June 21, 1927. 1,633,287

J. REUTHER ET AL

DISPENSING APPARATUS

Filed May 11, 1926 2 Sheets-Sheet 1

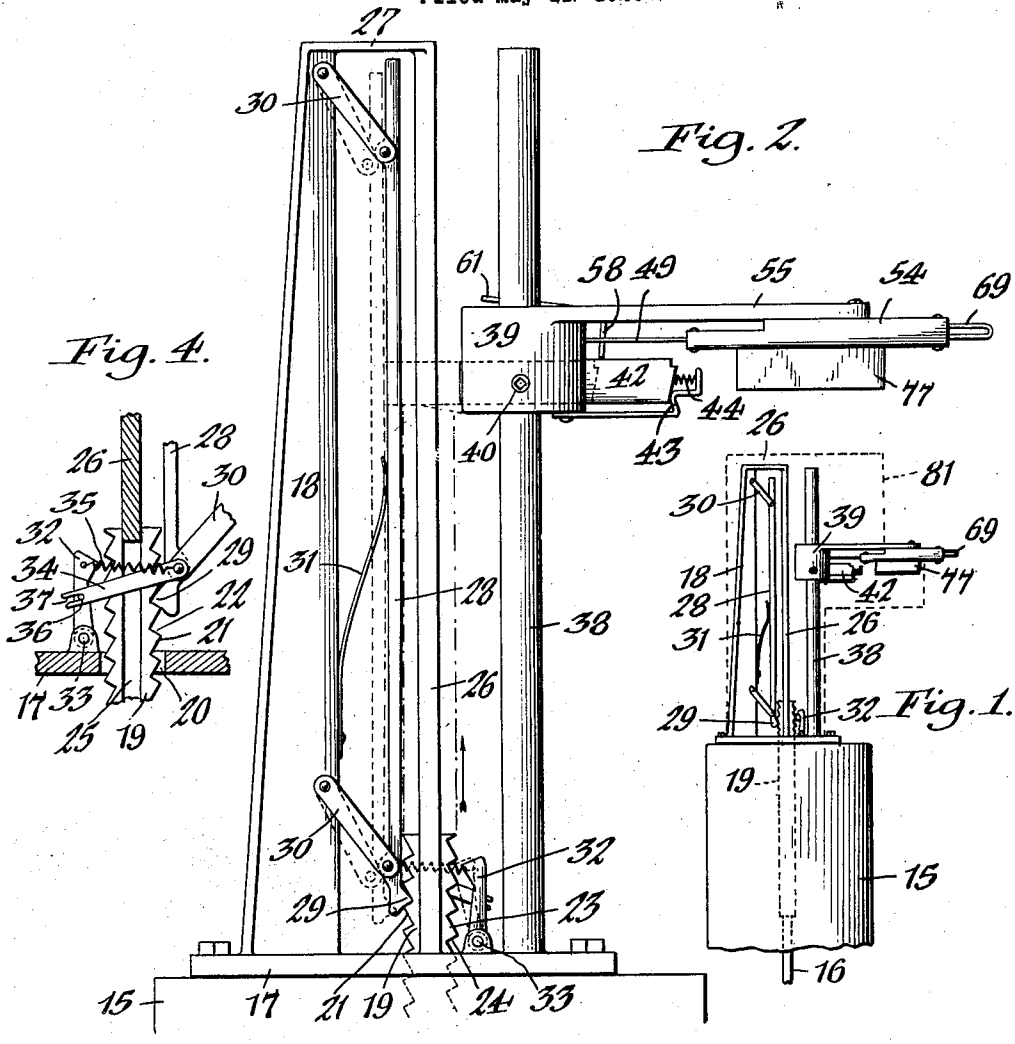
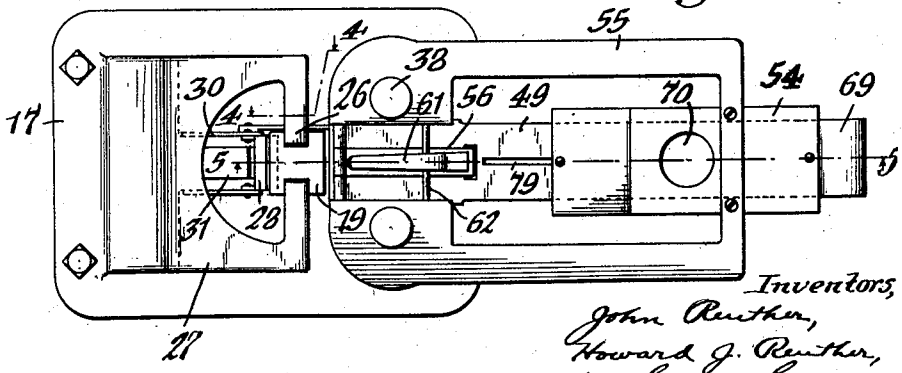


Fig. 2.

