April 24, 1934. W. M. CARROLL. 1,955,904

REGISTERING MECHANISM

Filed Oct. 27, 1930 6 Sheets-Sheet 1

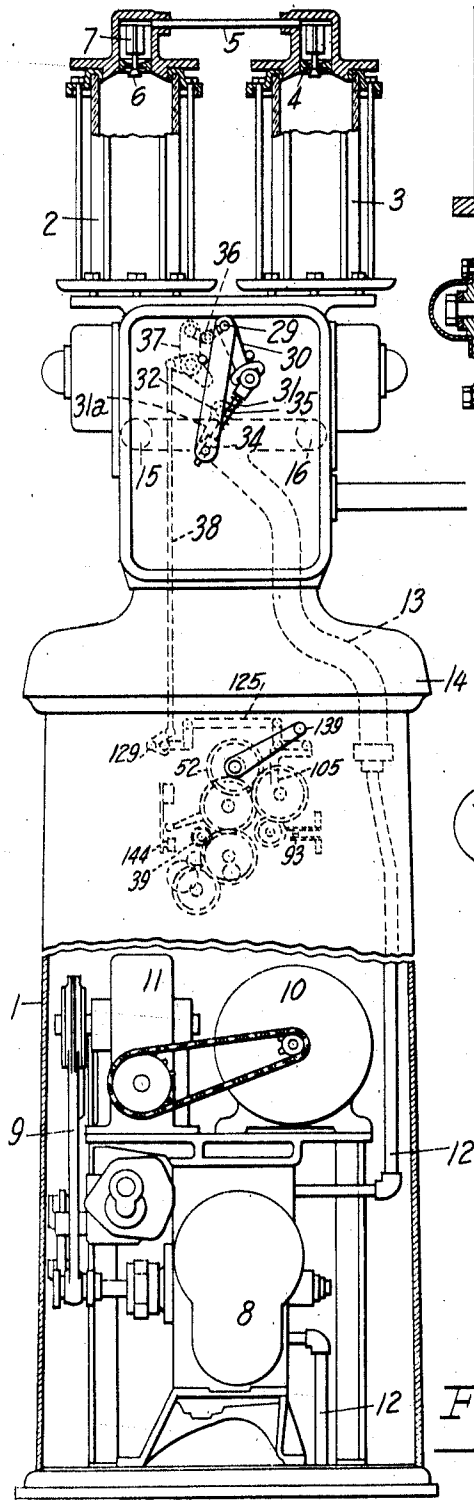



Fig. 1.

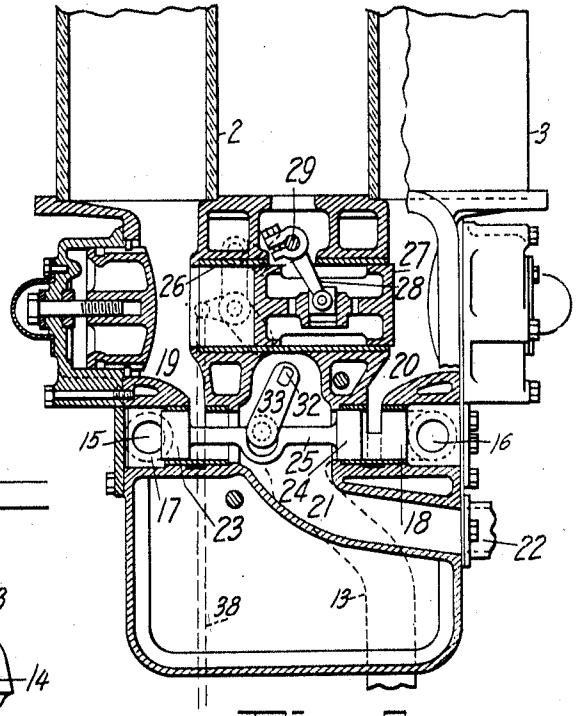



Fig. 2.

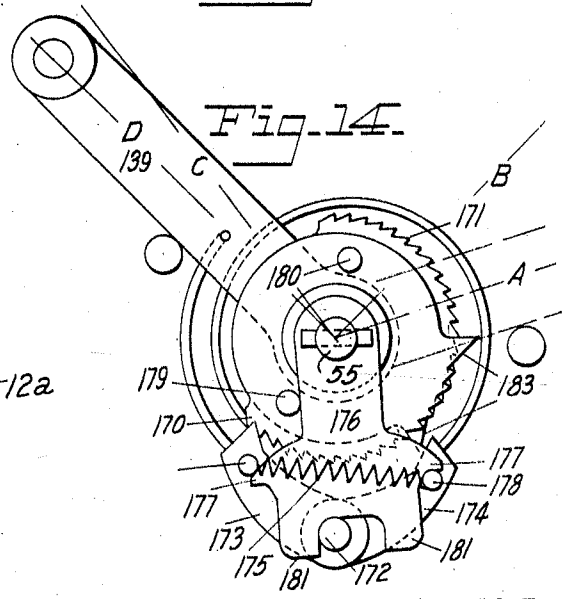



Fig. 14.

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Fig. 3.

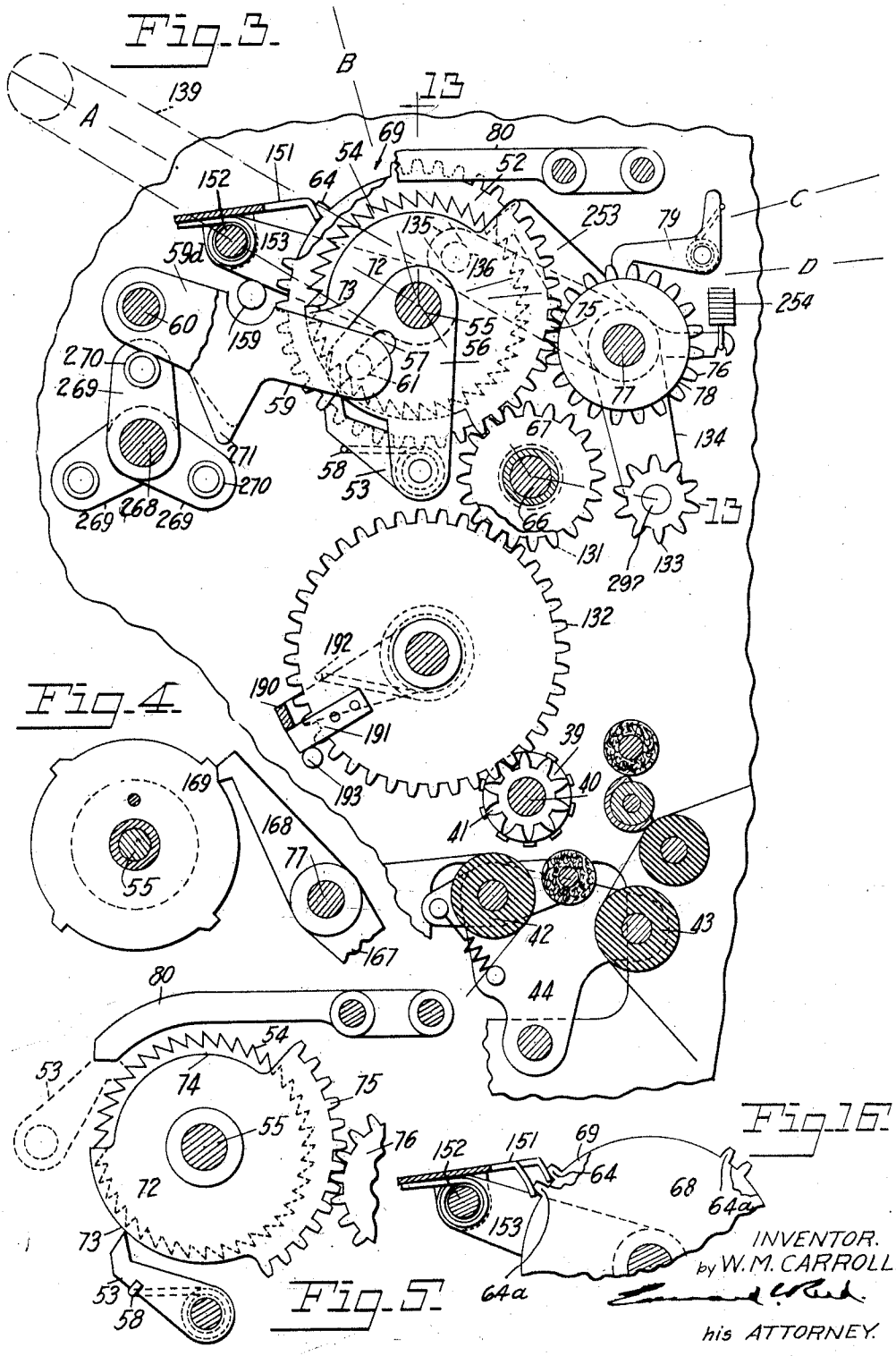



Fig. 4.

