June 15, 1948. A. DUNKIN 2,443,555

ADJUSTING CONNECTION FOR PUMP PLUNGERS OR THE LIKE

Filed May 27, 1946

Fig. 2.

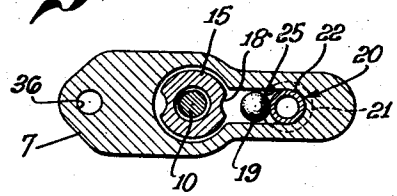


Fig. 1.

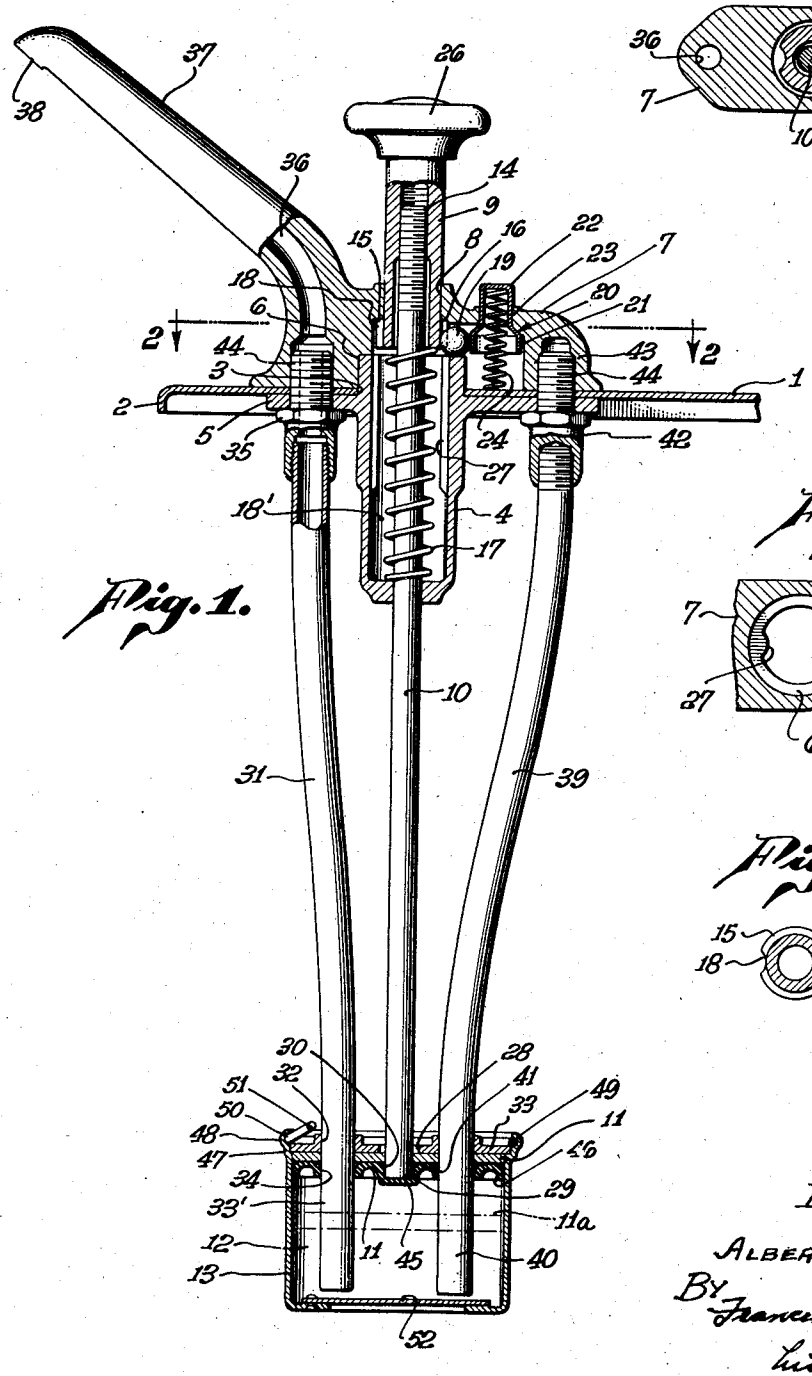


Fig. 3.

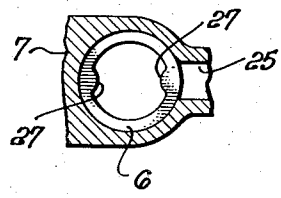


Fig. 4.