Fig. 4.

Fig. 1.

Fig. 3.



Inventors,
John Reuther,
Howard J. Reuther,
by Geyer & Geyer
Attorneys.

June 21, 1927.

1,633,287

J. REUTHER ET AL

DISPENSING APPARATUS

Filed May 11, 1926

2 Sheets-Sheet 2

Fig. 5.

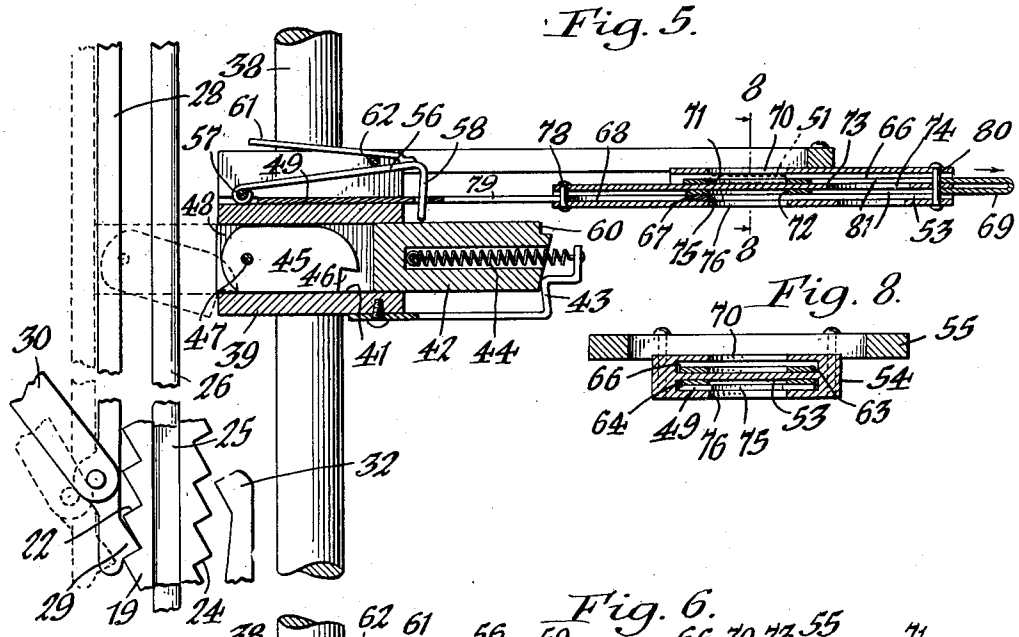


Fig. 8.

Fig. 6.

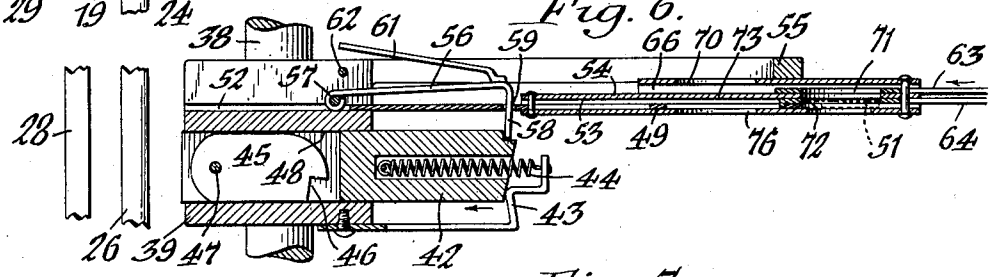


Fig. 7.

