June 30, 1931. D. L. WRAY ET AL 1,812,576

APPARATUS FOR RECORDING THE DELIVERY OF MEASURED QUANTITIES OF LIQUIDS

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Fig. 1.

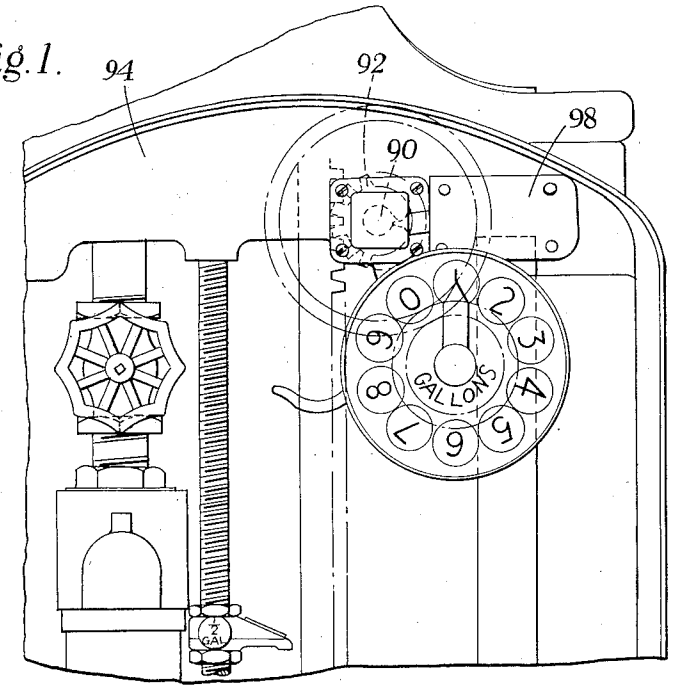
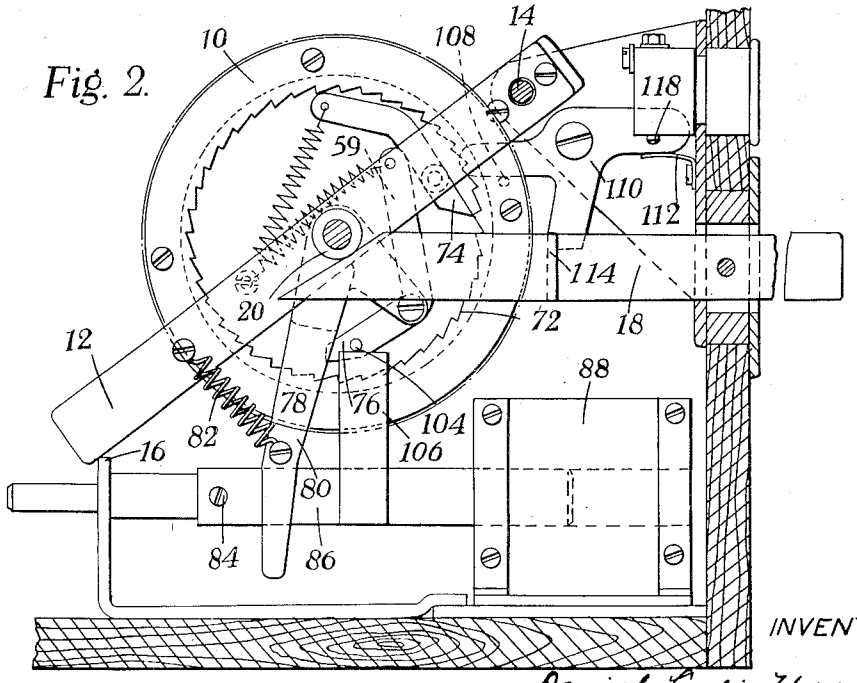


Fig. 2.



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June 30, 1931. D. L. WRAY ET AL 1,812,576

APPARATUS FOR RECORDING THE DELIVERY OF MEASURED QUANTITIES OF LIQUIDS

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Fig. 3.

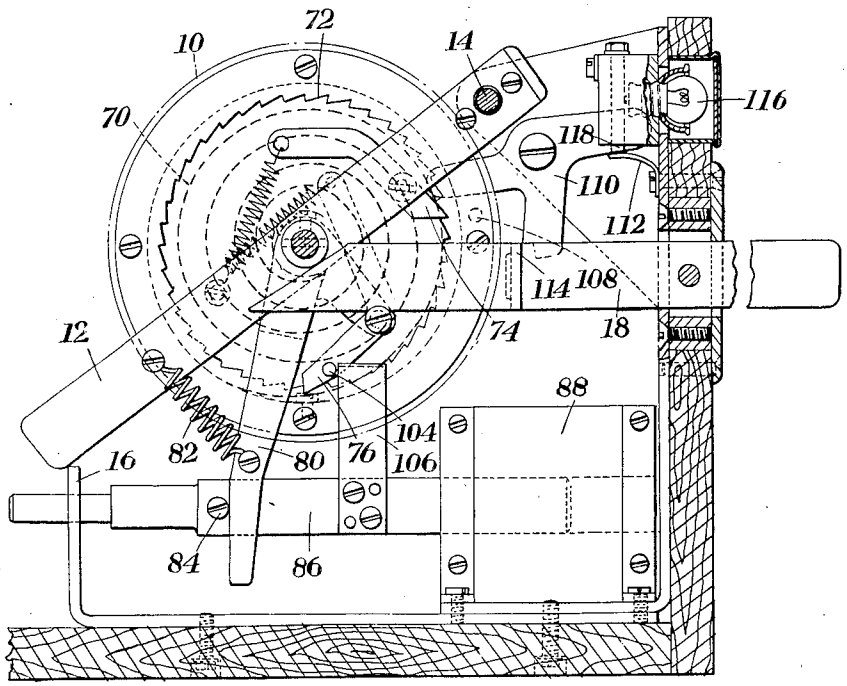
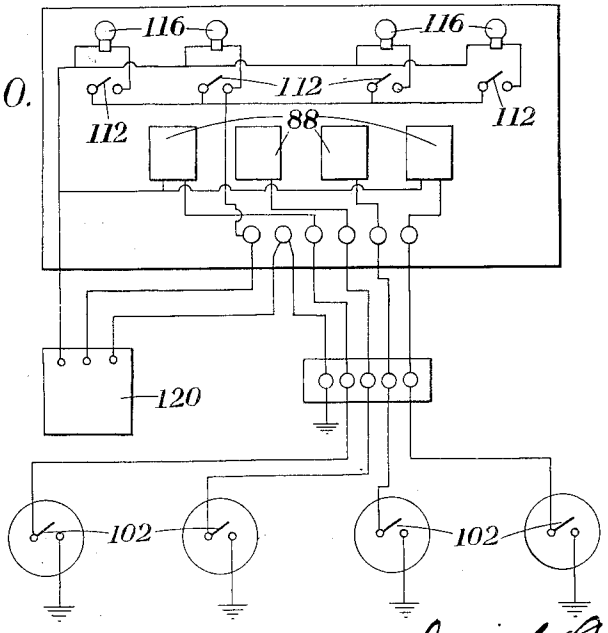


Fig. 10.