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ADJUSTING CONNECTION FOR PUMP PLUNGERS OR THE LIKE

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9 Claims. (Cl. 103—38)

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This invention relates to adjusting means that is particularly adapted for use on syrup pumps such as are employed for dispensing fruit juices or the like at soda fountains. These pumps are usually mounted in, or on, the cover of a container or jar for the fruit juice, and the operator of the pump discharges a small quantity of the juice through a spout into a glass in which he is preparing a drink. It is often desirable in such pumps, to have means for regulating the amount of juice discharged in this way. One of the objects of this invention is to provide a simple construction for accomplishing this without the necessity for taking the pump apart; in other words, to provide a construction whereby the operator of the pump can make an adjustment in the stroke of the pump, through the medium of a hand-controlled part associated with the pump casing, the operation of which will enable the stroke of the pump to be regulated by merely rotating the handle or actuating member for the pump, that usually projects up through the cover of the pump casing.

In the application of the invention, its preferred embodiment includes the use of a relatively fixed guide member or guide means which is in, or near, the path of travel of the depressible handle carrying a plunger or a piston that causes the ejection of the liquid through the delivery spout; and one of the objects of this invention is to provide simple means for preventing relative rotation of this handle or actuating member on its thread connection to the pump rod or piston rod; and further, to provide means whereby this actuating member can be readily released when desired, to permit its free rotation to effect the drawing up or moving down of the piston rod through the agency of the thread connection.

A further object of the invention is to provide a construction for accomplishing the purposes indicated, which will require a small number of parts which can be constructed and assembled at low cost.

Further objects of the invention will appear hereinafter.

The invention consists in the novel parts and combinations of parts to be described hereinafter, all of which contribute to produce an efficient adjusting connection for pump plunger or the like.

A preferred embodiment of the invention is described in the following specification, while the broad scope of the invention is pointed out in the appended claims.

In the drawings:

Fig. 1 is a vertical section and partial elevation through the cover of a fruit jar, certain parts being broken away, and illustrating the working parts employed in my invention. In this view these parts are shown in their normal position with the

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piston of the pump in its extreme elevated position, and with the adjustment set for the maximum possible movement of the piston of the pump corresponding to the greatest possible discharge of syrup from the pump.

Fig. 2 is a horizontal section taken about on the line 2—2 of Fig. 1, passing through the parts of the locking mechanism, that prevent relative rotation of the actuating member or handle of the plunger when the same is in its normal and elevated position. This view illustrates this locking mechanism in a released position to permit the actuating member or handle of the pump plunger to be rotated to effect an adjustment.

Fig. 3 is a plan view of a portion of the pump casing broken away, and illustrating the form of the relatively fixed guiding means that is engaged by the actuating member for the pump rod when the same is depressed in operating the pump.

Fig. 4 is a horizontal section through the plunger handle just above its guide collar that constitutes a feature of this invention.

Referring more particularly to the parts, 1 indicates the usual fruit jar cover that forms a cover for the upper end of the container or jar, and these covers are usually provided with a marginal flange such as the flange 2 illustrated. This flange fits down around the lip of the jar, or container, and holds the cover in position.

The cover plate 1 is provided with a central opening 3, at which the upper portion of the pump mechanism is mounted, and this mechanism includes a relatively fixed guiding means in the form of a barrel 4 extending down from an integral frame plate 5 that fits against the under side of the cover plate 1. This guide barrel 4 is in alignment with a sleeve 6 that projects upwardly through the opening 3, and which constitutes an extension of the wall of the barrel 4.

The sleeve 6 is received in a counterbore formed in the under side of a cover fitting or casing 7, which is formed with a guide opening 8 for the actuating member or handle 9 for the pump plunger, said pump plunger including a piston rod 10, the lower end of which carries a piston 11 the function of which is to eject the syrup from the pump chamber 12 in a barrel 13, in a manner that will be described hereinafter. The upper end of the piston rod 10 has a thread connection 14 to the actuating member 9, and the lower end of the actuating member 9 is formed with an enlargement or collar 15 that seats against the inner face 16 of the fitting or casing member 7, and against which it is normally held by pressure exerted by a coil spring 17 that is carried in the elongated chamber 18', or spring-barrel formed within the relatively fixed guide member 4. The collar 15 is provided

preferably at two diametrically opposite points with two sockets 18 in the form of grooves extending longitudinally with the axis of the actuating member 9. These grooves are illustrated in Fig. 2, and are of arcuate form struck on a radius slightly larger than the radius of a floating key or locking member 19, which is preferably in the form of a small ball, although this floating key obviously could be in the form of a roller.