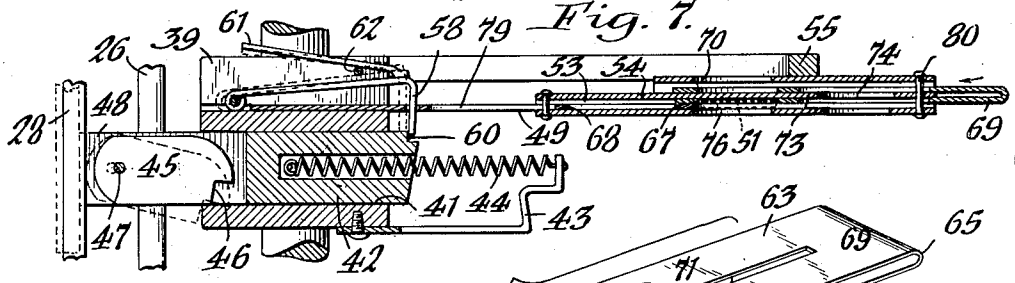


Fig. 9.

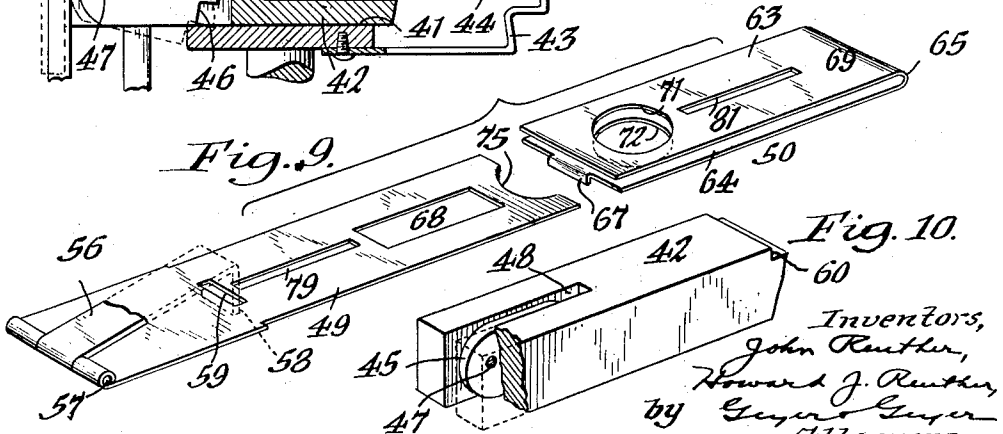


Fig. 10.

Inventors,
John Reuther,
Howard J. Reuther,
by Geyer & Geyer
Attorneys.

Patented June 21, 1927. 1,633,287

UNITED STATES PATENT OFFICE.

JOHN REUTHER AND HOWARD JOHN REUTHER, OF EAST AURORA, NEW YORK.

DISPENSING APPARATUS.

Application filed May 11, 1926. Serial No. 108,257.

This invention relates generally to a vending apparatus and more particularly to a self-serve pump for dispensing gasoline, kerosene, oil and the like.

One of its objects is the provision of a pump of this character having simple and reliable coin-controlled means for rendering the pump operative and automatically governing the dispensing of a predetermined quantity of liquid in accordance with the particular coin used.

Another object of the invention is to provide a self-serve dispensing apparatus in which the coin itself constitutes a part of the means for rendering the pump operative.

A still further object is the provision of a simple and inexpensive apparatus of this character which can be readily applied to the various types of pumps now used at gasoline stations, which is easy to operate, and whose parts are so organized and arranged that they are not liable to get out of order.

In the accompanying drawings:—Figure 1 is a fragmentary side view of a gasoline pump equipped with my invention. Figure 2 is an enlarged side view of the coin-controlled mechanism and associated parts. Figure 3 is a top plan view thereof. Figure 4 is a detailed sectional view taken in the plane of line 4—4, Fig. 3. Figure 5 is an enlarged vertical longitudinal section on line 5—5, Fig. 3, showing the parts in their inoperative position. Figures 6 and 7 are sectional views, similar to Fig. 5, showing the different positions of the parts prior to rendering the pump ready for operation after the insertion of a coin. Figure 8 is a cross section on line 8—8, Fig. 5. Figure 9 is a detached perspective view of the coin-controlled slide elements. Figure 10 is a perspective view of the locking pawl releasing plunger.

Similar characters of reference indicate corresponding parts throughout the several views.