Fig. 5.

Fig. 6.

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REGISTERING MECHANISM

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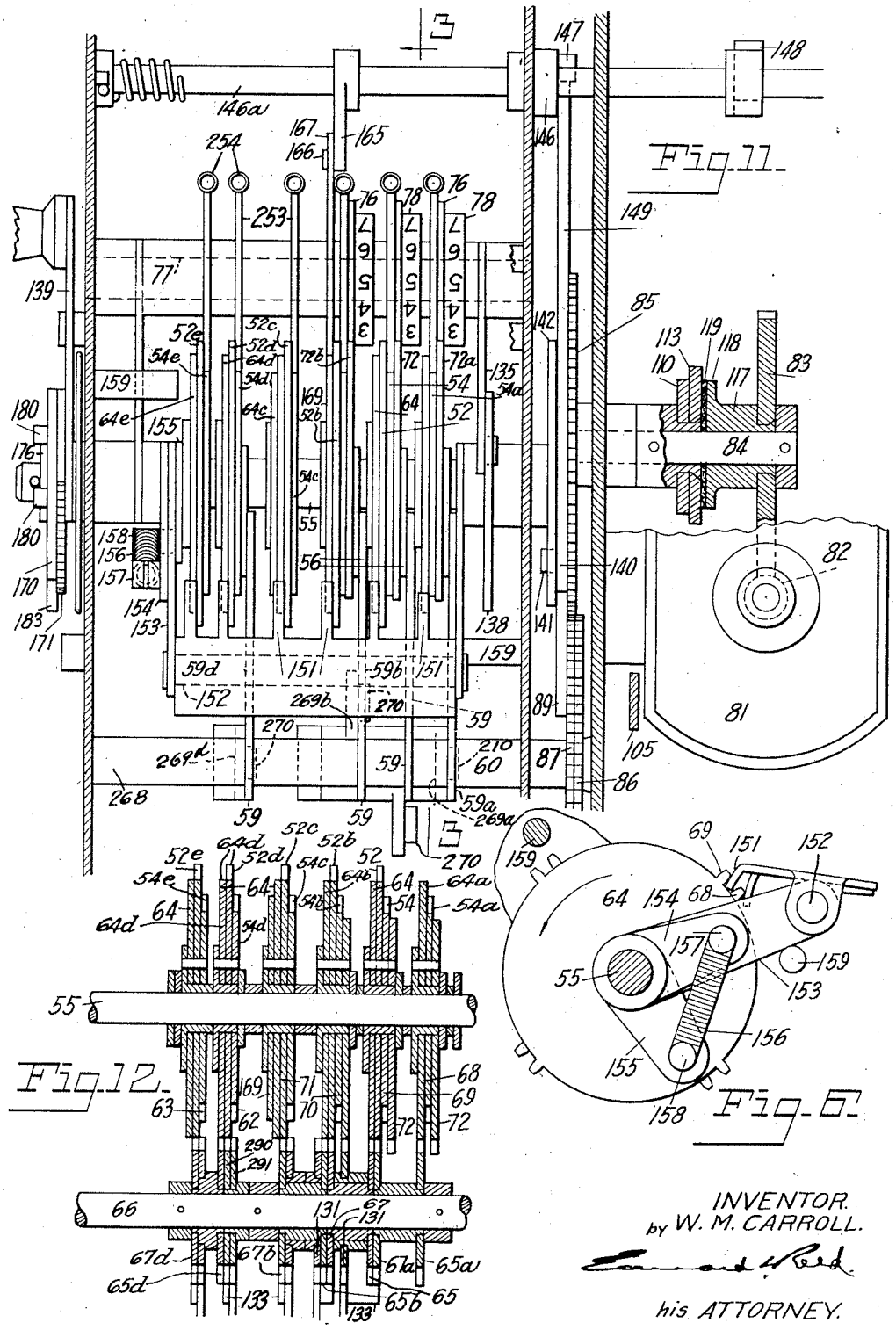


Fig. 11.



Fig. 12.



Fig. 6.

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REGISTERING MECHANISM

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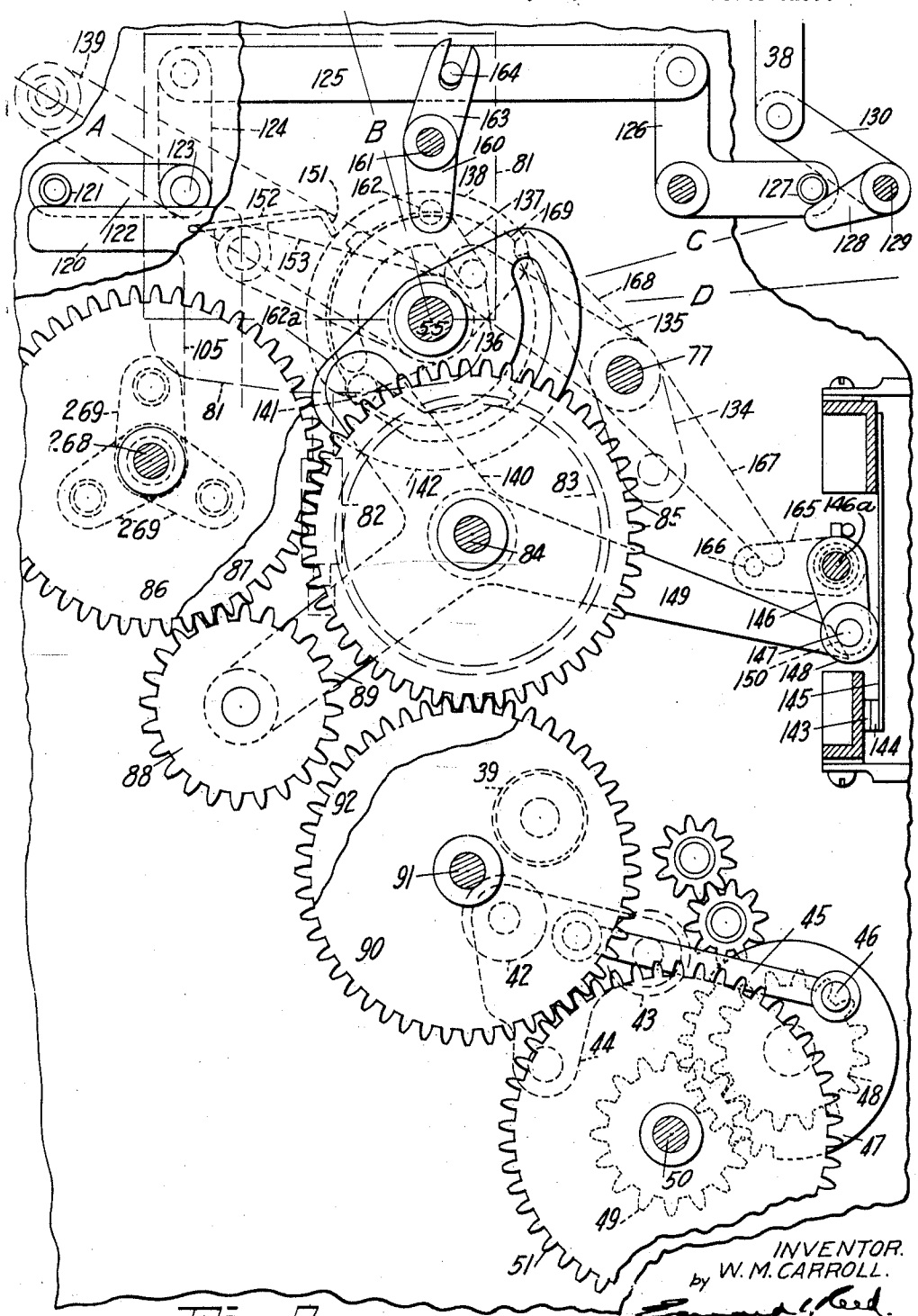



Fig-7-

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REGISTERING MECHANISM

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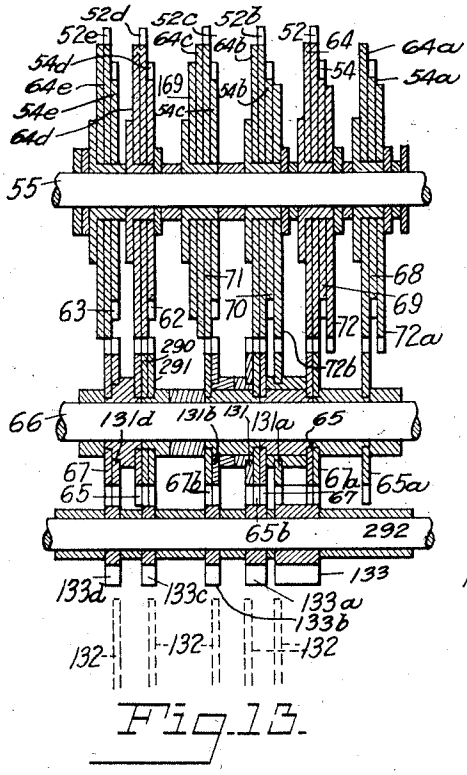



Fig. 13.