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June 30, 1931. D. L. WRAY ET AL 1,812,576

APPARATUS FOR RECORDING THE DELIVERY OF MEASURED QUANTITIES OF LIQUIDS

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Fig. 4.

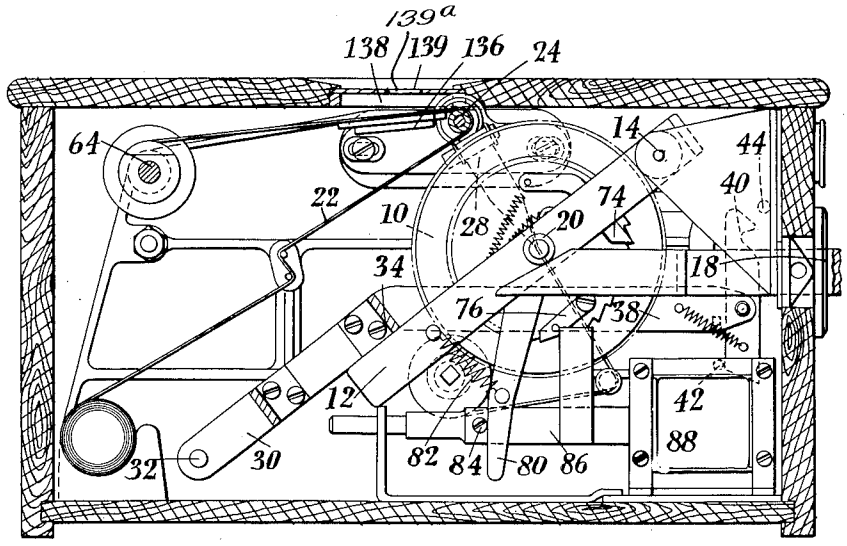
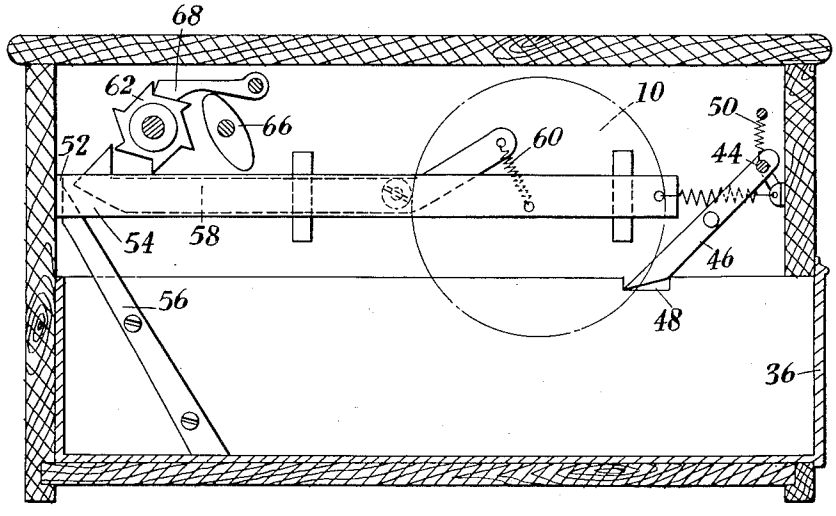


Fig. 5.



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June 30, 1931. D. L. WRAY ET AL 1,812,576

APPARATUS FOR RECORDING THE DELIVERY OF MEASURED QUANTITIES OF LIQUIDS

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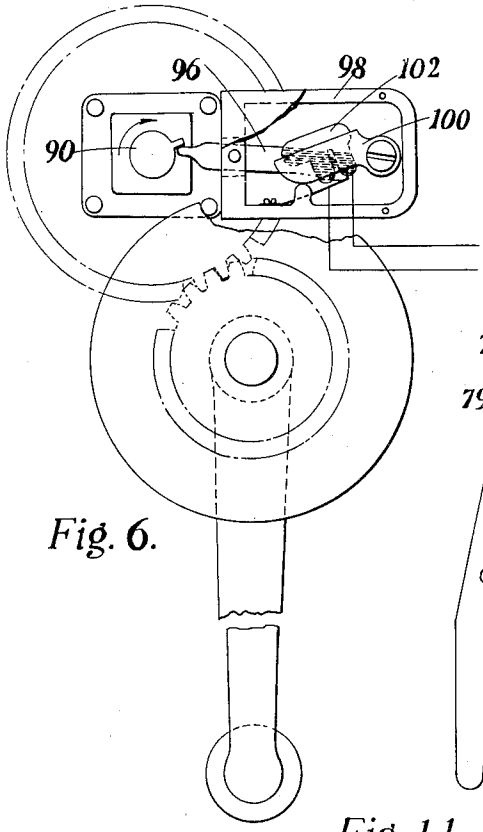


Fig. 6.

Fig. 8.

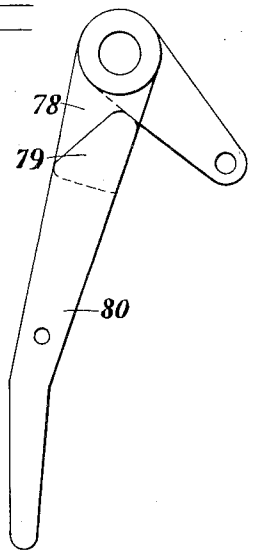


Fig. 9.