This invention is particularly intended for use in connection with gasoline, kerosene or oil pumps of any well-known construction, the drawings showing a pump casing 15 through which extends a vertically reciprocating pump rod 16 leading to the customary pump plunger and cylinder, not shown, the pump being operated either manually or by compressed air or otherwise to elevate the pump plunger to dispense the gasoline or other liquid from the pump.

In its general organization, the invention comprises means for normally locking the pump rod in its lowered or inoperative position; a coin-controlled device for releasing the pump-rod locking means to render the pump operative and for governing the stroke of the pump rod to dispense a predetermined quantity of gasoline for the coin deposited; and means controlled by the pump rod for causing the return of the pump-locking means and the coin-controlled device to their initial positions, wherein the former prevents a further pumping action of the pump-rod and the latter is reset in position to receive another coin.

The device consists of a base plate 17 bolted or otherwise fastened to the pump-casing 15 and having a standard or bracket 18 rising from the rear side thereof. The upper portion of the pump-rod 16 terminates in a double-faced ratchet bar 19 passing through an opening 20 in the base plate. The teeth 21 on the rear face of the ratchet bar have upwardly-facing stop shoulders 22, while the teeth 23 on the front face have downwardly-facing stop shoulders 24. In its opposite lateral sides the ratchet bar has vertical grooves 25 which engage corresponding guide rails 26 extending upwardly from the base plate and joined at their upper ends with the standard 18 by a connecting plate or web 27.

The means for normally locking the pump-rod 16 in its lowered position to prevent operation of the pump, consists of a locking pawl preferably in the form of an upright bar 28 disposed between the standard 18 and guide rails 26 and suspended for movement to bring its tooth 29 into and out of engagement with the opposing ratchet teeth 21. Parallel links 30 pivotally connect the upper and lower ends of this pawl with the standard and a spring 31 serves constantly to yieldingly retain the pawl in its locked position, shown by full lines in Figs. 1, 2 and 5. Opposed to the locking pawl and cooperating with the teeth 23 on the opposite side of the ratchet bar is an escapement pawl 32, which, when in its operative position, shown by dotted lines in Fig. 2, prevents downward

movement of the pump rod. This escapement pawl is fulcrumed at 33 and is connected to an arm 34 pivoted to the lower end of the locking pawl, said arm acting to force and retain the escapement pawl out of engagement with the ratchet bar when the locking pawl is in engagement therewith. As shown in Fig. 4, a spring 35 tends to move the escapement pawl toward the ratchet bar and a pin and slot connection 36, 37 with the arm 34 permits said pawl to move to and fro during the elevating or effective stroke of the pump-rod 16.

The coin-controlled device for releasing the pump-rod locking means or bar-pawl 28 from the ratchet bar 19 to render the pump operative, so that the motorist or consumer can serve himself a predetermined quantity of gasoline without the necessity of an attendant at the filling station is preferably constructed as follows:—

Rising from the base plate 17 and disposed in front of the guide rails 26 is a pair of vertical guide posts 38 on which a block or cross-head 39 is adjustably mounted, as by set screws 40 or otherwise, said block constituting a support for the working parts of the coin-controlled mechanism. Guided for horizontal movement in an opening 41 in this block and cooperating with the locking pawl 28 to disengage it from the ratchet bar 19 is a tappet or pawl-releasing plunger 42, which is held against a stop or abutment 43 in its normally retracted position, shown by full lines in Figs. 1, 2, 5 and 6, by a spring 44. A vertically-swinging locking detent or catch 45 having a notch 46 at its free lower end is pivoted at 47 within a slot 48 formed in the front-portion of the plunger 42, so that when the latter is projected out of the block-opening 41 to shift the locking pawl 28 to its released position, the detent will, at a predetermined point, drop by gravity to the position shown by dotted lines in Figs. 5 and 7. In this position, the upright edge of the detent notch 46 abuts against the adjacent end of the block 39, while its horizontal edge rests on the bottom of the opening 41, thereby preventing the detent from swinging entirely out of its slot. When projected, the plunger 42 and its detent lie between the guide rails 26, so that they are in the path of movement of the ratchet bar 19.