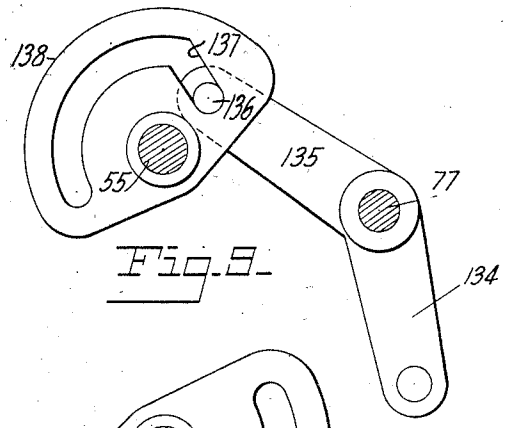



Fig. 9.

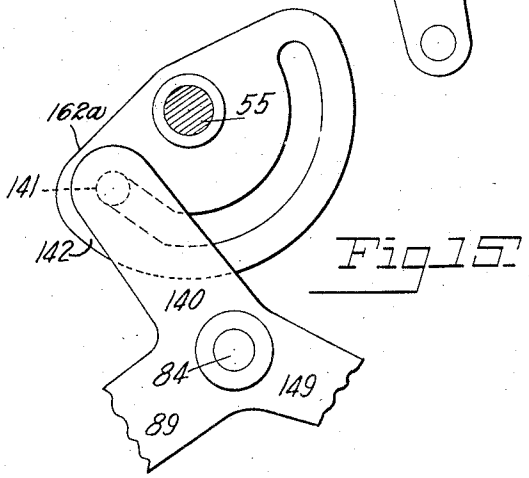



Fig. 15.

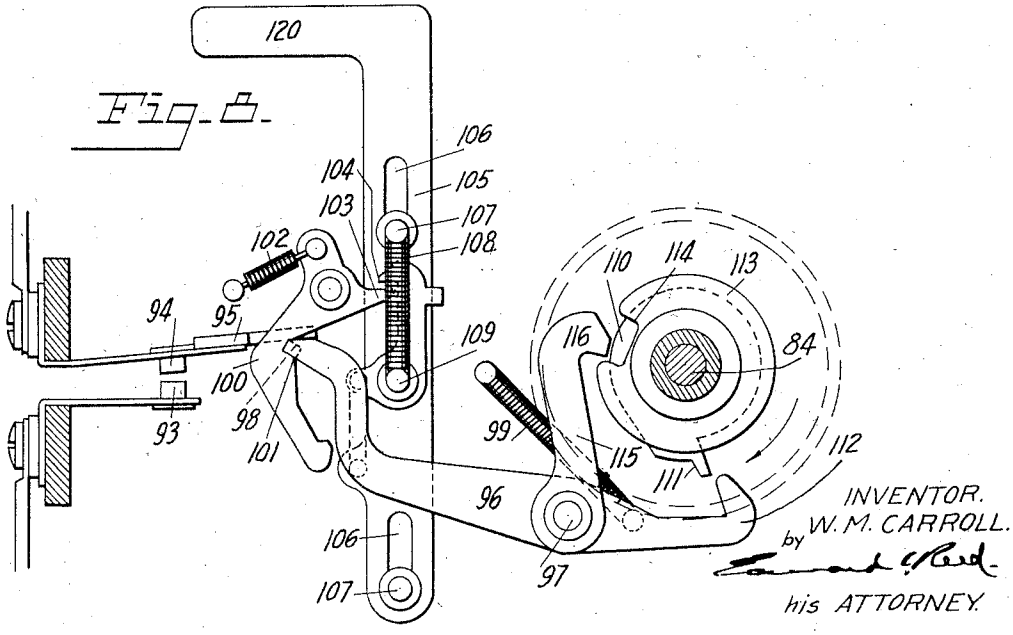



Fig. 8.

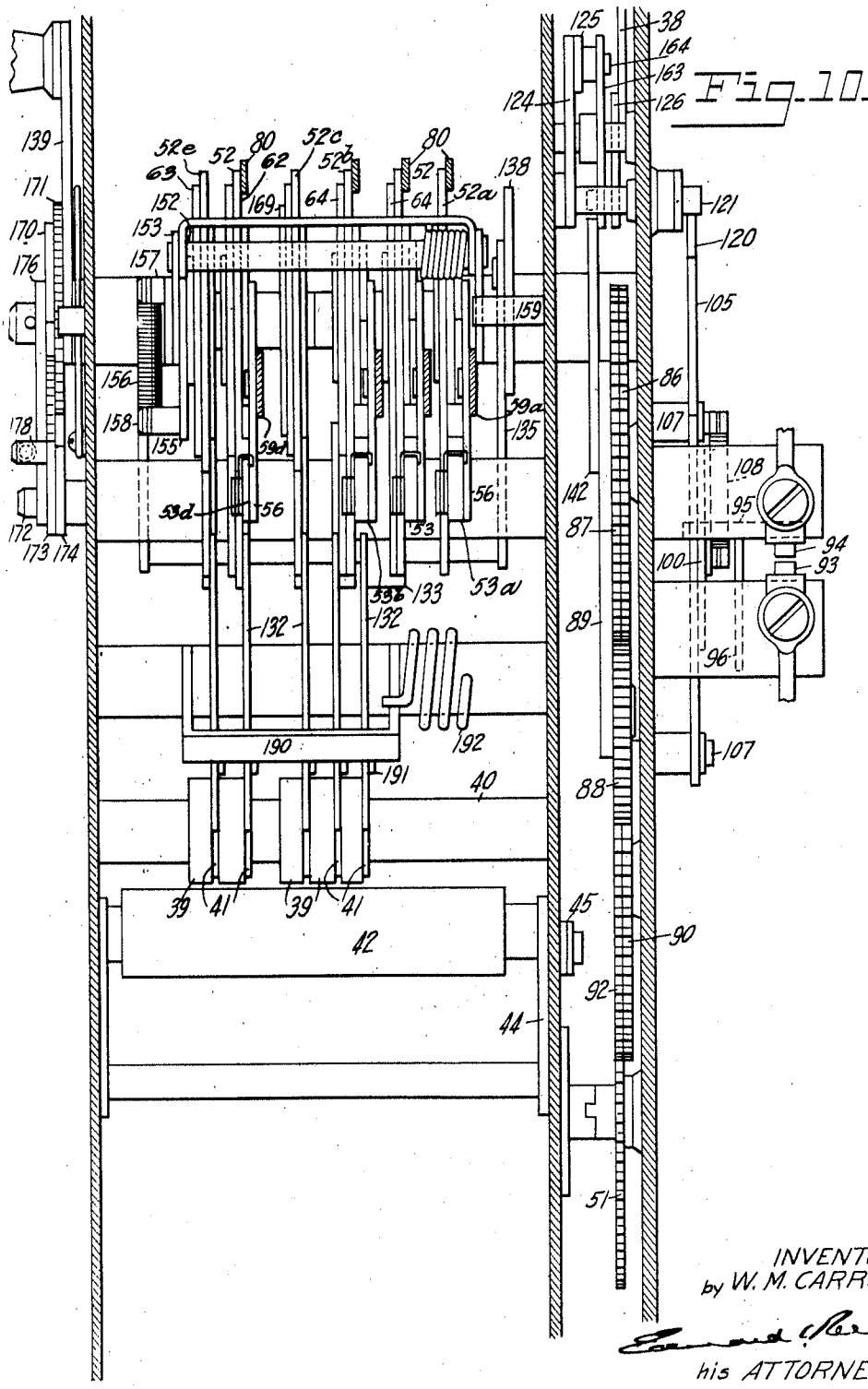
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REGISTERING MECHANISM

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Fig. 10.




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Patented Apr. 24, 1934 1,955,904

# UNITED STATES PATENT OFFICE

1,955,904

## REGISTERING MECHANISM

William M. Carroll, Dayton, Ohio, assignor to Augustine Davis, Jr., Cincinnati, Ohio

Application October 27, 1930, Serial No. 491,616

39 Claims. (Cl. 234—34)

This invention relates to registering mechanism for liquid dispensing apparatus.

One object of the invention is to provide simple and efficient mechanism controlled by the dispensing apparatus for setting up on a register certain items relating to the liquid dispensed, such as the quantity of liquid delivered and the money value thereof.

A further object of the invention is to provide such a mechanism which may be interposed between the dispensing apparatus and a register, both of known construction, without a substantial modification of either.

A further object of the invention is to provide such a mechanism in which the items relating to each unit of liquid delivered will be accumulated, or totalized, during the delivery of the liquid, and then transferred to the register after the delivery has been completed.

