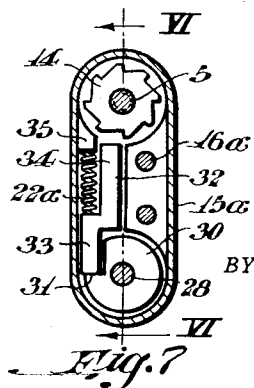
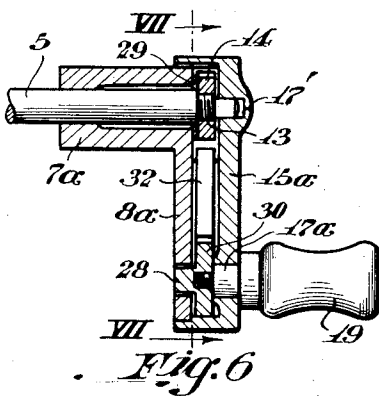
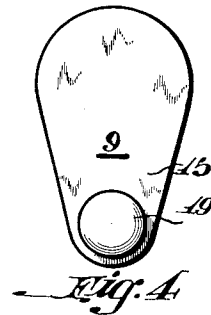
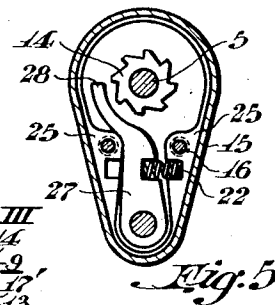
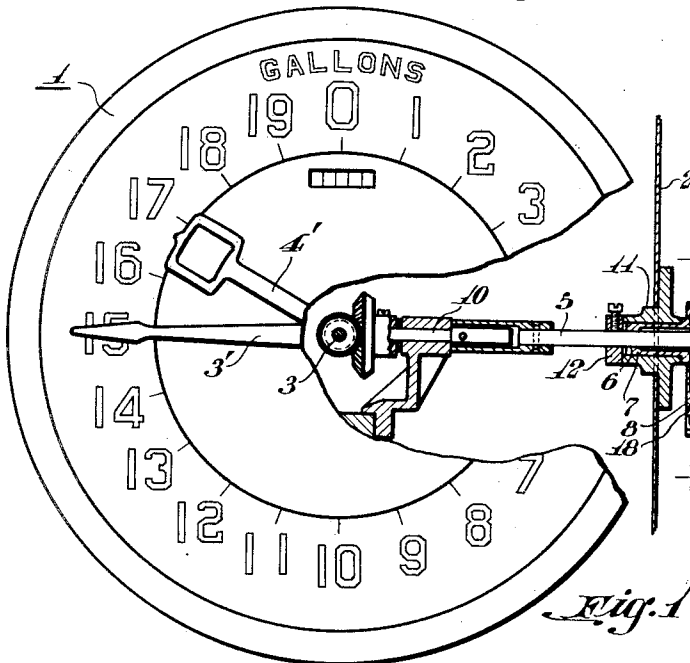
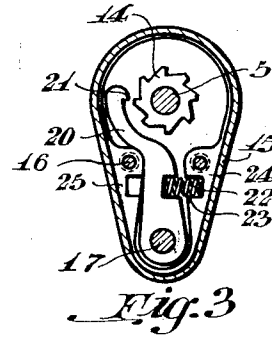
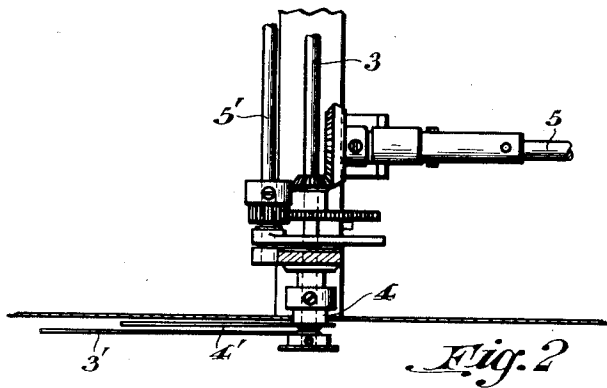


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REGISTER SET-BACK CRANK
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2,098,730

REGISTER SET-BACK CRANK

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1 Claim. (Cl. 74-548)

The present invention relates to liquid registers such as are employed in gasoline dispensing pumps, and more particularly relates to side set back mechanisms therefor.

In general, such dispensing pumps comprise a main casing or housing for the pump, motor, meter and register, the dial of the register being located in one wall of the housing so as to be visible from the front. The type of register having a set back knob projecting through the glass dial cover has the disadvantage of requiring the boring of a hole through the glass cover, and therefore it has been proposed to place the set back knob at the side of the outer casing suitably coupled to the register unit pointer shaft. The register is frictionally driven from the meter, and in this position it is possible for an unscrupulous customer to bear hard against the set back knob unobserved and retard the register while he is making a purchase, or the knob can similarly be manipulated and turned by the attendant to advance the register and thus defraud the customer.