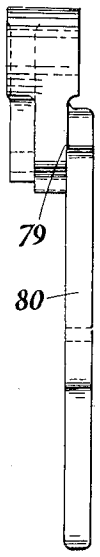
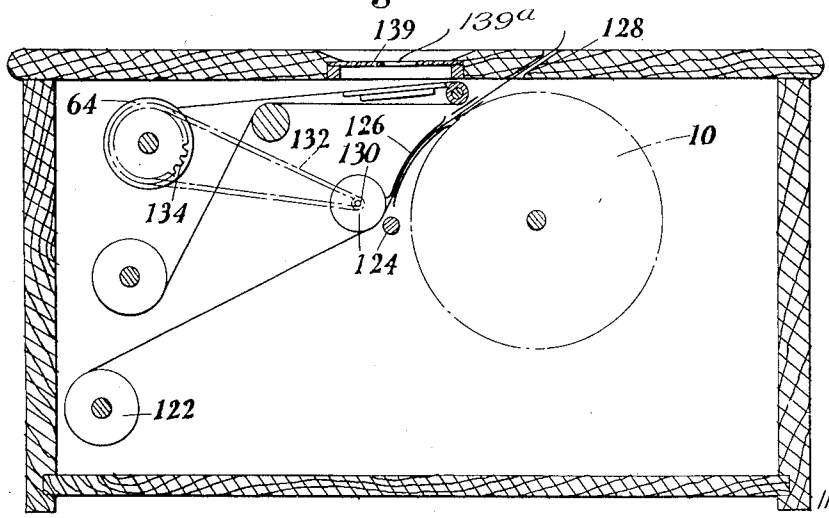


Fig. 11.



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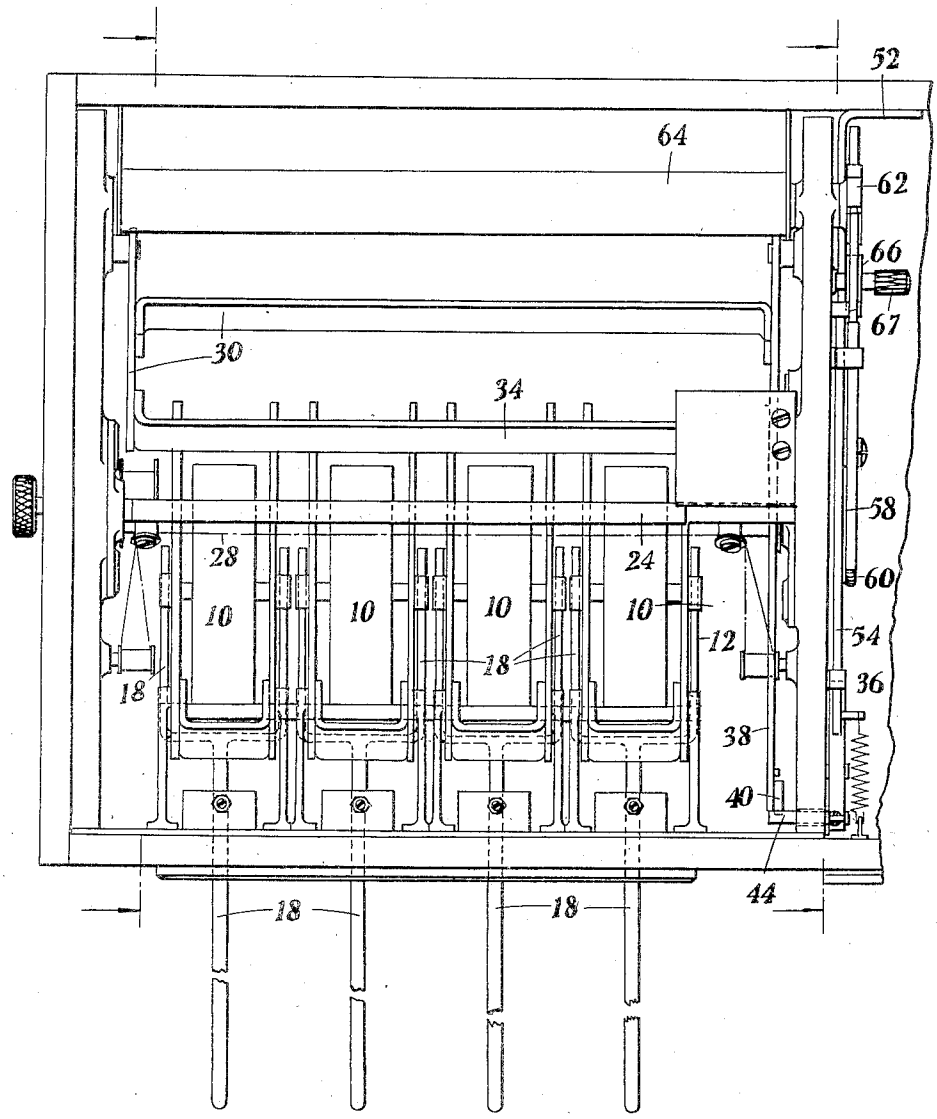
By Frank A. Anderson ATTORNEY

June 30, 1931. D. L. WRAY ET AL 1,812,576

APPARATUS FOR RECORDING THE DELIVERY OF MEASURED QUANTITIES OF LIQUIDS

Filed Sept. 8, 1930 8 Sheets-Sheet 5

Fig. 7.