A further object of the invention is to provide such a mechanism in which the individual items may be accumulated and then transferred to the register and in which both the accumulator and the register will be power operated, and which will have means controlled by the transfer mechanism to disconnect the accumulator from the operating means at the beginning of the transfer operation and for connecting the operating means with the register on the completion of the transfer.

A further object of the invention is to provide such a mechanism having means for rendering the dispensing apparatus inoperative during the transfer operation.

A further object of the invention is to provide such a mechanism having means to compel the operator to transfer the record at predetermined intervals.

Other objects of the invention will appear as the mechanism is described in detail.

In the accompanying drawings Fig. 1 is a front elevation, partly in section, of a dispensing apparatus embodying my invention; Fig. 2 is a sectional view of the mechanism for causing the liquid to be delivered in predetermined units; Fig. 3 is a section taken approximately on the line 3—3 of Fig. 11 and showing in side elevation one of the accumulators and the means for connecting the same with the register; Fig. 4 is a detail view of the cam which controls the pump motor switch; Fig. 5 is a detail view of the price setting mechanism; Fig. 6 is a detail view of the resetting mechanism; Fig. 7 is a side elevation of the operating and controlling mechanism for the accumulators and the printer; Fig. 8 is a detail view of the switch controlling mechanism for the motor which operates the accumulator and the printer; Fig. 9 is a detail view of the cam which controls the connection between the accumulator and the register; Fig. 10 is a front elevation of the mechanism shown in Figs. 3 and 7, partly in section; Fig. 11 is a top plan view of said mechanism; Fig. 12 is a sectional detail view of the accumulator and the transfer mechanism; Fig. 13 is a sectional detail view of the mechanism for transferring the record from the accumulators to the register; Fig. 14 is a detail view of the full stroke mechanism for the operating device; Fig. 15 is a detail view of the cam which controls the connection between the motor and the actuating device; and Fig. 16 is a detail view of the resetting device.

In these drawings I have illustrated one embodiment of my invention and have shown the same in connection with a liquid dispensing apparatus of a well known type. It will be understood, however, that this particular embodiment has been chosen for the purpose of illustration only and the mechanism may take various forms and may be used in connection with dispensing apparatus of various kinds.

The dispensing apparatus here illustrated comprises a vertical standard or housing 1 at the upper end of which are mounted two measuring receptacles, 2 and 3, which are here shown in the form of glass cylinders of identical size, each having a capacity of one gallon, or other suitable measuring unit. Each receptacle has at its upper end a vent 4, the vents of the two receptacles being connected by a pipe 5. Each vent is controlled by a valve 6 which is connected with a float 7 so arranged that when the receptacle is filled the float will close the valve. Mounted in the lower portion of the standard or housing 1 is a pump 8 which may be operated in any suitable manner. In the present instance it is motor driven and is connected by a pitman 9 with an electric motor 10, through suitable reducing gearing contained within the casing 11. The inlet of the pump is connected by a pipe 12 with a suitable source of liquid supply, such as an underground reservoir, and the outlet of the pump is connected by a pipe 12a with an inlet pipe 13 formed in the casing 14 constituting the upper part of the standard and on which the twin receptacles 2 and 3 are mounted. This inlet conduit 13 is provided with branches 15 and 16 leading respectively to valve chambers 17 and 18 which are connected with the respective measuring receptacles by passageways 19 and 20. The valve chambers

are also connected at their inner ends with an outlet conduit 21 the outer end of which is connected with a discharge pipe 22. Mounted in each valve chamber is a piston valve, 23 and 24, the two valves being rigidly connected by a rod 25 so that they will move in unison and being so arranged that when moved to the limit of their movement in one direction the measuring receptacle 2 will be connected with the discharge pipe and the measuring receptacle 3 will be connected with the inlet or supply pipe. When the valves are shifted to the other limit of their movement the measuring receptacle 2 will be connected with the inlet or supply pipe and the measuring receptacle 3 will be connected with the discharge pipe. Arranged between the two passageways 19 and 20 is a cylinder 26 having mounted therein a double ended piston 27 the ends of which are exposed to the liquid in the respective passageways. When that receptacle which is connected with the supply pipe is filled the continued operation of the pump will subject the liquid to pressure sufficient to shift the piston 27 lengthwise of the cylinder 26. Connected with the piston 27 is a crank arm 28 rigidly secured to a shaft 29 which extends through the outer wall of the casing 14 and is connected with the valves 23 and 24 in such a manner as to shift those valves. As here shown, an arm 30 is secured to the outer end of the shaft 29 and is connected with a second arm 31 which is connected with an arm 31*a* rigidly secured to a shaft 32 also extending through the wall of the casing and having secured to its inner end an arm 33 which is connected with the valve rod 25. The arms 30 and 31 constitute in effect a toggle and the arm 31 is longitudinally movable in a part 34 which is connected with the arm 31*a* and is acted upon by a spring 35, the arrangement being such that when the two arms are brought into longitudinal alinement the spring will be compressed and when the arms are moved beyond their alined positions the spring will expand to complete the movement of the arms, thus completely shifting the valves. One end of a toggle 36 is rigidly secured to the shaft 29 and the other end thereof is pivotally connected with one arm of the bell crank 37, the other arm of which is connected with a rod 38 which functions in a manner to be hereinafter described. The movement of the shaft 29 in each direction is sufficient to move the toggle 36 from one angular or broken position across its extended position to an angular or broken position on the opposite side of its extended position, thus causing the rod 38 to be moved downwardly during the initial movement of the shaft 29 and to be elevated during the final movement of said shaft. This particular dispensing apparatus forms no part of the present invention except in so far as it enters into combination with the recording mechanism and the controlling devices therefor, and therefore it need not be described in detail. A full description of a dispensing apparatus of this type will be found in Patent No. 1,612,488, granted December 28, 1926 to Carbanaro.

Associated with the liquid delivery mechanism is a register adapted to record certain items relating to the liquid delivered, such as the number of gallons, or other units, delivered on each delivery transaction and the money value thereof. Preferably the register is of the recording type and is provided with means for printing a record of the registered items and for issuing a ticket on which said items are printed. The register itself is not a part of the present invention and I have illustrated only such parts thereof as are necessary to an understanding of the operation of the invention. The registering mechanism here illustrated comprises a series of type wheels 39 (Figs. 1, 3 and 10) rotatably mounted on the countershaft 40 and connected with each type wheel is a gear 41 which forms part of the mechanism for operating that type wheel. The printing mechanism comprises two platens, 42 and 43, here shown as rollers carried by a pivoted frame 44 and so arranged that when the frame is moved in one direction from its normal position the platen 42 will be brought into printing relation to the type wheels and when the frame is moved in the other direction from its normal position the platen 43 will be brought into printing relation to the type wheels. Separate webs of paper extend about the respective platens and each web is so supported by its platen that it will be moved into contact with the type which are in printing position when that platen is moved into printing relation to the type wheels. One of said webs becomes a permanent record which is retained in the machine and the record printed on the other web is detached and issued as a ticket, as is customary in ticket issuing machines. The platen frame 44 is connected by a pitman 45 (Fig. 7) with a wrist pin 46 carried by a mutilated gear 47 to which is rigidly connected a gear 48. The gear 48 meshes with a gear 49 on a shaft 50 and is rigidly connected with a gear 51 which is operated in a manner to be hereinafter described. The ratio of the gearing and its arrangement are such that one complete rotation of the gear 51 will cause a complete operative movement of the platen frame, which will cause the two platens to be brought successively into printing relation to the type wheels.

The means for setting up the computed items or record on the register preparatory to printing the same is controlled by a movable part of the delivery mechanism in such a manner as to cause a predetermined operation of said means upon the delivery of each unit of liquid. The setting up means for the register may be connected therewith, to transmit the record thereto, in any suitable manner. In the present mechanism the setting up means comprises mechanism constituting an accumulator which is disconnected from the register during the delivery of the liquid and after the delivery has been completed is connected with the register and actuated to transfer the accumulated record thereto. The setting up means as a whole comprises a plurality of separate devices, there being preferably a separate setting up device for each counterwheel 39 of the register. Each of these devices includes an accumulating element which may conveniently be in the form of a gear. Connected with each such accumulator gear are various other elements for controlling the operation thereof, each group of elements constituting a gear unit. For the purposes of the present machine I have provided, as shown in Figs. 11, 12 and 13, the two gear units 62 and 63 for the gallons counterwheel, and four gear units, 68, 69, 70 and 71, for the mills, cents, tens of cents and dollar counterwheel. The several gear units are similar in character. Some of them differ slightly in detail from the others. In Fig. 3 I have illustrated the cents gear unit 69, which is typical of the other units except for minor differences which will hereinafter appear. The gear unit there illustrated

comprises a rotatable member 52, here shown as a forty tooth gear, (see Fig. 3), to which a predetermined movement is imparted upon the delivery of each unit of liquid by the dispensing apparatus. The device for imparting this movement to the rotatable member may conveniently take the form of a pawl, as shown at 53, and, in the present arrangement, a ratchet wheel 54 is rigidly secured to the rotatable member and arranged to be engaged by the pawl. The gear 52 and the ratchet wheel 54 are rotatably mounted upon a normally stationary shaft 55 and the pawl 53 is supported by a suitable pawl carrier here shown as an arm 56 pivotally mounted on the shaft 55 and having an offset portion provided with a radial slot 57. A spring 58 acts on the pawl to press the same toward the ratchet wheel. A lever 59 is pivotally mounted at one end on a shaft 60 and has at its other end a pin 61 extending into the slot 57 of the pawl carrier so that the movement of the lever 59 about its axis will move the pawl carrier about the axis of the shaft 55 and cause the pawl to operatively engage the ratchet wheel. The ratchet wheel is held against reverse movement by a detent pawl 253 which is actuated by a spring 254 rigidly connected with the gear 52 and ratchet wheel 54 is a four tooth gear 64 (Fig. 6), which actuates the transfer mechanism, as will be hereinafter described.