According to the present invention, we provide a set back mechanism coupled to the unit pointer shaft in such manner that it is not possible to manipulate the set back mechanism in any way to advance the register, and we provide a secret lock or "combination" thereof which must be operated for setting back the register. A person unacquainted with the combination cannot set back or retard the register, and will fumble about in a conspicuous manner in attempting to operate the set back. Any person acquainted with the operation thereof can set back or retard the register, but in doing so, his actions will be conspicuous so that he will be observed by the attendant.

Accordingly, it is a major object of the present invention to provide a set back crank for a shaft which can be manipulated only in a conspicuous manner to prevent stealthy tampering.

Another object is the provision of a set back mechanism of the one way clutch type which can be quickly and easily brought into set back engagement by a person acquainted with the operation thereof and which involves a concealed manipulation to bring the visible set back mechanism into engagement.

A further object is the provision of a set back crank which includes a one way clutch mechanism and a concealed "combination" having the outward appearance of a simple crank, and which requires proper manipulation of the crank handle to engage the one way clutch with a shaft.

A further object is the provision of a combination crank having an oscillatable handle thereon connected to the clutching mechanism for manual rotation by the hand or fingers to actuate the clutching mechanism.

It is a still further object to devise a one-way clutch mechanism and mounting therefor in such manner that they may be assembled in either of two relationships so as to accommodate an associated shaft regardless of the direction in which the latter normally rotates.

Another object of the present invention is to combine a crank with a shaft by a one-way clutch mechanism in such manner that the crank forms a bearing for the shaft.

The foregoing and additional objects of invention will be fully clarified by the following detailed description and appended claim, when studied in conjunction with the accompanying drawing, wherein:

Figure 1 is a front elevation of a gasoline register, in connection with the preferred embodiment of the present invention shown in vertical section, the face of the register being broken away to show the set back shaft, and a fragment of the housing being shown through which the set back shaft extends.

Figure 2 is a fragmentary plan view of Figure 1 showing parts of the internal mechanism of the register.

Figure 3 is an enlarged section on line III-III of Figure 1.

Figure 4 is an enlarged side elevation of the set back crank looking in the direction of the arrow IV.

Figure 5 is a vertical section of a modification corresponding to a section taken on line III-III of Figure 1.

Figure 6 is a vertical section taken on line VI-VI of Figure 7 of a further modification.

Figure 7 is a vertical section on line VII-VII of Figure 6.

With continued reference to the drawing, wherein like numerals are employed to designate like parts, and with particular reference to the embodiment seen in Figures 1 to 4;

The register designated generally by the numeral 1 is enclosed within a main pump housing 2, and the set back shaft 5 adapted to be coupled thereto, extends through the housing on one side thereof. The register is driven from a suitable meter or pump through suitable frictional couplings (not shown) and the unit shaft 3 drives the unit pointer 3' while the total sleeve 4 suitably coupled to shaft 3 by reduction gear-

ing and a counter shaft 5' drives the total gallonage pointer 4' at a slower rate to indicate the total quantity dispensed. The set back shaft 5 is journaled adjacent its end as indicated at 5 in a sleeve 7 which is formed as an integral extension of the back cover 8 of a crank assembly indicated generally by the numeral 9. As shown, the shaft 5 is removably coupled by a pin and groove type universal coupling to an auxiliary set back shaft 10 which in turn is geared to the unit shaft 3 to rotate therewith, but it will be understood that the shaft 5 may be coupled to the register in any suitable manner. The sleeve 7 is suitably supported in a suitable bearing 11 secured by screws (not shown) or other suitable means to the casing 2, and a collar 12 held on shaft 5 by a set screw prevents removal or withdrawal of shaft 5.

The end of shaft 5 is reduced at 13 and is threaded to receive the ratchet wheel 14, and in the construction shown the ratchet wheel 14 and collar 12 hold the shaft 5 against longitudinal displacement. The chambered cover plate 15 has edges which mate with those of the back plate 8 and the plates are held together by screws 16 to form the hollow crank arm 9. The cover plate has a recess 17 therein which receives the further reduced end of shaft 5 in assembled position.

The crank arm 9 extends radially from the shaft 5, and at its free outer end the plate 15 provides a bearing for a crank pin 17 having a reduced portion 18 journaled in a suitable recess in cover plate 8. The crank pin 17 projects through cover plate 15 and has a knob or handle 19 secured thereto to rotate therewith. This knob serves the double function of providing an operating handle for the crank, and when properly manipulated, causes proper engagement of the one way clutch in the set back crank, as will presently appear.

A pawl 20 having a hooked end 21 (Figure 3) is located within the hollow crank arm 9, and is secured at one end to crank pin 17 in any suitable manner, as by screw threads, to rotate therewith. The pawl 20 is normally pressed by spring 22 located in pocket 23 out of engagement with ratchet wheel 14, and upon turning of knob 19 against the bias of spring 22, and simultaneously or thereafter rotating the crank 9, the hooked end 21 engages ratchet 14 so that the crank arm 9, ratchet wheel 14 and shaft 5 rotate in unison.