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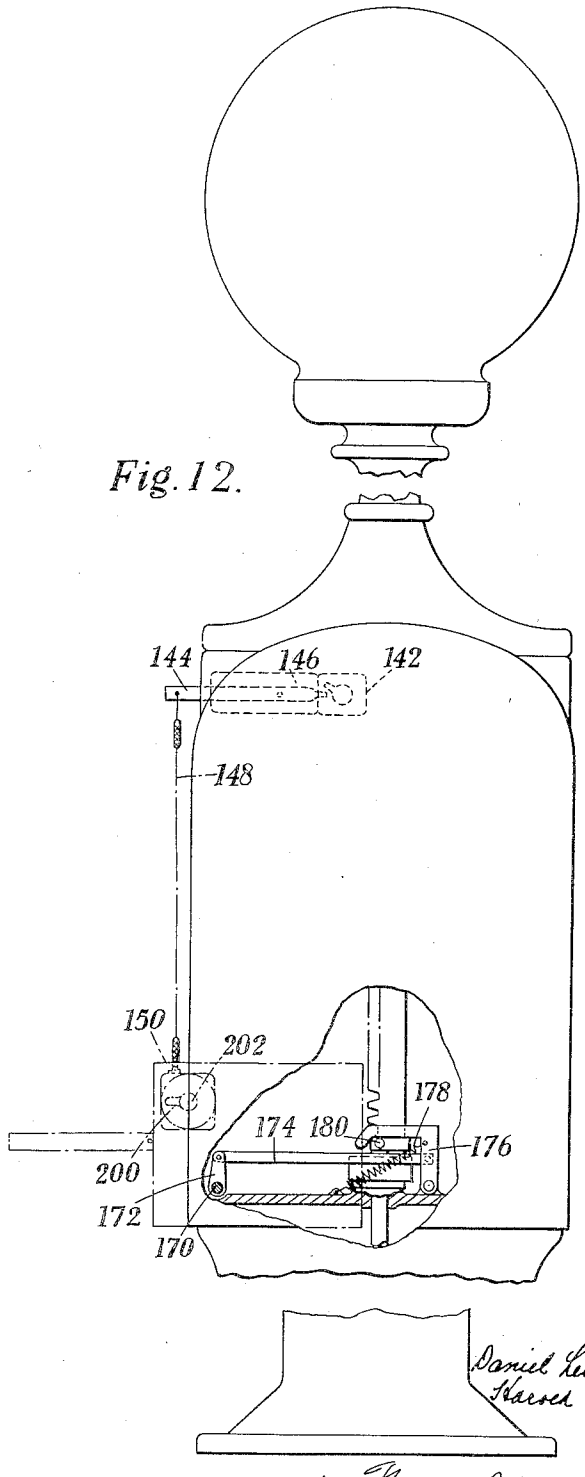
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June 30, 1931. D. L. WRAY ET AL 1,812,576

APPARATUS FOR RECORDING THE DELIVERY OF MEASURED QUANTITIES OF LIQUIDS

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Fig. 12.



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June 30, 1931. D. L. WRAY ET AL 1,812,576

APPARATUS FOR RECORDING THE DELIVERY OF MEASURED QUANTITIES OF LIQUIDS

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Fig. 13.

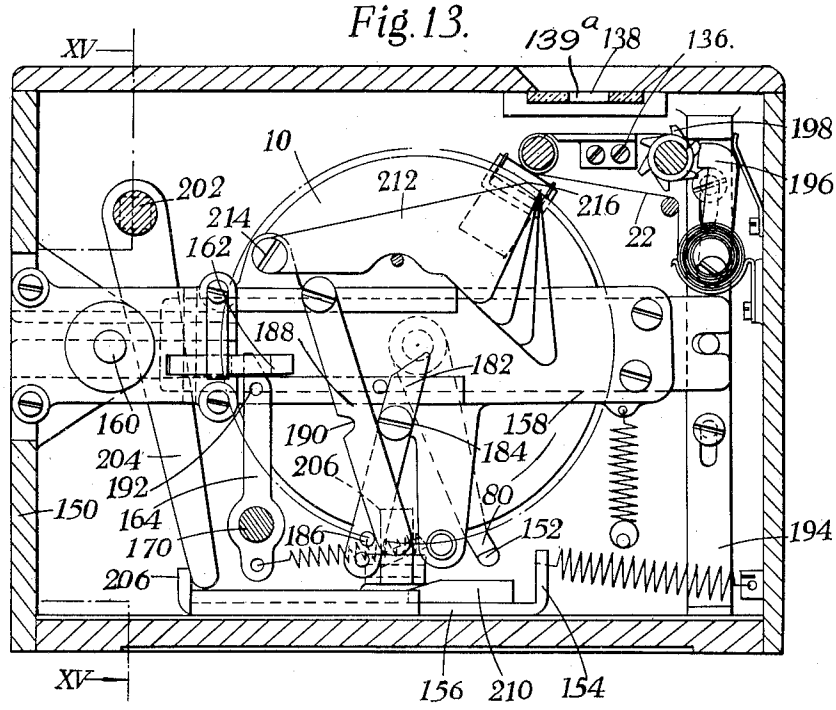
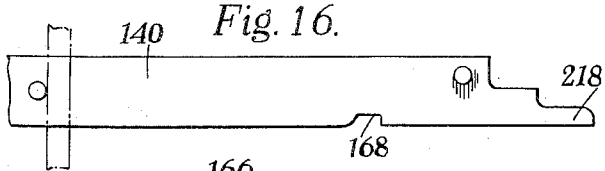


Fig. 16.



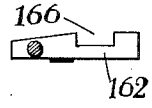


Fig. 17.

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June 30, 1931. D. L. WRAY ET AL 1,812,576

APPARATUS FOR RECORDING THE DELIVERY OF MEASURED QUANTITIES OF LIQUIDS

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Fig. 14.

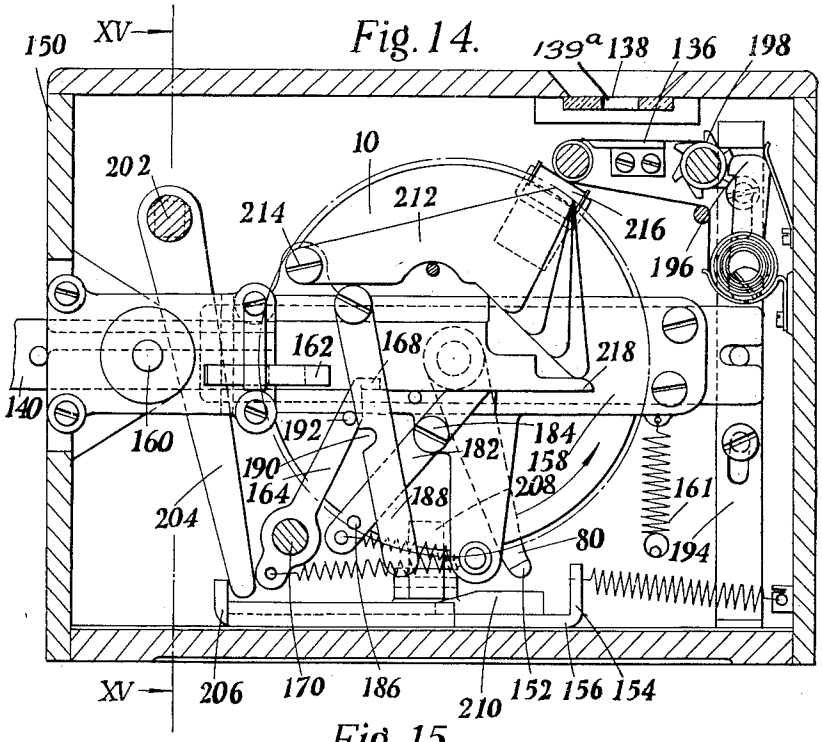
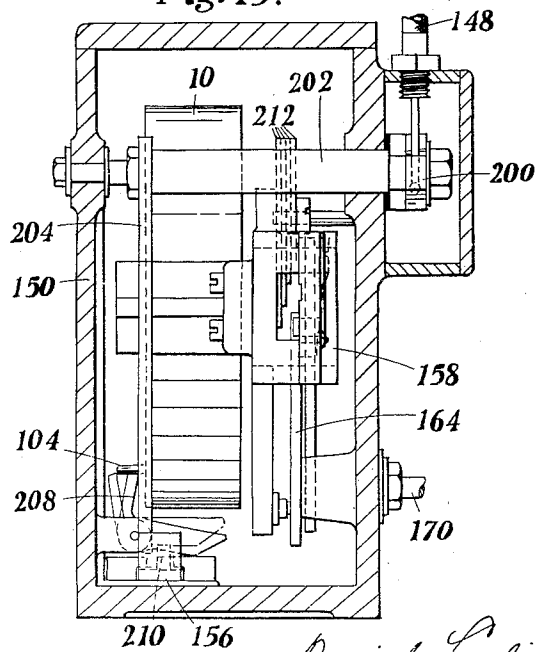