The movement of the plunger to release the locking pawl from the ratchet bar is effected by a manually operated coin-slide composed of two relatively movable sections 49, 50, one cooperating with the plunger and the other controlling the movement of the former in one direction by the coin 51, say a twenty-five cent piece, which acts as a link between the two sections to cause them to move in unison during the effective or operative stroke thereof. The slide-section 49 consists of a comparatively long horizontally-disposed plate supported at one end on the block 39 and engaging opposing guide-grooves 52 therein, while the opposite end engages a guide-way or channel 53 formed in the lower portion of a supporting member 54 attached to a yoke or extension 55 extending forwardly from said block 39, as shown in Figs. 3 and 5. A releasable coupling lever 56 is pivoted at 57 to the front end of the plate 49 and has a depending lip 58 at its free end passing through an opening 59 in the plate, said lip being adapted to engage a shoulder 60 at the rear end of the plunger 42 at a predetermined point in the movement of the coin-slide. The coupling lever is held in its elevated, non-coupling position, as shown in Fig. 5, by a cam face or inclined lift bar 61 applied to and overhanging the lever and engaging a transverse pin 62 attached to the supporting block 39 above said lever. When the slide plate 49 is moved rearwardly, the lift bar recedes from its pin, allowing the coupling lever to drop by gravity into cooperative engagement with the plunger 42, as shown in Fig. 6, while when moved forwardly to simultaneously actuate the plunger and release the locking pawl 28 from the ratchet bar 19 to render the pump operative, the lift bar of said lever encounters its pin near the end of the stroke and lifts the lever from engagement with the plunger-shoulders 60 in the manner illustrated in Fig. 7.

The companion slide-section 50 preferably consists of vertically spaced upper and lower plates 63, 64 joined at their rear ends by a fold 65, the upper plate engaging a corresponding channel 66 in the upper portion of the supporting member 54 and the lower plate engaging the lower channel 53 thereof and overlapping the adjoining end of the slide-plate 49. The front end of the lower plate 63 of the slide-section 50 has a depending lug 67 which engages a longitudinal slot 68 in the plate 49. In the normal position of the parts shown in Fig. 5, this lug abuts against the rear end of the slot, so that when the projected rear end or hand grip portion 69 of the slide-section 50 is grasped to pull the same rearwardly to the position shown in Fig. 6, the companion slide 49 will travel with it. When pushed forwardly to its initial position, however, said slide 50 will move separately and independently of its companion slide, its lug 67 traveling idly in the slot 68, unless some means is interposed between the opposing ends of the slides to compel their simultaneous movement. The means, in the present instance, to accomplish this result, is the coin 51.

In its top, the channeled slide-supporting member 54 has a coin-receiving opening 70 and the coin-carrying slide 50 has aligning openings 71 and 72 in its upper and lower plate, which normally are in vertical aline-

ment with said coin-receiving opening, but are out of communication with each other at such time, by the intervening partition 73 between the guide channels 53, 66. This partition is provided near its rear end with a transfer opening 74 through which the coin is adapted to drop by gravity into the lower channel 53 when the coin-carrying slide is pulled outward to the position shown in Fig. 6, at which time the openings 71, 72 are in communication. The rear end of the slide section 49 has a substantially semi-circular notch 75 therein so that the coin, which is approximately equal to the combined thickness of the slide-sections, is not only confined in the plate-opening 72 but it also bears or is seated against said notch. Thus, the coin acts as a rigid link between the slide-sections and compels the forward movement of the lower slide section 49 when the companion one 50 is pushed forward, as seen in Fig. 7. At the end of this forward stroke, the coin drops by gravity through a discharge opening 76 in the bottom wall of the lower channel 53 into a suitable box or receptacle 77, said discharge opening being in axial alinement with the coin-receiving opening 70. The stroke of the slide-sections is equal to the distance between the centers of the alining openings 70, 76 and the transfer opening 74, the movement of the slide section 49 being limited in either direction by a stop pin 78 engaging a slot 79 in the section, and the movements of the slide-section 50 being limited by a similar stop pin 80 engaging alining slots 81 in the upper and lower plates 63, 64 of such section.

To prevent the use of steel slugs and beating this device, the top wall of the channeled supporting member 54 may be magnetized, which will cause such slugs to be attracted to and stick to the top wall rather than drop from the upper channel 66 and through the transfer opening 74 into the lower channel 53.