The number of counterwheels or accumulators 52 will be determined, in part at least, by the number and character of the items which are to be registered. In the present machine I have shown means for registering gallons, or units of delivery up to ninety-nine and means for registering money value of the liquid delivered up to nine dollars and ninety-nine cents. In some localities the price of gasoline is quoted in fractions of a cent, usually in tenths. In order to compute the price where a fraction is involved I have provided a gear unit for registering in tenths of a cent or mills, such a gear unit being shown at 68 (Figs. 11 and 12), and comprising a four tooth transfer gear 64*a* and a forty tooth ratchet wheel 54*a*. As will hereinafter appear the record is not transferred to the register in mills and therefore this gear unit does not require the forty tooth counter gear. The cents gear unit, as above described, is shown at 69, and the tens of cents gear unit is shown at 70, the latter comprising a forty tooth gear 52*b*, a forty tooth ratchet wheel 54*b* and a four tooth gear 64*b*. The dollars gear unit is shown at 71 and comprises a forty tooth gear 52*c* and a four tooth gear 64*c* and a forty tooth ratchet wheel 54*c*, which, in this instance serves merely to hold the gear unit against reverse movement. The mills, cents and tens of cents gear units are independently actuated by pawls 53*a*, 53, and 53*b*, (Fig. 10), and levers 59*a*, 59 and 59*b*, (Fig. 11), and the amount is transferred from each gear unit of a lower denomination to the gear unit of the next higher denomination by means of transfer wheels 65*a*, 65 and 65*b*, mounted on shaft 66 and arranged to be engaged respectively by the four tooth gears of the three units, and each having connected therewith a transfer gear 67*a*, 67 and 67*b*, which meshes with the forty tooth gear of the gear unit of next higher denomination. As will hereinafter appear the several gear units for computing money values are actuated successively so that the count may be transferred from a gear unit of lower denomination to a gear unit of higher denomination before the latter is operated by the actuating mechanism.

The count on the mills gear unit 68 is transferred to the cents gear unit 69 upon the first operation of the mills gear unit, that is, when one mill is registered on the mills of the gear unit ten mills are transferred to the cents gear unit. Thus the cents gear unit includes at all times, as a full cent, any fraction of a cent on the mills gear unit. This is preferably accomplished by so locating the teeth of the four tooth gear of the mills gear unit that the first movement thereof, from its initial position, will cause the cents gear unit to be advanced one space or tooth. This arrangement is shown in Fig. 16 where the teeth of the four tooth gear 64*a* of the mills gear unit 68 are in the "1" position while the teeth of the four tooth gear 64*b* of the cents gear unit 69 are in the "9" position.

For the purpose of setting up the number of gallons two accumulator gear units are provided as shown at 62 and 63 in Figs. 10, 11 and 12. The gear unit 62, which constitutes the units counter, comprises a forty tooth gear 52*d*, a four tooth gear 64*d* and a forty tooth ratchet wheel 54*d*, which is actuated by pawl 53*d* and lever 59*d* in the manner above described. The gear unit 63 comprises a forty tooth gear 52*e*, a four tooth gear 64*e* and a ratchet wheel 64*b*. This gear unit being the tens counter is not operated independently of the unit counter but the count is transferred thereto by means of the four tooth gear 64*d* in the gear unit 62. This four tooth gear is arranged to actuate a transfer gear 65*d* which is rotatably mounted on the transverse shaft 66 and has connected therewith a gear 67*d* also loosely mounted on the shaft 66 and meshing with the gear 52*e* of the gear unit 63. The transverse gears 65*d* and 67*d* have the same number of teeth, in the present instance 20, and it will be apparent that upon each quarter rotation of the forty tooth gear 52*d* of the gear unit 62 the gear unit 63 will be advanced one step or tooth.

A suitable actuating device is provided for imparting movement to the pawl actuating levers 59*a*, 59 and 59*b* and 59*d*, and, as here shown, that device comprises a shaft 268 extending parallel with the shaft 55 which supports the gear units and having rigidly secured thereto a series of arms 269*a*, 269, 269*b* and 269*d*, each having a laterally extending stud or roller 270, and the several arms being spaced lengthwise of the shaft 268 to position the same adjacent to the respective pawl actuating levers 59*a*, 59, 59*b* and 59*d*. Each of these levers is provided with a downwardly extending projection 271 arranged to be engaged by the stud 270 of the corresponding actuating arm, the rear edge of the projection being inclined so that the stud will act thereon with a cam action and the length of the projection being such that the movement of the lever will impart the desired movement to the gear operating pawl. In the case of the money value computing gear units the pawl has a movement through an arc of ninety degrees so that the forty tooth gear may be advanced a distance of ten teeth upon each operation thereof. In the case of the gallons computing gear unit the pawl is moved a distance of one tooth only upon each operation thereof and the projection 271 on the pawl operating lever 59*d* for that gear unit is correspondingly short, as shown in dotted lines in Fig. 3. The actuating arms for the money value computing gear units are spaced about the axis of the actuating shaft 268 so

that the several gear units will be actuated successively.

Means are provided for causing one complete rotation to be imparted to the actuating shaft 268 upon the delivery of each unit of liquid and this complete rotation of the actuating device will cause the pawls for each of the money value gear units 68, 69 and 70 to be moved through an arc of ninety degrees and will cause the pawl 53*d* for the gallons computing gear unit 62 to be moved a distance of one tooth. Inasmuch as the pawls for the money value gear units move a uniform distance upon each operation thereof it is necessary to provide some means for so controlling the operation of those pawls that their gear units will be advanced distances corresponding to the price per unit of the liquid dispensed, so that each operation of the actuating mechanism will add the price of one unit to the gear units and eventually to the register. This price setting mechanism may take various forms and, in the present instance, I have mounted on the shaft 55, adjacent to each of the gear units 68, 69 and 70, a disk or plate, 72*a*, 72 and 72*b*, (see Fig. 5), which plates are adjustable about the axis of the shaft. Each plate has peripheral portions of different radial width, as shown at 73 and 74. That portion having the greater radial width, 73, has its edge even with or slightly beyond the ends of the teeth of the adjacent ratchet wheel 54 and the nose of the pawl 53 is of sufficient width to overlap both the plate and the ratchet wheel and consequently when this wider portion of the plate is in line with the pawl the latter will be held out of engagement with the ratchet teeth. That portion of the plate having the shorter radial width has its edge adjacent to the inner ends of the ratchet teeth so that it will not interfere with the engagement with the teeth by the pawl. The plate may be adjusted about the axis of the shaft in any suitable manner but, as here shown, it has a third peripheral portion provided with gear teeth, as shown at 75, and these teeth mesh with a pinion 76 (Fig. 3) rotatably mounted on a shaft 77 so that by actuating the several pinions 76 the pawl controlling plates for the respective gear units may be adjusted to the desired positions. In the present machine the pinions 76 are arranged to be engaged and actuated by the finger of the operator, it being understood that the plates are adjusted only when the price per gallon changes. Preferably each pinion 76 has secured thereto an indicator 78 (Fig. 11) which will indicate to the operator the position of the plate. Detents 79 normally engage the teeth of the price setting pinions 76 to hold the same, and consequently the plates, against displacement. It will be apparent, therefore, that by releasing the detent and adjusting the plates 72*a*, 72 and 72*b* of the respective gear units to selected positions with relation to the ratchet wheels of those units the mechanism may be caused to register any desired price per unit of liquid on each operation thereof. For example, if the price of gasoline is 18$\frac{9}{10}$ cents per gallon the plate 72*a* of the mills gear unit would be set to cover all but three of the ratchet teeth which are positioned within the limits of travel of the pawl 53*a*, the plate 72 for the cents counter would be set to cover two of the ratchet teeth which are positioned within the limits of travel of the pawl 53 and the plate 72*b* for the tens of cents counter would be set to cover all but one of the ratchet teeth which are positioned within the limits of travel of the pawl 53*b*. To prevent the overthrow of the pawls or of the gear units a stop 80 (Fig. 5) is arranged in the path of each pawl, at the limit of its movement, and the end of the pawl is inclined so that its contact with the stop will press the pawl into engagement with the ratchet teeth, thus not only checking the movement of the pawl but preventing any movement of the ratchet wheel with relation to the pawl.