Fig. 15.



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Patented June 30, 1931 1,812,576

UNITED STATES PATENT OFFICE

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APPARATUS FOR RECORDING THE DELIVERY OF MEASURED QUANTITIES OF LIQUIDS

Application filed September 8, 1930, Serial No. 480,546, and in Great Britain September 5, 1929.

This invention relates to apparatus for delivering measured quantities of liquid, for example motor fuel or oil, of the kind which includes a liquid-delivering pump having a piston which returns to the same starting position after every complete liquid-delivering operation. The invention is in no way concerned with liquid-delivering apparatus of other types, for example those which deliver liquids from bottles or those which include a variable-volume measuring chamber which is filled and emptied by gravity.

The object of the invention is to provide recording mechanism for delivering-apparatus of the kind referred to which recording mechanism will be set automatically in accordance with the amount of liquid delivered and actuated by hand or otherwise.

A further object is to accurately indicate what particular amount of fluid a particular individual draws from a pump at any time, whereby a positive check may be kept on the employees at a fluid dispensing station.

According to this invention a movable type-carrier (for example a type-wheel is operatively connected to the pump-piston in such a manner as to advance in step-by-step fashion, one step for each predetermined unitary pumping movement of the pump piston, and a single actuating member arranged to impress the type upon the record-sheet and to return the type carrier to zero position in a single operation.

There may be a plurality of liquid-delivering pumps and a plurality of type carriers, one for each pump, mounted together remote from the pumps and arranged to effect printing independently of one another on a single record-sheet, but it is within the scope of the invention to mount the recording mechanism on the pump itself, in which case the manually-operable actuating member may take the form of an insertible key, which may serve to unlock the normally locked delivery means. Several such keys may be provided, differently shaped so that each actuates a separate one of a set of additional type-elements, thereby recording the fact that a particular key was used as well as making a record of the amount delivered. Preferably the arrangement is such that the key, once inserted, cannot be withdrawn until the recording operation has been completed.

Preferably the step-by-step movement of the type carrier is effected by an electromagnet under the control of a switch actuated by the pump as a consequence of the delivery of liquid.

It is preferred also to provide a signal (for example an electric lamp) which is operated as a consequence of the setting of the type, thereby informing the attendant that the recording mechanism is ready for actuation.

Two practical embodiments of the above and other features of the invention will now be described by way of example, with reference to the accompanying drawings, in which

Figure 1 is a view of a petrol pump of known type carrying the attachment by which the recording apparatus is actuated,

Figure 2 is a side elevation partly in section of a part of one of the recording units in the normal or resting position,

Figure 3 is a view similar to Figure 2 with the parts in the positions which they occupy when petrol has been delivered but before the printing operation,

Figure 4 is a side elevation of a complete unit,

Figure 5 is a side elevation of the cash-drawer mechanism,

Figure 6 is a side elevation of the switch attachment to the pump,

Figure 7 is a plan, with the top of the casing removed, of a battery of four units,

Figures 8 and 9 are detail views of a part of the recording mechanism,

Figure 10 is a circuit diagram,

Figure 11 is a diagrammatic side elevation showing the paper-feed devices used when it is desired to issue tickets or vouchers, one for each transaction,

Figure 12 is a view of a part of a petrol pump with an attachment embodying an alternative form of the invention,

Figure 13 is a side elevation partly in sec-

tion of the attachment with the parts in the normal position,

Figure 14 is a view similar to Figure 13 with an actuating key inserted.

Figure 15 is a cross-section along the line XV—XV in Figure 14, some parts being omitted for the sake of clarity,

Figure 16 is a view of the actuating key, and

Figure 17 is a plan of a detail of the latching mechanism.

The apparatus to be described with reference to Figures 1 to 10 comprises recording mechanism in a situation remote from the petrol pump, which is provided with a small switch attachment operated by the crank of the pump. When the crank is operated a circuit leading to the recording mechanism is closed, a type-wheel is set in accordance with the amount of petrol delivered, a signal lamp is lighted, and the manual actuating handle is unlatched, which handle, when operated, prints the amount, price, etc., of petrol delivered and unlocks a cash-drawer. The return of the handle to normal position automatically causes the type-wheel to be re-set to zero, the handle to be re-latched and the signal lamp to be extinguished. The cash drawer is relocked upon being pushed home. A number of petrol-pumps, each provided with a switch attachment, may be connected to a multiple recording mechanism, comprising several recording units each independently connected to a separate pump but recording on a single record roll and having a single cash drawer common to them all.

Figures 2, 3 and 4 illustrate a single recorder unit, while in Figure 7 four such units are shown grouped together in a single casing, with a single cash drawer common to the four units.