Briefly stated, the operation of the apparatus is as follows:—

Assume the parts to be in the position shown in Figs. 1, 2 and 5, with the pump-rod 16 locked against pumping movement by reason of the pawl 28 being engaged with the ratchet bar 19. When the consumer desires gasoline, he first places a coin 51 in the opening 70 of the supporting member 54 which drops by gravity into the alining opening 71 in the upper plate of the coin-carrying slide 50 and rests on the partition 73 between the guide channels 53, 66. This slide is then pulled rearwardly to the position shown in Fig. 6, this movement drawing the companion slide 49 with it to bring the lip 58 of its coupling lever 56 into engagement with the shoulder 60 of the plunger 42. At the end of the stroke, the coin drops through the partition-opening 74 onto the bottom of the guide-channel 53 where it is confined within the lower plate-opening 72 and also bears against the opposing notch 75 of the slide 49. Upon now pushing the slide 50 forwardly to its initial position, the companion slide 49 travels with it and the plunger 42 is likewise advanced and encounters the locking pawl 28 and releases it from engagement with the ratchet bar 19. Near the end of its stroke, the plunger-catch 45 drops to its locking position shown by dotted lines in Figs. 5 and 7 and the coupling lever 56 is simultaneously disengaged from the plunger through the medium of the lift bar 61 and pin 62 in the manner shown by full lines in Fig. 7. The pump is now unlocked and free to function, the consumer operating it either by hand or otherwise, depending on the type of pump to which the device is employed. As the gasoline is dispensed from the pump, the pump-rod travels upwardly and the amount of gasoline dispensed is dependent on the stroke of the pump, which is determined by the value of the coin for which the device is intended to receive. At the end of the stroke, the upper end of the ratchet bar 19 trips the plunger-catch 45, allowing the spring 44 to return the plunger to its initial position and consequently permitting the locking pawl 28 to return to its locked position by the spring 31. The pump plunger is then lowered to its original position either by the present consumer or by the one following.

In adapting the device for use with coins of smaller or larger denominations, the stroke of the pump-plunger is correspondingly decreased or increased by lowering or raising the coin-controlled mechanism to an adjusted set position on the guide posts 38. The various parts of the device are enclosed within a suitable housing 81 shown by dotted lines in Fig. 1, which covers all the parts with the exception of the coin-receiving opening 70 and the hand-grip portion 69 of the coin-slide 50.

It will be understood from the foregoing that the invention is not limited to the exact details of construction herein shown and described, and various changes therein may be made within the scope of the appended claims without departing from the spirit of the invention or sacrificing its advantages.

We claim as our invention:—

1. In a device of the character described, the combination with a liquid pump having a part to be actuated for dispensing the liquid, of means for locking said pump-part against operative movement, and unitary means for releasing said locking means from said part to render the pump operative and for arresting the pump-part at a predetermined point in its movement.

2. In a device of the character described, the combination with a liquid pump having a part to be actuated for dispensing the

liquid, of means for locking said pump-part against operative movement, and means for releasing said locking means from said part to render the pump operative, said releasing means constituting a stop for governing the extent of operative movement of the pump-part when released.

3. In a device of the character described, the combination with a liquid pump having a part to be actuated for dispensing the liquid, of means for locking said pump-part against operative movement, a releasable member arranged to move said locking means from engagement with said part to render the pump operative, said member being disposed across the path of movement of the pump-part in its operative position to limit the travel thereof in one direction, and means for actuating said releasable member in a direction to disengage said locking means.

4. In a device of the character described, the combination with a liquid pump having a part to be actuated for dispensing the liquid, of means for locking said pump-part against operative movement, a releasable member arranged to disengage the locking means from said part to render the pump operative, means for projecting said releasable member to its operative position, and means controlled by the pump-part for automatically governing the return of the releasable member to its inoperative position.

5. In a device of the character described, the combination with a liquid pump having a part to be actuated for dispensing the liquid, of means for locking said pump-part against operative movement, a releasable member arranged to disengage the locking means from said part to render the pump operative, means for projecting said releasable member to its operative position, yieldable means tending to urge the releasable member to its retracted position, and a detent for holding said member in its projected position, said detent being arranged in the path of movement of the pump-part in the operative position of the releasable member.