The actuating device, 268—269, is motor operated and the motor is so controlled that it will cause one complete rotation to be imparted to the actuating device upon the delivery of each unit of liquid. The motor as shown at 81 in Figs. 7 and 11 and its shaft is provided with a worm 82 which meshes with a worm gear 83 on a shaft 84. Mounted on the shaft 84 and connected with the worm gear 83 is a spur gear 85 which meshes with a gear 87 loosely mounted on the actuator shaft 268. Rigidly secured to the actuator shaft 268 alongside the gear 87 is a second gear 86 identical with the gear 87. The two gears may be connected one to the other to cause them to rotate in unison, and thus cause power to be transmitted from the motor to the actuator, by means of a pinion 88 which is of sufficient width to mesh with the teeth of both gears 86 and 87 and is movable into and out of mesh with those gears. As here shown, the pinion 88 is carried by an arm 89 pivotally mounted on the shaft 84 and is moved into and out of operative engagement with the gears 86 and 87 by a mechanism which will be hereinafter described. Suffice it to say here that this mechanism is of such a character that during the delivery of the liquid the actuator shaft is connected with the motor. It may also be noted here that when the actuating device is disconnected from the motor the latter is connected with the printing mechanism. To this end the gear 51 which actuates the platens 42 and 43 meshes with a gear 90 loosely mounted on a shaft 91. Loosely mounted on the shaft 91 alongside the gear 90 is a second gear 92 which meshes with the driven gear 85. The gears 90 and 92 are so arranged that when the connecting pinion 88 is moved out of mesh with the gears 86 and 87 on the actuator shaft it will be moved into mesh with the gears 90 and 92 for the printing mechanism.

The circuit for the motor 81 is controlled by a switch, which, as shown in Fig. 8, comprises a stationary contact member 93 and a movable contact member 94, the latter being provided with an extension or finger 95 by means of which it may be actuated. A switch actuating lever 96 is pivotally mounted on a fixed axis, as shown at 97, and has at one end a transverse projection 98 which extends beneath the finger or extension 95 of the movable switch member and serves to control the position of that switch member. A spring 99 acts on the lever 96 to move the same in a direction which will cause the switch to be closed. Normally this movement of the lever is prevented by a latch 100 having a shoulder 101 which engages beneath the transverse projection 98 on the lever, when the latter is in its elevated position, and retains the switch in its open position. A spring 102 holds the latch normally in operative engagement with the lever. A finger 103 on the latch extends into the path of a lug or projection 104 carried by a vertically reciprocatory switch operating member 105 which is provided with slots 106 by means of which it is slidably mounted on studs 107. The switch operating member 105

is held normally in its elevated position by a spring 108 which is connected at one end with the upper stud 107 and at its other end with a stud 109 on the switch operating member. When the operating member is pressed downwardly the lug 104 thereon will actuate the latch against the action of the spring 102 to release the lever 96 and the spring 99 will move that lever about its axis and thereby release the switch 95 and permit the latter to close, this being accomplished by the resiliency of the support for the movable contact member. Mounted on the shaft 84 is a cam 110 having a projecting portion or lobe 111. The lever 95 has at that end thereof, opposite the projection 98, an upwardly extending nose 112 which is so arranged with relation to the cam 110 that when the parts are in their normal positions, with the switch open, the nose will lie just behind the cam projection 111 and will be spaced radially beyond the same. When the switch operating member 105 is depressed and the lever 96 released the nose 112 of that lever will move inwardly into contact with the periphery of the cam 110 in the rear of the projection 111. The switch having been closed the motor will operate on the shaft 84 and the cam 110 will rotate in the direction of the arrow and as the shaft completes a single rotation the projecting portion 111 of the cam will force the nose 112 of the lever 96 outwardly thus moving the transverse projection 98 at the opposite end of the lever upwardly to open the switch and to permit the latch 100 to again engage the same, thus breaking the circuit through the motor.

In order to positively stop the rotation of the shaft 84, and thereby instantly stop the operation of the actuating shaft, when the shaft 84 is connected therewith, I have secured to the cam 110 a disk 113 having a peripheral notch 114. Rigidly secured to the lever 96 at the axis thereof is an arm 115 having a nose 116 so positioned that when the parts are in their normal positions, with the switch open, the nose 116 will extend into the recess 114 and will form a stop to prevent the rotation of the disk and consequently of the shaft. When the switch controlling lever 96 is released and moves in a direction to close the switch the nose 116 of the arm 115 will move out of the recess in the disk and the latter will be free to rotate but when the cam actuates the lever 96 to restore the parts to their normal position the nose 116 will be again moved into the recess 115 and will stop the movement of the disk at the end of a complete rotation. However, it is not practical to instantly stop an electric motor and I have therefore interposed a slip connection between the motor and the shaft 84. As shown in Fig. 11, the worm gear 83 is carried by a sleeve 117 in which the shaft 84 is rotatably mounted and the end of this sleeve is provided with an enlargement or disk 118 adjacent to the disk 113, which is rigidly secured to the shaft 84 and friction material 119 is interposed between the disks under sufficient pressure to cause the two parts to normally rotate in unison but to permit the sleeve to rotate with relation to the shaft when the movement of the latter is suddenly checked.

The switch operating member 105 is actuated by a movable element of the dispensing apparatus so as to cause the switch to be closed upon the delivery of each unit of liquid. As here shown, the switch operating member is provided at its upper end with a lateral extension or head 120 with which engages a stud or roller 121 (Fig. 7) carried by a crank arm 122 pivotally mounted at 123 above the head of the switch operating member. Rigidly connected with the arm 122 is an upwardly extending arm 124 which is connected by means of a link 125 with one arm of a bell crank lever 126, the other arm of which carries a stud or roller 127 arranged to be engaged by a finger 128 pivotally mounted on a fixed axis, as shown at 129, and having connected therewith a crank arm 130 which is pivotally connected with the lower end of the connecting rod 38 (Fig. 1) which, as above described, is actuated by the shaft 29 of the delivery mechanism upon each operation thereof. Consequently each time the valve mechanism of the dispensing apparatus is reversed the finger 128 will, through the connecting mechanism, depress the switch operating member 105 and cause the motor to impart one complete rotation to the actuating device.

As has been stated, the count which is received by the gear units may be transferred to the registering device in any suitable manner and at any suitable period during the operation of the mechanism but, in the present device, the gear units serve as accumulators and the accumulated count, or totalized record, is not transferred until the end of the delivery operation. Consequently the gear units are normally disconnected from the register and a connection must be established before the count can be transferred. In the present mechanism I have utilized the transfer pinions 67*a*, 67, 67*b* and 67*d* as parts of the means for connecting the gear units or accumulators with the register. These transfer pinions are in constant mesh with the forty tooth gears of the respective gear units and I have mounted adjacent to each of these transfer pinions, which are here shown as twenty-tooth gears, idle pinions 131*a*, 131, 131*b* and 131*d*, (Figs. 3 and 13) which mesh in intermediate gears 132 which in turn mesh with the respective gears 41 which are connected with the type wheels of the register.

Inasmuch as the gear unit 62 was driven by the actuating pawl to register units of gallons it has no transfer gear in mesh with the gear 52*d* and I have mounted on the shaft 66 an idle pinion 290, which is in mesh with the gear 52*d* and an idle pinion 291, which is in mesh with the corresponding intermediate gear 132. (Figs. 12 and 13.) The pinions 67*a*, 67, 67*b*, 67*d* and 290 are normally disconnected from the pinions 131*a*, 131, 131*b*, 131*d* and 291 so that the operation of the first mentioned pinions, during the delivery of liquid, does not affect the last mentioned pinions or the register. When the gear units are to be connected with the register the pinions 133, 133*a*, 133*b*, 133*c* and 133*d* are moved into mesh with the respective pairs of pinions on the shaft 66, each pinion, 133, 133*a*, 133*b*, 133*c* and 133*d* being wide enough to mesh with both of the other pinions, thereby causing those pinions to rotate in unison and causing any movement of the forty-tooth gears to be transmitted to the corresponding type wheels of the register. As here shown, the pinions 133, 133*a*, 133*b*, 133*c* and 133*d* are mounted on a shaft 292 carried by arms 134 rigidly mounted on the shaft 77. Rigidly secured to the shaft 77 is an arm 135 extending to a point adjacent to the shaft 55 and having at its end a stud 136 extending into a cam groove 137 of a cam 138 (Fig. 7) which is rigidly secured to the shaft 55. The shaft 55 is provided with suitable means, such as a crank 139, for operating the same and the arrangement of the cam 138 is such that the first movement imparted to the

shaft 55 by its operating device will move the pinions 133, 133*a*, 133*b*, 133*c* and 133*d* into mesh with the corresponding transfer pinions and thereby establish the connection between the gear units or accumulators and the register. The cam groove is so shaped that the pinion will be held in this position until the shaft operating device has completed its movement and been returned to its initial position. Means are also provided to cause the first part of the movement of the shaft 55 to shift the pinion 88 and thereby disconnect the actuating device from the motor and connect the latter with the printer. For this purpose an arm 140 is rigidly connected with the arm 89 which carries the pinion 88 and has at its free end a stud 141 which travels in a box cam 142, the cam groove being so shaped that the first movement of the cam will shift the pinion and during the remainder of the movement of the cam the pinion will be held in the position to which it has been moved, that is, in a position to connect the motor with the printer.