The rolling member or ball key 19 is normally in engagement with one of the slots 18 in which it is normally held by means movable at will of the operator, and preferably consisting of a push button 20 having a body 21 of relatively large diameter, and a tubular stem 22 that projects up through a guide opening 23 in the cover fitting 7. This push button is normally held in an elevated position by a small coil spring 24, the upper end of which is held in a bore in the tubular stem 22. When the push button 20 is in its elevated position as shown in Fig. 1, the opposite sides of the ball key 19 are substantially engaged by the arcuate groove at 18 on one side, and the enlarged body 21 of the push button on the other side. As illustrated in Fig. 2, this key ball is held in a small channel or radial groove 25 formed in the under side of the cover fitting or casing member 7, which is only wide enough to permit movement of the ball key 19 in a substantially radial direction from or toward the axis of the actuating member or handle 9. Hence, in the position in which the parts are illustrated in Fig. 1, the actuating member or handle 9 cannot be rotated. However, if it is desired to make an adjustment of the pump, for example, to shift the piston 11 so that it would be disposed at a lower level in the pump chamber 12 (as indicated by the dotted lines at 11*a* in Fig. 1) it is merely necessary for the operator of the pump to press the push button 20. When this is done, the stem 22 of reduced diameter will move down to the level of the ball key, and this permits the ball key 19 to roll away from the socket 18 if, and when, the pump handle 9 is rotated. As the thread connection 14 in Fig. 1, is illustrated as being a right-hand thread, it will be evident that by giving the handle 9 a left-hand rotation, or anti-clockwise rotation from above, the pump piston 10 will be moved downwardly, and if moved sufficiently, would carry the piston 11 down to the level indicated at 11*a*.

The diameter of the body of the actuating member or handle 9, is the same as the diametrically measured distance between the bottoms of the two grooves 18, so that the ball or key 19 will not interfere in any way with the depression of the pump plunger, which would be effected by a sudden downward pressure applied by the operator's hand to the knob 26 of any suitable form, that is attached to the upper end of the actuating member 9.

In order to prevent any possibility of the actuating member 9 rotating relatively to the piston rod 10 when it is depressed down into the barrel or spring chamber 18, the member 4 is provided with longitudinally disposed ribs 27 that extend downwardly on its inner face, and which are located in line with the grooves 18. These guide ribs 27 are clearly illustrated in Fig. 3.

In any situation where this adjusting means is employed, it is of course necessary to provide means for preventing the rotation of the pump rod 10, or part corresponding to it when the handle 9 is being rotated to effect the adjustment. In the present instance, the rotation of the pump rod 10 is prevented by the construction employed at the lower end of the pump. In this construction, the lower end of the piston rod 10 is received in a central opening 28 in the pump piston 11, and the tip 29 just below the piston 11 is welded to the under side of the piston in a welding ring 30. The delivery tube 31 for the pump, passes down through an opening 32 in the pump head 33, and is secured in this opening by welding or other means. The lower end of the tube 31 is formed into a straight extension 33', the axis of which is parallel with the axis of the pump chamber or barrel 12, so that this projecting extension 33' can operate as a guide for the piston 11 which, of course, has a guide opening 34 that receives the extension 33' loosely. The upper end of the delivery tube 31 is connected by a suitable coupling 35 to the lower end of the duct 36 of the delivery spout 37 that, in the present instance, extends up at an angle of approximately 45° to the location of its delivery head or mouth 38 under which the glass is placed when receiving the juice.

In order to form a brace for the other side of the pump barrel 13 remote from the tube 31, I provide a blank brace tube 39 which may, for convenience, be of the same diameter and similar to the tube 31. Like the tube 31, this blank tube 39 has a straight extension 40 at its lower end that extends down through the pump head 33 like the tube 31, and which is secured to the pump head in the same way. This straight extension 40 also passes through a guide opening 41 in the piston 11, so that it will operate as a guide for the reciprocating piston 11. The upper end of the blank tube 39 is connected by a blank coupling 42 to the rear end of the cover fitting 7, as illustrated at 43. These two couplings 35 and 42 cooperate with the sleeve 6 to secure the fitting 7 and the plate 5 rigidly to the cover plate 1. In other words, when the threaded members 44 of these two couplings 35 and 42 are tightened up in their threaded sockets in the fitting 7, this connection will be made secure. The under side of the piston 11 is preferably provided with a gasket 45 of soft material formed up like a cup leather with downwardly projecting lips 46 against all walls or surfaces with which it contacts, so that these lips 46 will tighten up automatically by the hydrostatic pressure when the piston is being forced down.

The pump barrel 13 is preferably removably secured to the head 33. For this purpose I prefer to make the pump barrel 13 of metal that can be spun or readily formed up to a shape, and the upper end of the barrel is made to larger diameter than the body of the barrel to form an annular shoulder or seat 47 to receive the lower edge of the pump head 33. In addition to this, the material above this seat 47 is bent outwardly to form an annular groove or seat 48 to receive a spring ring 49. This ring is of course a split ring open at the point 50 where the two ends of the half rings are provided with handles 51, which can be pressed together in a well known manner, to reduce the diameter of the ring and enable it to be removed. The elasticity of the ring is sufficient to hold it into place above the upper edge of the head 33 to secure the barrel firmly on the pump head 33.