6. In a device of the character described, the combination with a gasoline pump having a pump-rod and ratchet teeth thereon, of a pawl normally engaged with said teeth to render the pump inoperative, a support, a pawl releasing member mounted on said support, means for yieldingly resisting movement of said member out of its normal retracted position, a device adapted for operative engagement with said pawl-releasing member to project it into position to release the pawl, and means for holding said member in such position, said member and its holding means being arranged in the path of movement of the pump rod to limit the stroke thereof and automatically release said holding means to permit the return of the pawl-releasing member to its normal reracted position.

7. In a device of the character described, the combination with a gasoline pump having a pump-rod and ratchet teeth thereon, of a pawl normally engaged with said teeth to render the pump inoperative, a support, a pawl releasing member mounted on said support, means for yieldingly resisting movement of said member out of its normal retracted position, a device adapted for operative engagement with said pawl-releasing member to project it into position to release the pawl, a detent applied to said member and adapted to interlock with said support in the projected position of the member, said detent being adapted to be tripped at a predetermined point in the operative stroke of the pump-rod.

8. In a device of the character described, the combination with a gasoline pump having a pump-rod and ratchet teeth thereon, of a pawl normally engaged with said teeth to render the pump inoperative, a support, a pawl releasing member mounted on said support, a device for governing the movement of the pawl-releasing member to a position to release the pawl, said device including a slide having a coupling element arranged for engagement with said member to compel movement of the latter therewith in one direction, and means for effecting the automatic return of said member in the opposite direction.

9. In a device of the character described, the combination with a gasoline pump having a pump-rod and ratchet teeth thereon, of a pawl normally engaged with said teeth to render the pump inoperative, a support, a pawl releasing member mounted on said support, a device for governing the movement of the pawl-releasing member to a position to release the pawl, said device including a slide having a coupling element arranged for engagement with said member to compel movement of the latter therewith in one direction, and means governed by the pump-rod for effecting the automatic return of said member in the opposite direction.

10. In a device of the character described, the combination with a gasoline pump having a pump-rod and ratchet teeth thereon, of a pawl normally engaged with said teeth to render the pump inoperative, a support, a pawl-releasing member mounted on said support, a device for governing the movement of the pawl-releasing member to a position to release the pawl, said device including a reciprocating slide having a coupling element arranged to interlock with said pawl-releasing member to compel movement thereof with said slide in one direction, means for disengaging said coupling

element from said member at a predetermined point in the projected movement of the latter and said slide, and means for effecting the automatic return of the pawl-releasing member in the opposite direction.

11. In a device of the character described, the combination with a gasoline pump having a pump-rod and ratchet teeth thereon, of a pawl normally engaged with said teeth to render the pump inoperative, a support, a pawl-releasing member mounted on said support, a device for governing the movement of the pawl-releasing member to a position to release the pawl, said device including a reciprocating slide having a coupling element arranged to interlock with said pawl-releasing member to compel movement thereof with said slide in one direction, means for disengaging said coupling element from said member at a predetermined point in the projected movement of the latter and said slide, a detent applied to said member and adapted to interlock with said support upon the disengagement of the coupling element therefrom, said detent being disposed in the path of movement of the pump-rod to be tripped thereby at a predetermined point of the pump stroke, and means for returning the pawl-releasing member to its retracted position when said detent is tripped.

12. The combination with a gasoline pump including a pump-rod, of a locking element normally engaged with the pump-rod to render the pump inoperative, a combined releasing and stop member for said locking element and pump-rod, respectively, and means for actuating said member.

13. The combination with a gasoline pump including a pump-rod, of a locking element normally engaged with the pump-rod to render the pump inoperative, a combined releasing and stop member for said locking element and pump-rod, respectively, mechanism for actuating said member in a direction to release the locking element and render the pump operative, and automatic means governed by the pump-rod for moving said combined releasing and stop member in the opposite direction.

14. In a device of the character described, the combination with a liquid pump having a part to be actuated for dispensing the liquid, of means for normally locking the pump-part against operative movement, and means projectible into the path of movement of said pump-part for releasing said locking means to render the pump initially operative and for limiting the extent of movement of the pump-part.

15. In a device of the character described, the combination with a liquid pump having a part to be actuated for dispensing the liquid, of means for normally locking the pump-part against operative movement, combined means for releasing said locking means from said pump-part and for arresting the movement of the latter at a predetermined point, and means tending to yieldingly urge said combined means to its retracted position when the pump part reaches such predetermined point.

JOHN REUTHER.
HOWARD JOHN REUTHER.