The type wheels 39 of the register may be reset in any suitable manner. In the present machine they are reset by restoring the intermediate gears 132 to their initial positions, and this is accomplished automatically at the end of each printing operation. For this purpose a yoke 190 (Fig. 3) is pivotally mounted on the axis of the gears 132 and extends across the peripheries of those gears in the paths of fingers 191 carried by the respective gears. The yoke is moved in a reverse or resetting direction by a spring 192. When the gears 132 are actuated to transfer the count to the type wheels the yoke will be moved against the action of the spring a distance equal to the greatest distance traveled by any of the gears and when the connecting pinions 133 are withdrawn and the gears 132 released the yoke will be moved in a reverse direction by the spring and will pick up the fingers 191 of the several gears and carry the gears to their initial positions, thus also returning the type wheels to their initial positions. A stop 193 is provided to check the movement of the gears when they have reached their initial positions.

It is desirable that the liquid dispensing apparatus should be rendered inoperative during the transfer of the record and it is preferable that this should be accomplished at the beginning of the transfer operation. I have therefore provided means whereby the circuit through the pump operating motor will be broken during the initial movement of the shaft operating device 139. As shown in Fig. 7, the pump motor switch comprises a fixed contact 143 and a movable contact 144 carried by a resilient arm 145. A crank arm 146 is mounted on a fixed axis 146*a* adjacent to the resilient arm 145 and has near its free end a stud 147 on which is mounted a roller 148, preferably of insulating material, which contacts with the resilient arm 145. Rigidly connected with the arm 140, which actuates the pinion 88, is an arm 149 having its free end inclined, as shown at 150, and arranged in contact with the stud 147 on the arm 146, the arrangement being such that when the arm 140 is actuated by the cam 142 the inclined end of the arm 149 will act on the stud 147 and cause the roller 148 to press the movable contact member 144 out of engagement with a fixed contact member 143 thus breaking the circuit through the pump motor. The arm 149 is retained in a position to maintain the circuit broken until the operating device is returned to its initial position.

At the end of each delivery transaction the gear units are reset to zero, there being of course four zero positions on each forty-tooth gear, and this resetting movement of the gears is utilized to transfer the count to the register through the connection which has been established. In the present instance, the gear units are reset by continuing their movement in the normal direction of operation, thus causing each forty-tooth gear, when reset, to be moved to a distance equal to the difference between the amount registered thereon and ten. The type wheels of the register are set normally in their zero positions and the connections between the same and the gear units are such that when the gear units are advanced to complete the movement thereof, and thus reset, the respective type wheels will be rotated in a reverse direction distances equal to the distances to which the corresponding gear units are moved. For example, if one of the gear units has accumulated a count of eight it will be moved forwardly a distance of two teeth in resetting the same, and this movement when transmitted through the connecting gearing to the corresponding type wheel will move that type wheel in a reverse direction the distance of two teeth, thus bringing the "8" type into printing position. The four tooth gears 64*a*, 64, 64*b*, 64*c*, 64*d* and 64*e* which form parts of the mechanism for transferring the count from one gear unit to another also constitute parts of the resetting mechanism and all the gear units are therefore provided with these four tooth gears. Cooperating with each four tooth gear is a pawl 151, the several pawls being in the present instance formed from one piece of metal and being mounted on a rod 152 carried by arms 153 pivotally mounted on the shaft 55. Means are provided whereby each complete operation of the operating device 139 for the shaft 55 will move the pawls 151 through an arc of ninety degrees. The mechanism for actuating the pawls 151 should be of such a character that the pawls will not impart movement to the gear units until the connection has been established between the gear units and the register and after the resetting operation has been completed the operating device should have a slight movement, after the pawls are stopped, for the purpose which will hereinafter appear. This may be accomplished in various ways and in Fig. 6. I have shown one mechanism by means of which the desired results may be secured. As there shown, an arm 154 is rigidly secured to the shaft 55 and a second arm 155 is loosely mounted on that shaft. A spring 156 is connected at one end with a pin 157 on the arm 154 and at the other end with a pin 158 on the arm 155. The pin 158 of the movable arm 155 extends across the lower edge of one of the arms 153 but is normally spaced some distance therefrom. When movement is imparted to the shaft 55 the arm 154 will rotate with the shaft and cause the arm 155 to move therewith but the distance between the pin 158 and the edge of the pawl carrying arm 153 is such that the cams 138 and 142 will have ample time to function before movement is imparted to the pawl carrying arms. After the arm 155 has picked up the pawl carrying arm 153 the pawls will be moved through an arc of ninety degrees, or until the arms contact with fixed stops 159, and during this movement they will pick up the next preceding teeth on the four tooth gears and thereby move each gear unit to its zero position. When the pawl supporting arm 153 engages the

stop 159 the shaft 55 and arm 154 may continue to move in the same direction due to the yielding of the spring 156, this additional movement being sufficient to cause the motor to operate the printing mechanism. This latter operation is brought about by means of an arm 160 (Fig. 7) rigidly secured to a shaft 161 and having a pin 162 arranged in the path of a part or edge 162a of the cam 142 and so arranged that it will be engaged by that part of the cam just before the cam completes its movement. Rigidly connected with the shaft 161 is a slotted arm 163 which engages a pin 164 on the link 125 forming part of the switch operating mechanism. Consequently after the count has been transferred from the gear units to the register, by the resetting of the gear units, the further movement of the operating device 139 will cause the circuit to be closed through the motor and the record printed.

Inasmuch as the mechanism must be manually operated to bring about the printing of the record it is desirable that some means be provided to require the operator to print the record. In the present mechanism I have provided means whereby the accumulation of a money value of an excessive amount on the gear units will cause the circuit through the pump motor to be broken and will prevent the closing of that circuit until the record has been printed. This, of course, does not force the operator to print a record of each transaction but he must ultimately print the accumulated record and if the records printed are abnormal an inspector will know at once that each transaction record has not been printed. The means for accomplishing this comprises an arm 165 rigidly connected with the switch operating mechanism 146 and having a laterally extending projection 166 arranged in the path of an arm 167 mounted on the shaft 77 and having connected therewith an arm 168 arranged to be actuated by a cam 169 rigidly connected with the dollars gear unit. This cam is a four lobe cam and is so arranged with relation to the gear unit that when the dollars gear passes from the eight to the nine position one of the lobes of the cam will engage the arm 168 and impart sufficient movement thereto to cause the switch to be opened, thus interrupting the operation of the motor whenever the amount of $9.00 has been accumulated without the record being printed.

Each lobe of the cam has a dwell of sufficient length to hold the switch in its open position until the gear unit has been moved to its open or zero position. Inasmuch as the dispensing mechanism is inoperative the only way in which the gear unit can be moved to that position is by operating the resetting mechanism and causing the record to be printed. When the gear unit is reset to zero the arm 168 will be released and the pump motor switch will close. A full stroke mechanism is provided to prevent the operator from moving the resetting mechanism far enough to release the arm 168 and then returning the same to its initial position without closing the switch through the motor which operates the printing mechanism.