In practice, the pump barrel 13 is suspended from the cover at a low level in the syrup jar. When the pump piston 11 is in its elevated position of rest, the pump barrel is of course full of

syrup or juice, as it can flow in freely through the usual valve 52 in the pump bottom.

When the piston is pushed down with a quick movement, the syrup in the pump barrel 13 is expelled up through the delivery tube. As the present invention does not concern this valve, it is unnecessary to illustrate it in detail.

Attention is called, however, to the fact that the outer surface of the push-button that connects the body 21 of the push-button to its tubular neck, is a tapered or conical surface. This enables the push-button to force the floating key 19 back into its socket in the pump handle.

Many other embodiments of the invention may be resorted to without departing from the spirit of the invention.

I claim as my invention:

1. In adjusting means for a pump plunger or the like, for altering the stroke thereof, the combination of a piston rod, an actuating member for the rod having a thread connection with the same, a relatively fixed guiding member for the actuating member normally out of engagement with the actuating member but located adjacent the path of travel for holding said actuating member against rotation relative to the rod during said travel, a movable key-member, means for normally holding the movable key-member in a position to interlock with the actuating member to prevent its rotation, and movable at will into a position to release the movable key so as to enable the actuating member to be given an adjusting rotation on the said thread connection, relative to the rod.

2. Adjusting means for a pump plunger or the like, according to claim 1, including a cover through which the said actuating member is guided and in which the guiding means on the actuating member is located within the cover, and seats substantially against the under side of the cover when the plunger is in its normal position.

3. Adjusting means for a pump plunger or the like, according to claim 1, including a cover through which the said actuating member is guided and in which a guiding means on the actuating member is located within the cover and seats substantially against the under side of the cover when the plunger is in its normal position, and including a return spring for returning the plunger after the same has been moved forward.

4. Adjusting means for a pump plunger or the like, according to claim 1, including a cover through which the said actuating member is guided and in which the guiding means on the actuating member is located within the cover and seats substantially against the under side of the cover when the plunger is in its normal position, including a spring disposed around the rod and thrusting against the inner end of the actuating member for returning the plunger after it has been actuated, and in which the said guiding means houses the said spring.

5. An adjusting means for a pump plunger rod or the like, for altering the stroke thereof, the combination of a cover, an actuating member for the rod guided through said cover, and having a thread connection with the rod, a relatively fixed guiding member for the actuating member normally out of engagement with the actuating member but located adjacent the path of travel thereof for holding said actuating member against rotation relative to the rod during said travel, a floating key, means normally holding the floating key in a position to interlock with the actuating member to prevent its rotation, and movable at will into a position to release the floating key so as to enable the actuating member to be given an adjusting rotation on the said thread connection relative to the rod.

6. Adjusting means for a pump plunger rod or the like, according to claim 5, in which the floating key consists of a rolling member, and in which the said cover has means for retaining and guiding the floating key when it moves toward or away from the actuating member.

7. Adjusting means for a pump plunger rod or the like, according to claim 5, in which the floating key consists of a rolling member, and in which the said cover has means for retaining and guiding the floating key when it moves toward or away from the actuating member, and in which the means for normally holding the floating key in its interlocking position includes a depressible button guided in the said cover and engaging the side of the floating key remote from the actuating member.

8. In adjusting means for a pump plunger or the like for altering the stroke thereof, the combination of a cover having a casing with a guide opening therethrough, a piston rod, an actuating member for the rod guided to slide through said guide opening and having a thread connection to the piston rod, a relatively fixed guiding member for the actuating member normally out of engagement with the actuating member but located adjacent the path of travel thereof, said actuating member having a guide head with a socket therein for engaging the relatively fixed guiding member to prevent the said rotation of the actuating member, a ball supported adjacent said actuating member, means normally holding said ball in said socket to prevent rotation of the actuating member when the same is out of engagement with said guiding means, said last-named means being movable at will into a position to release the ball so as to enable the actuating member to be given an adjusting rotation on the said thread connection.

9. In an adjusting means of the kind described, the combination of a pair of members with a thread connection between the same, means for holding one of said members against rotation, the other of said members having a socket therein removed from the axis of said thread, a floating key-member, means exposed to view for direct actuation by one's hand movable at will and normally holding said floating key-member in said socket to prevent rotation of the other member on the axis of said thread connection and operating when moved, to release the floating key-member and permit relative rotation of said members.

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