Each unit comprises a type wheel 10 carried in bearings in a frame 12 pivoted at 14. The lower end of each frame normally rests on a stop 16 which limits its downward movement, and printing is effected by depressing the outer projecting end of a pivoted lever 18 the inner end of which engages beneath the bearing boss 20 on the frame 12. This movement raises the frame, thus causing the wheel 10 to be pressed against the paper strip 22 (Figure 4) supported on the platen 24. The paper strip is wide enough to receive the impressions from all the type-wheels in the casing 26, and an ink ribbon 28 extends the full length of the platen between the paper and the type.

A frame 30 (Figures 4 and 7) is pivoted within the casing at 32 and a bail 34 carried by the frame overlies the frame 12. A hook 40 is pivotally connected to the frame 30. The lower end of this hook normally rests against a pin 42. When any one of the frames 12 is raised the frame 30 will be lifted, thus raising the hook 40 sufficiently far for its lower end to clear the pin 42. The spring then swings the hook into engagement with a pin 44 (Figures 4, 5 and 7) on a pivoted detent 46 (Figure 5) which normally engages a notch 48 in the edge of the cash drawer and holds it shut. When the frames 12 and 30 return to their normal positions, the hook 40 will pull the upper end of the detent 46 downwards against the tension of a spring 50, thus raising its lower end out of engagement with the notch 48, and thereby releasing the drawer. The lower end of the hook 40 is bevelled as shown. During the return movement this bevelled end rides over the pin 42 and returns the hook to its original position.

The bent end 52 of a sliding spring-pressed bar 54 is engaged by a bar 56 fixed to the drawer, the spring tending to open the drawer, which therefore springs open when the detent 46 is raised. A pawl 58 pivoted to the bar 54 and controlled by a spring 60, cooperates with a ratchet-wheel 62 fixed to the spindle of a paper-feed reel 64, so that each time the drawer springs open, that is to say immediately after each printing operation, the paper is fed a short distance to present a fresh space to the type. A cam 66 manually operated by a knob 67, is provided which when turned moves the pawl 58, and also a retaining pawl 68, out of engagement with the ratchet-wheel, to facilitate the removal of the finished record wound on the reel 64.

Each type-wheel is urged in an anticlockwise direction, as seen in Figures 2, 3 and 4, by a coiled spring 70 (Figure 3), and it carries an internally-toothed ratchet-wheel 72 engaged by a spring-pressed retaining pawl 74 and an operating pawl 76.

The latter is carried pivotally on the short arm of a bell-crank 78 (see also Figures 8 and 9) the other arm 80 of which extends downwardly and is connected by a spring 82 to the frame 12. The lower end of the arm 80 is engaged by a pin 84 on the armature 86 of a solenoid 88 which when energized moves the armature to the right and thus rotates the bell-crank anticlockwise. The pawl 76 will thus engage the next tooth of the ratchet-wheel. When the solenoid is de-energized the spring 82 will rotate the bell-crank in the clockwise direction, causing the pawl 76 to rotate the ratchet-wheel, and with it the type-wheel, one tooth space. The retaining pawl will hold the type-wheel in this position, and a subsequent energization of the solenoid will in the same way cause the type-wheel to advance a further tooth space. The bell-crank 78 is provided with a triangular projection 79 (Figs. 8 and 9) which abuts against the underside of the frame 12, thus limiting its movement in the clockwise direction.

The solenoid is energized momentarily whenever the crank of the petrol pump is op-

erated. Figures 1 and 6 show the means for effecting this. A small single-tooth cam 90 is secured to the spindle of the rack-actuating pinion 92 of the petrol pump 94, Figure 1, which spindle rotates once for each half-gallon of petrol delivered. The tooth of the cam encounters the end of a lever 96 pivoted in a small box 98 bolted to the pump. The other end of the lever within the box is raised by this encounter and in rising it rocks an arm 100 which carries a mercury switch 102, thus closing the switch. When the tooth of the cam has passed the end of the lever the switch returns to the open position, which is that shown in Figure 6. The mercury switch is placed in the circuit of the solenoid 88, which is thus momentarily energized once for each half-gallon of petrol delivered.

Figure 2 shows the position of the parts before petrol has been delivered. It will be noted that both pawls 76 and 74 are out of engagement with the ratchet-wheel 72, a pin 104 on the pawl 76 resting on an upward extension 106 of the armature 86 which maintains this pawl out of engagement, while an upward extension 59 of the pawl 76 engages the pawl 74 and keeps it out of engagement. When the solenoid is energized the extension 106 is withdrawn from beneath the pin 104, thus allowing both pawls to spring into engagement with the ratchet-wheel. Thereafter, on de-energization of the solenoid, the pawl 76 rotates the type-wheel one tooth space as already described. The parts then assume the position shown in Figure 3.

Referring again to Figure 2, a pin 108 on the type-wheel bears against the underside of one arm of a three-armed lever 110, and holds it in the position shown against the pressure of a blade spring 112 bearing against the right-hand arm of the lever. The downward arm of the lever is formed with a notch which takes over a part 114 of the lever 18 and prevents this lever from being operated. The spring 112 is a contact spring for on electric lamp 116 (Fig. 10). When the type-wheel moves one tooth space the pin 108 moves downwards, thereby allowing the lever 110 to rock anti-clockwise under the influence of the spring 112. This not only releases the lever 18 but also allows the spring 112 to make contact with the terminal 118 of the lamp which thereupon lights up. It will thus be clear that the lever 18 cannot be operated until at least one half-gallon has been delivered, and that the fact that petrol is being or has been delivered is indicated by the lighting-up of the lamp.

When delivery has been completed the handle 18 is operated as already described. This lifts the type-wheel with the result that the pin 104 is raised and the bell-crank 78 moves the armature 86 to the left; after printing, the pin 104 will rest on the extension 106, thus releasing both pawls and allowing the type-wheel to return to zero under the action of the spring 70, the pin 108 rocking the lever 110 clockwise and once more locking the lever 18 and extinguishing the lamp. This pin 108 serves as the zero stop for the type-wheel.

The type-wheel carries type indicating the amount and price of the quantity of petrol delivered, together with the number of the pump and any other relevant information which it may be desired to print, and the type-faces are preferably made readily interchangeable to provide for changes of price and other varying factors.

Figure 10 illustrates the arrangement of circuits. Current is obtained from an accumulator 120 having a two-volt and a six-volt tapping. The four lamps 116 and their contacts 112 are shown at the top of the figure connected in parallel across the two-volt terminals. The solenoids 88, in series each with its mercury switch 102, are connected in parallel to the negative terminal of the accumulator and to its six-volt terminal through the pump casings, represented as earth connections.