Spring 22 resists sufficiently the rotation of knob 19 during manipulation so that should a person unfamiliar with the set back mechanism attempt to manipulate the crank he will receive the impression that knob 19 is not rotatable relative to the crank and will therefore hold the knob loosely in his fingers so that when the crank 9 is turned it will rotate freely on shaft 5 without turning the latter. The hooked pawl 20 can be engaged with the ratchet only by applying a continuous bias to knob 19 by the fingers as the crank is turned.

Thus, anyone not familiar with the mechanism would fumble around in an attempt to stealthily set back the register. It is impossible to advance the register because when the knob 19 is turned to cause the pawl 20 to engage ratchet 14 and the crank 9 is turned to advance the register, the hooked end 21 of the pawl slips over the teeth of the ratchet. The leverage available in knob 19 is so small that it is not ordinarily possible for the attendant to jam the

pawl and ratchet together with sufficient force to overcome this slippage.

The described combination of the crank assembly is difficult to solve because of the beguiling appearance of the assembly. The combination or locking mechanism is hidden and the crank resembles many simple conventional cranks which carry actuating knobs at their free ends. The words "crank", as used throughout this application, is employed to designate any effective crank arm the end of which is radially offset from an associated shaft, and such an effective crank arm may be formed by a plate or disc as well as by an actual arm or elongated casing.

Some registers have their pointers resettable by rotation of the set back shaft in clockwise direction, while others require rotation of the set back shaft in counterclockwise direction for resetting the register. As shown in Figures 1 to 4, the set back shaft 5 is rotated counterclockwise for resetting, and provision is made to adapt the crank for clockwise resetting operation. The pocket 23 is located in a lug 24 on one edge of cover 15, and the lug 25 on the opposite edge having a similar recess serves as a stop for pawl 20. This construction permits inversion of pawl 20 and ratchet 14 for driving the shaft 5 in clockwise direction for registers requiring clockwise setting. The fastening screws 16 pass through these lugs.

In the modification shown in Figure 5, wherein the parts similar to those of the modification of Figures 1 to 4 have the same reference characters, the pawl 27 has an angular end 28 which engages ratchet wheel 14 upon suitable rotation of the knob 19 and crank pin 17. In this modification the knob 19 must be biased reverse to the natural direction of operation in order to cause the pawl 25 to engage ratchet 14 for set back operation.

The modified form, illustrated in Figures 6 and 7, functions in substantially the same way as that above described, the chief difference in the two embodiments residing in the construction of the pawl assemblies. The crank casing of Figures 6 and 7 comprises a back plate 8a having an integral bearing sleeve 7a, and a narrow cover plate 15a secured to the back plate by screws 16a. A ratchet wheel 14 is locked on the shaft 5 against a washer 29 which in turn bears against the back plate 8a.

The knob 19 is secured to a pin 17a, the latter being journaled in the cover plate 8a and tightly screwed into a special cam 30 that is mounted for free oscillation within the crank casing. The cam has an axial extension 28 journaled in the back plate. The cam is cylindrical except for a segmental notch cut into it off-center and longitudinally of the crank. The bottom of the notch provides a camming surface 31.

A pawl element 32, comprising a pair of laterally offset legs 33 and 34, is positioned between the cam and the ratchet in such manner that the leg 33 fits within the notch 31. A lug 35 is formed on the cover plate, and a spring 22a reacts, between this lug and the inner end of the leg 33, to normally urge the outer end of the leg 33 into engagement with the cam surface 31, at which time the leg 34 does not engage the ratchet. In this position of parts, a mere rotation of the crank casing will have no effect on the shaft 5.

In order to intercouple the crank and the ratchet, the knob 19 must be oscillated to turn the cam 30 in counterclockwise direction as

shown in Figure 4 to cause the pawl member 32 to be reciprocated inwardly until its detent end or leg 34 engages one of the tooth spaces of the ratchet. The side wall of the notch in cam 30 5 assists in guiding the pawl member during its slight reciprocation. The intercoupled relationship of course must be maintained as long as it is desired to rotate the shaft 5.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present 10 embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the 15 appended claim rather than the foregoing description, and all changes which come within the meaning and range of equivalency of the

claim are therefore intended to be embraced therein.

What is desired to be secured by Letters Patent and claimed as new is:

In a shaft operating mechanism, a manually 5 operated crank arranged to operate said shaft only when selectively manipulated in a predetermined manner by an operator comprising a ratchet on the end of said shaft, a crank on the 10 end of said shaft with a rotatable handle at the end thereof, a pawl fixed to said handle to rotate therewith and to engage said ratchet when 15 said handle is rotated, and means normally urging said pawl out of engagement with said ratchet.

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