piston in the cylinder, a cap member provided with a spout portion, said pump tube being secured to the cap to communicate with the spout portion, said cap having a guide portion, said piston rod projecting through the guide portion in the cap and arranged to slide therein to reciprocate the piston, the cylinder being provided with apertures in its base, and a valve in the cylinder controlling said apertures to admit fluid to the cylinder but prevent its escape therethrough.

5. In a dispensing pump, the combination of a cylinder comprising a base and side por-

tion, a removable head for the cylinder having a central guide opening and also having a tubular extension from an opening therein parallel with the axis of the cylinder, a piston comprising a disk portion that is slidable in the cylinder and a tubular extension from an opening in the piston that is slidable in the said head extension, the piston also having a central aperture containing a boss, and a piston rod secured in said boss and projecting upward through the said central guide opening of the head.

6. In a dispensing pump, the combination of a cylinder comprising a base and side portion, a removable head for the cylinder having a central guide opening and also having a tubular extension from an opening therein parallel with the axis of the cylinder, a piston comprising a disk portion that is slidable in the cylinder and a tubular extension from an opening in the piston that is slidable in the said head extension, the piston also having a central aperture in a boss, a pump tube secured to the head extension, a piston rod secured in said boss and projecting upward through the said central guide opening of the head, and a cap member provided with a spout portion, said pump tube being secured to the cap to communicate with the spout portion, said cap having a guide portion, said piston rod projecting through the guide portion in the cap and arranged to slide therein to reciprocate the piston in the cylinder.

7. In a dispensing pump, the combination of a cylinder comprising a base and side portion, a removable head for the cylinder having a central guide opening and also having a tubular extension from an opening therein parallel with the axis of the cylinder, a piston comprising a disk portion that is slidable in the cylinder and a tubular extension from an opening in the piston that is slidable in the said tubular extension, the piston also having a central aperture in a boss, a pump tube secured to the tubular extension, a piston rod secured in said boss and projecting upward through the said central guide opening of the head, a cap member provided with a spout portion, said pump tube being secured to the cap to communicate with the spout portion, said cap having a guide portion, said piston rod projecting through the guide portion in the cap and arranged to slide therein to reciprocate the piston, the cylinder being provided with apertures in its base, and a valve in the cylinder controlling said apertures to admit fluid to the cylinder but prevent its escape therethrough.

8. In a device as set forth, the combination of a support having a vertical bore, a rod guided to slide in the support bore, a pair of complementary bearing members removably carried by the rod at its upper end,

- said bearing members having alining diametral slots, a spring arranged between the bearing members and the support to move the rod upwardly, a handle having a pair of inwardly projecting alining journals movably located between the said bearing members at their slotted portions to reciprocate the rod, and a fulcrum on the support for the handle.
9. In a device as set forth, the combination of a support having a vertical bore, a rod guided to slide in the support bore, a pair of complementary bearing members removably carried by the rod at its upper end, said bearing members having alining diametral slots, a spring arranged between the bearing members and the support to move the rod upwardly, a handle having a pair of inwardly projecting alining journals movably located between the said bearing members at their slotted portions to reciprocate the rod, and a fulcrum on the support for the handle comprising a pin connecting a pair of upright parallel faces, the handle having a forked extremity permitting its movement longitudinally on the pin when swung.
10. In a device as set forth, the combination of a support having a vertical bore, a rod slidable in said bore and having its upper end threaded, a threaded bearing disk on the said rod having a diametral slot in one face, a disk on said rod and having a diametral slot to register with the slot of said bearing member, a nut member arranged to clamp the said bearing members together with the slots registering, and a handle member having one end fulcrumed on the support and having an annular portion containing inwardly projecting alining pins arranged to turn in the said registering slotted bearing members whereby the swinging of the handle will reciprocate the rod.
11. In a device as set forth, the combination of a support having a vertical bore, a rod slidable in said bore and having its upper end threaded, a threaded bearing disk on the said rod having a diametral slot in one face, a disk on said rod and having a diametral slot to register with the slot of said bearing member, a nut member arranged to clamp the said bearing members together with the slots registering, a handle member having one end fulcrumed on the support and having an annular portion containing inwardly projecting alining pins arranged to turn in said registering slotted bearing members whereby the swinging of the handle will reciprocate the rod, and a spring arranged between the support and the bearing members arranged to elevate the rod when depressed.
12. In a device as set forth, the combination of a supporting member having a bore therethrough contracted at the lower end to form a shoulder, a rod slidable in the said bore and having its upper end threaded, a coil spring surrounding said rod in the bore and engaging said shoulder, a sleeve slidable in said bore and having an internal flange to engage the spring, a bearing member having a threaded bore engaging the threaded rod and having a diametral slot, a disk member arranged to engage the rod at its threaded portion and having a diametral slot arranged to register with said slot of the bearing member, a handle member provided with a pair of alining journals that are spaced to engage said registering slots on opposite sides of the rod respectively, whereby the handle is journaled on the rod, and a fulcrum on the support for one end of the handle.
13. In a device as set forth, the combination of a supporting member having a bore therethrough contracted at the lower end to form a shoulder, a rod slidable in the said bore and having its upper end threaded, a coil spring surrounding said rod in the bore and engaging said shoulder, a sleeve slidable in said bore and having an internal flange to engage the spring, a bearing member having a threaded bore engaging the threaded rod and having a diametral slot, a disk member arranged to engage the rod at its threaded portion and having a diametral slot arranged to register with said slot of the bearing member, a handle member provided with a pair of alining journals that are spaced to turn in said registering slots on opposite sides of the rod respectively, whereby the handle is journaled on the rod, and a fulcrum on the support for one end of the handle on which the handle is movable transversely to the rod.
14. In a device as set forth, the combination of a supporting member having a bore therethrough contracted at the lower end to form a shoulder, a rod slidable in the said bore and having its upper end threaded, a coil spring surrounding said rod in the bore and engaging said shoulder, a sleeve slidable in said bore and having an internal flange to engage the spring, a bearing member having a threaded bore engaging the threaded rod and having a diametral slot, a disk member arranged to engage the rod at its threaded portion and having a diametral slot arranged to register with said slot of the bearing member, a handle member provided with a pair of alining journals that are spaced to turn in said registering slots on opposite sides of the rod respectively, whereby the handle is journaled on the rod, and a fulcrum on the support for one end of the handle comprising a horizontal pin connecting two upright parts having vertical movement, the handle having a longitudinal slot in its fulcrum end that is

arranged to engage the pin to guide the handle for vertical movement and also permit its endwise movement.

5 15. In a device as set forth, the combination of a supporting member having a bore therethrough contracted at the lower end to form a shoulder, a rod slidable in the said bore and having its upper end threaded, a coil spring surrounding said rod in the bore and engaging said shoulder, a sleeve slid-
10 able in said bore and having an internal flange to engage the spring, a bearing member having a threaded bore engaging the

threaded rod, and having a diametral slot, a disk member arranged to engage the rod 15 at its threaded portion and having a diametral slot arranged to register with said slot of the bearing member, and a handle member having one end fulcrumed on the support and having an annular portion con- 20 taining inwardly projecting alining pins arranged to engage the said registering slotted bearing members whereby the swinging of the handle will reciprocate the rod.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."