Figure 11 illustrates diagrammatically, a modified construction used when it is desired to print a duplicate record on paper strip which is delivered out of the casing to be torn off, thus providing tickets or vouchers. For this purpose a reel 122 of paper strip is provided which strip passes between feed-rollers 124, one of which is of large diameter, then through a curved guide 126, beneath the platen 24 and out through a slot 128 in the top of the casing. The larger of the two feed rollers carries a small sprocket-wheel 130 connected by a chain 132 to a large sprocket-wheel 134 on the paper-feed reel 64. Thus each movement of the reel 64 will feed the strip a greater distance than the paper. The gear ratio is preferably such that the movement of the strip is about six times that of the paper. The ink ribbon 28 is led between the type and the strip and back between the strip and the paper, so that both the strip and the paper receive impressions.

In the construction illustrated in Figure 11, and also in that illustrated in Figure 4, the paper passes over a flat support 136 immediately beneath an opening 138 in the casing. This opening is covered by a glass sheet 139 in which a slot 139*a* is cut (Figs. 4, 11, 13 and 14), thus enabling the operator to write on the record.

Figures 12 to 17 illustrate a modified form of the invention. The whole apparatus is attached to the pump and it serves to make it impossible to deliver petrol without making a permanent record of the amount delivered and at the same time indicating which employee was responsible for the transaction. No cash drawer is provided, since the apparatus is intended to be used in conjunction

with any recognized cash recording system and to serve as an additional check on such system.

Each employee is provided with a numbered key 140 (Figures 14 and 16) which must be inserted into the apparatus before petrol can be delivered. When inserted it serves as a lever to effect printing and it cannot be withdrawn until printing has been effected.

The apparatus comprises two attachments, one of which consists of a cam 142 (Figure 12) on the rack-actuating pinion and a lever 144 pivoted in a box 146, these parts being similar to the parts 90, 96, and 98 already described. The lever 144 does not operate a switch, however, but is connected to a Bowden cable 148 by means of which the type-wheel is operated. The other attachment is a recording unit generally similar to that already described. It is enclosed in a metal box 150 fixed to the pump platform as shown in Figure 12. There is no solenoid, but instead the ram 80 of the bell-crank 78 is terminated by a cross-piece 152 (Figs. 13 and 14) lying in the path of an upward projection 154 of a spring-pressed slide 156. It should be mentioned that in Figures 13 and 14 the recording apparatus is shown as seen from the side opposite to that shown in Figures 2, 3 and 4, so that the type-setting movement of the arm 80 under the influence of the spring 82 is to the right, or anticlockwise, instead of to the left as in the other figures. The spring 82 is not shown in Figures 13 and 14; it is anchored to a fixed part of the apparatus, since the frame 12 is not used in this modified construction. This frame 12, in fact, is replaced by a hollow lever 158 pivoted at 160 urged downwards by a spring 161. The mouth of the hollow lever is flush with one end of the box near its pivot, as shown. The key 140 is thrust into the bore of the lever, and this action causes the plunger of the petrol-pump to be unlocked, locks the key in the lever and enables the lever to be raised to effect printing, after which the key is released and can be withdrawn. The means for bringing about these results will now be described.

The forward end of the key first encounters a pivoted spring-pressed latch 162 (see also Figure 17) and thrusts it aside. This releases the end of a spring-pressed arm 164, normally held in a notch 166 in the latch, which projects into the bore of the lever through a slot. Further movement of the key swings the arm 164 clockwise until its end finally snaps into a notch 168 in the underside of the key. Until the arm is released from this notch it prevents the withdrawal of the key.

The arm 164 is fixed to a spindle 170 which projects beyond the side of the box and carries an arm 172 (see Figure 12) connected by a link 174 to a pivoted hook 176 normally held by a spring 178 above a pin 180 fixed to the pump plunger. So long as the hook is above the pin 180 the pump cannot be operated, but when the arm 164 has been moved by the key into the position shown in Figure 14 the hook is held out of the path of the pin and petrol can be delivered.

A further arm 182 is pivoted at 184 to the hollow lever, its upper end being in the path of the end of the key, and its lower end carrying a pin 186 which engages the lower end of a depending bar 188, also pivoted to the tubular lever, which bar has a notch 190 in its edge. Normally the bar 188 is held in the position shown in Figure 13, but when the key is inserted it is allowed to swing down until its edge, just above the notch 190, rests against a pin 192 carried by the arm 164, as shown in Figure 14.

With the parts in the position shown in Figure 14, it will be seen that the type-wheel 10 will be raised to print on the paper 22 when the outer end of the key is depressed. During this operation the bar 188 is raised sufficiently to enable the notch 190 to engage the pin 192. During the return downward movement of the hollow lever the bar 188 will therefore swing the arm 164 sufficiently to remove its tip from the notch 168 in the key, thus releasing the key. During this movement a slide 194, connected to the hollow lever by a pin and slot, is raised and lowered. This slide carries a pawl 196 which during the downward movement rotates a ratchet 198 attached to the paper feed reel, thus feeding the paper one line space.

When the pump is operated, the lever 144 is operated once for each half gallon delivered. The Bowden cable 148 is connected at its lower end to an arm 200 (Figures 12 and 15) secured to a spindle 202 which carries a downwardly-extending arm 204. The lower end of this arm engages a further projection 206 on the slide 156, thus moving it to the left and thereby moving the arm 80 also to the left, and allowing it to return, once for each half gallon delivered.

The type-wheel is reset to zero in the following manner. The pin 104 on the pawl 76 (previously described with reference to Figures 2 and 3) encounters during its downward movement the upper end of a pivoted weighted detent 208 in the form of a bell-crank, which operates to release the two pawls 76 and 74, just as does the part 106 in the modification shown in Figures 2, 3 and 4. The detent is rocked into the position shown in dotted lines in Figure 15 by a cam 210 fixed to the slide 156.

Each key 140 is intended to cause a figure or other character to be printed to indicate which key has been used. For this purpose a number of type-levers 212, one for each key (four are illustrated) are pivoted independ-

ently at 214. These carry type-faces 216 to print the required indication, and their lower ends are in echelon, as clearly shown, within the bore of the hollow lever 158. The key 140 shown in the drawings has its extremity 218 so shaped as to engage only the longest type-lever, that is the left-hand one in Figure 15, so that when the outer end of the key is depressed only that type-lever is raised to impress the paper. Each of the other keys is shaped to engage a different one of the type-levers, so that each causes a separate number or other character to be printed. The type-levers are independent of the type-wheel, which is actuated always in the same way by every key.

The apparatus described with reference to Figures 12 to 17 is applicable to oil-cabinets as well as to petrol-pumps, as will be apparent.

We claim:—

1. In combination with a liquid-measuring delivery pump, recording mechanism comprising a type wheel, means for rotating said type wheel step-by-step against resilient restraint to set the type thereof, a pivoted lever constituting a manually operable actuating member and adapted when operated to move the type wheel bodily, a detent for the lever, a notch in the lever to receive the detent, a spring urging said detent into a non-detaining position, a projection on the type wheel adapted to engage said detent when the type wheel is in the zero position and to hold it in lever detaining position and a paper support to receive the impress of the type when the type wheel is moved bodily as aforesaid.

2. In combination, a liquid measuring delivery pump, recording mechanism comprising a type wheel, means for rotating said type wheel step-by-step against resilient restraint to set the type for recording, a spring pressed lock normally preventing the operation of the pump, a pivoted hollow lever connected to said type wheel and serving as a socket for an insertable key and cooperating therewith to constitute an actuating member for moving the type wheel bodily against the record blank, and a member adapted to be encountered and actuated by the key when inserted and operatively connected to the spring pressed lock to place the said lock in a non-locking position.

3. A recording device including a casing, a type wheel rotatably mounted in said casing and having an internal ratchet gear, a reciprocable member, a projection on said member, a bell crank lever pivoted at the axis of said type wheel and actuated by said projection on said reciprocable member, an operating pawl pivotally connected to said bell crank lever and capable of engagement with the teeth of said ratchet gear for rotating the type wheel upon reciprocation of said reciprocable member, a spring urged retaining pawl, an upstanding extension on said reciprocable member, and a pivoted manually operable actuating member for moving said type wheel into printing position, said upstanding extension engaging said operating pawl and releasing said operating and detaining pawls from engagement with said ratchet gear.

4. In a recording device, a casing, a pivoted hollow actuating member in said casing, a recording mechanism including a type wheel rotatably connected to said hollow member, a plurality of auxiliary type carriers pivotally connected to and arranged to partially project into said hollow member and having type characters to indicate the individual operating said recording device, and a key insertable in said hollow member and adapted to cooperate therewith to form the manually actuating member, said key having an end projection to engage selectively with one of said auxiliary type carriers to position the properly selected type carrier in printing position so that the individual operating said recorder may be designated upon the actuation of said hollow member and the printing of characters on said type wheel and auxiliary type carriers.

5. In a recording device, a casing, a pivoted hollow actuating member in said casing, a recording mechanism including a type wheel rotatably connected to said hollow member, a plurality of auxiliary type carriers pivotally connected to and arranged to partially project into said hollow member to position a properly selected type carrier in printing position so that the individual operating said recorder may be designated upon the actuation of said hollow member and the printing of characters on said type wheel and auxiliary type carriers, a key insertable in said hollow member and adapted to cooperate therewith to form the manually actuating member, said key having an end projection to engage selectively with one of said auxiliary type carriers, said carriers having type characters to indicate the individual operating said recording device, a spring pressed latch, and a member normally held by said latch in a locked position and actuated by said key to unlock the recording mechanism.

6. In a recording device, a casing, a pivoted hollow actuating member in said casing, a recording mechanism including a type wheel rotatably connected to said hollow member, a plurality of auxiliary L-shaped type carriers pivotally connected to and arranged to partially project into said hollow member, a key insertable in said hollow member and cooperating therewith to constitute an actuating member for moving the type wheel and one of said auxiliary type carriers bodily against the record sheet, said key having an end projection to engage selectively with one

of said auxiliary type carriers to position the properly selected type carrier in printing position so that the person operating said recorder may be designated upon the actuation of said hollow member and the printing of characters on said type wheel and auxiliary type carriers, a spring pressed latch for holding the recording mechanism in a locked position, a member adapted to be encountered and actuated by said key to place the recording mechanism in an unlocked position, a latch recess in said key to receive the said member and lock the key in operative position, and another member having a latch recess to receive a projection on the said member upon actuating the said hollow member to a printing position, said first mentioned member being withdrawn from said recess in said key upon release of said actuating hollow member and the recording mechanism being returned to the locked position.

7. In a recording device, a casing, a pivoted hollow actuating member in said casing, a recording mechanism including a type wheel rotatably connected to said hollow member and a plurality of auxiliary L-shaped type carriers pivotally connected to and arranged to partially project into said hollow member, a key insertable in said hollow member and cooperating therewith to constitute an actuating member for moving the type wheel and one of said auxiliary type carriers bodily against the record sheet, said key having an end projection to engage selectively with one of said auxiliary type carriers, a spring pressed latch for holding the recording mechanism in a locked position, a member adapted to be encountered and actuated by said key to place the recording mechanism in an unlocked position, a latch recess in said key to receive the said member and lock the key in operative position, another member having a latch recess to receive a projection on the said member upon actuating the said hollow member to a printing position, said first mentioned member being withdrawn from said recess in said key upon release of said actuating hollow member and the recording mechanism being returned to the locked position, and a member operatively connected and actuated by said manually operable hollow member to advance the paper feed reel one space.

8. In combination with a liquid measuring delivery pump, recording mechanism comprising a type wheel, means for rotating said type wheel step by step against resilient restraint to set the type for recording, a pivoted hollow lever connected to said type wheel and serving as a socket for an insertable key and cooperating therewith to constitute an actuating member for moving the type wheel bodily against the record blank, a spring pressed latch, a member normally held by said latch in a locked position and actuated by said key to an unlocked position, a pump piston, a projection on said pump piston, an L-shaped pivoted spring urged locking member normally bearing against said projection and locking said pump piston in an inoperative position, and a lever operatively connected to said pivoted L-shaped locking member and the member normally held by said spring pressed latch so that upon the unlatching of the last mentioned member by the insertion of said key, the pump is put in an unlocked position.

In witness whereof we hereunto subscribe our names this 26th day of August, A. D. 1930.

DANIEL LESLIE WRAY.
HAROLD GUY CHRISMAS.