The full stroke mechanism for forcing the operator to complete the movement of the operating device 139 and the shaft 55 in one direction before he can reverse that movement may take various forms. As shown in Figs. 11 and 14, I have rigidly connected with the shaft 55, adjacent to the operating handle 139, two segments 170 and 171 having opposed ratchet teeth. Pivotally mounted on a stud 172, mounted on a fixed support, are pawls 173 and 174 to engage the ratchet teeth of the respective segments. These pawls are so mounted and controlled that when one pawl is in operative engagement with the teeth of its segment the other pawl will be in an inoperative position. The pawls are here shown as connected by a spring 175 which tends to move them to their operative positions. Pivotally mounted on the shaft 55 is a depending frame 176 which overlaps the two pawls and has at each end a hook shaped portion 177 adapted to engage over a stud 178 on the adjacent pawl to hold that pawl in its inoperative position. This frame ordinarily swings free on the shaft 55 and one of the segments is provided with studs 179 and 180 arranged on opposite sides of the frame, so that one or the other of these studs will engage the frame and impart movement thereto as the operating device completes its movement in one direction or the other. The movement of the frame is limited by projections 181 extending downwardly on the opposite sides of the pawl supporting stud 172. Each toothed segment is provided with a cam 183, these cams being so located with relation to the respective segments that as the operating device approaches the limit of its movement one of the cams will engage the pawl which is in operative engagement with its segment and move the same out of engagement therewith. For example, as shown in Fig. 14, the pawl 173 is in engagement with the segment 170 and when the operating member 139 is moved to the right and approaches the limit of its movement in that direction the cam 183 of the segment 170 will engage the pawl 173 and force the same out of engagement with the segment. Immediately following the movement of the pawl to its inoperative position the stud 180 will engage the swinging frame 176 and move the hook shaped portion 177 thereof above the stud 178 on the pawl, thereby locking this pawl in its inoperative position. At the same time the hook shaped portion 177 on the other edge of the swinging frame will be moved out of engagement with the stud 178 on the pawl 174, thereby releasing that pawl and permitting it to be moved into engagement with the toothed segment 171. As the operating handle is moved in a reverse direction, that is to the left in Fig. 14, the pawl 174 will hold it against reverse movement until the cam 183 of the segment 171 reverses the pawls in the manner above described.

While I have shown and described one embodiment of my invention I wish it to be understood that I do not desire to be limited to the details thereof as various modifications may occur to a person skilled in the art.

Having now fully described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a mechanism of the character described, a register, a rotatable device to set up on said register the items to be registered, a device movable into and out of a position to connect said rotatable device with said register, an actuating device for said rotatable device, a motor, a device movable into and out of a position to connect said motor with said actuating mechanism, means to reset said rotatable device to its zero position, an operating device, and means actuated by said operating device to first connect said rotatable device with said register and disconnect said motor from said actuating device, and to then reset said rotatable device and thereby transfer the accumulated items therefrom to said register.

2. In a mechanism of the character described, a register having means for printing a record of the items registered thereon, a rotatable device to set up on said register the items to be registered, normally inoperative means to connect said rotatable device with said register, actuating mechanism for said rotatable device, a motor, means to connect said motor with either said actuating mechanism or the printing means of said register, means to reset said rotatable device to its zero position, an operating device, means actuated by the initial movement of said operating device to cause the first mentioned connecting means to connect said rotatable device with said register and to cause the last mentioned connecting means to disconnect said motor from said actuating mechanism and connect the same with said printing means, and means controlled by a further movement of said operating device to actuate said resetting means and thereby cause the accumulated items to be transferred from said rotatable device to said register.

3. In a mechanism of the character described, a register having means for printing a record of the items registered thereon, a rotatable device to set up on said register the items to be registered, normally inoperative means to connect said rotatable device with said register, actuating mechanism for said rotatable device, a motor, means to connect said motor with either said actuating mechanism or the printing means of said register, means to reset said rotatable device to its zero position, an operating device, means actuated by the initial movement of said operating device to cause the first mentioned connecting means to connect said rotatable device with said register and to cause the last mentioned connecting means to disconnect said motor from said actuating mechanism and connect the same with said printing means, means controlled by a further movement of said operating device to actuate said resetting means and thereby cause the accumulated items to be transferred from said rotatable device to said register, and means actuated by the continued movement of said operating device to cause said motor to actuate said printing means.

4. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register to register items relating to the units delivered, of a device for setting up on said register the items to be registered, means for operatively connecting said device with said register, motor operated means for actuating said setting up device, means controlled by said operable means of said dispensing apparatus to cause said motor operated actuating means to impart a predetermined movement to said setting up device upon the delivery of each unit of said commodity, and adjustable means to determine the amount of movement imparted to said setting up device by each operation of said actuating means.

5. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of a device comprising a rotatable member for setting up on said register the items to be registered, means to operatively connect said device with said register, an oscillatory device to impart movement to said rotatable member, motor operated means to actuate said oscillatory device, and means controlled by said operable means of said dispensing apparatus to cause said motor operated means to impart movement to said oscillatory device upon the delivery of each unit of said commodity.

6. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of a device comprising a rotatable member for setting up on said register the items to be registered, means to operatively connect said device with said register, an oscillatory device to impart movement to said rotatable member, motor operated means to actuate said oscillatory device, means controlled by said operable means of said dispensing apparatus to cause said motor operated means to impart movement to said oscillatory device upon the delivery of each unit of said commodity, and adjustable means to vary the amount of movement imparted to said rotatable member by said oscillatory device in accordance with the unit value of the commodity dispensed.

7. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of a rotatable device to set up on said register the items to be registered and comprising a toothed member, a pawl to actuate said toothed member, motor operated means for imparting movement to said pawl, means controlled by said operable means of said dispensing apparatus to cause said motor operated means to impart a predetermined movement to said pawl upon the delivery of each unit of said commodity, and means for operatively connecting said rotatable device with said register.

8. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of a rotatable device to set up on said register the items to be registered and comprising a toothed member, a pawl to actuate said toothed member, motor operated means for imparting movement to said pawl, means controlled by said operable means of said dispensing apparatus to cause said motor operated means to impart a predetermined movement to said pawl upon the delivery of each unit of said commodity, adjustable means to vary the movement imparted to said toothed member by said pawl in accordance with the unit value of the commodity dispensed, and means to operatively connect said rotatable device with said register.

9. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of a rotatable device to set up on said register the items to be registered and comprising a toothed member, a pawl to actuate said toothed member, a carrier for said pawl mounted for movement about the axis of said toothed member, a lever mounted on a fixed axis and having one end operatively connected with said pawl carrier, a rotatable actuating device having a part to engage said lever and cause the same to impart movement to said pawl carrier, means controlled by said operable means of said dispensing apparatus to cause a predetermined movement to be imparted to said actuating device upon the delivery of each unit of said commodity, and means for operatively connecting said rotatable device with said register.

10. In a mechanism comprising a dispensing apparatus having operable means to cause a

commodity to be delivered in predetermined units, the combination with a register, of a rotatable device to set up on said register the items to be registered and comprising a toothed member, a pawl to actuate said toothed member, a carrier for said pawl mounted for movement about the axis of said toothed member and having a slot, a lever mounted on a fixed axis near one end thereof, having near its other end a projection extending into the slot in said pawl carrier and having between its ends a projection, an actuating shaft, an arm secured to said shaft and having a part to engage the projection on said lever and cause said lever to actuate said pawl carrier, means controlled by said operable means of said dispensing apparatus to cause a predetermined movement to be imparted to said actuating shaft upon the delivery of each unit of said commodity, and means for operatively connecting said rotatable device with said register.

11. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of means for setting up on said register the items to be registered and comprising a plurality of rotatable devices each including a toothed member, pawls to actuate said toothed members, separate carriers for the respective pawls, movable members having operative connection with said pawl carriers, a rotatable actuating device having a plurality of parts arranged to engage and actuate the respective movable members and spaced apart about the axis of said actuating device to cause said movable members to be actuated successively, means controlled by the operable means of said dispensing apparatus to cause a single rotation to be imparted to said actuating device on the delivery of each unit of said commodity, and means for operatively connecting said setting up means with said register.

12. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of means for setting up on said register the items to be registered and comprising a plurality of rotatable devices each including a toothed member, pawls to actuate said toothed members, separate carriers for the respective pawls, a plurality of levers mounted for movement about a common axis, each of said levers having means for operatively connecting it with one of said pawl carriers, a rotatable actuating device having a plurality of parts arranged to successively engage and actuate the respective levers, means controlled by the operable means of said dispensing apparatus to cause a single rotation to be imparted to said actuating device upon the delivery of each unit of said commodity, and means for operatively connecting said setting up means with said register.

13. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of means for setting up on said register the items to be registered and comprising a plurality of rotatable devices each including a toothed member, pawls to actuate said toothed members, separate carriers for the respective pawls, a plurality of levers mounted for movement about a common axis, each of said levers having means for operatively connecting the same with one of said pawl carriers and each of said levers having a projection, an actuating shaft, a plurality of arms rigidly secured to said actuating shaft and having parts arranged to engage projections on the respective levers, said arms being spaced about the axis of said shaft to cause said levers to be successively engaged and actuated, means controlled by said operable member of said dispensing apparatus to cause a single rotation to be imparted to said actuating shaft upon the delivery of each unit of said commodity, and means for operatively connecting said setting up means with said register.

14. In a mechanism of the character described, a register, a rotatable device to set up on said register the items to be registered and comprising a toothed member, a pawl carrier mounted for movement about the axis of said toothed member, a pawl carried by said pawl carrier and arranged to engage the teeth of said toothed member, a lever having one end operatively engaged with said pawl carrier and having its other end pivotally mounted on a fixed support spaced from the axis of said pawl carrier, said lever having a projection between its ends, an actuating shaft, and a part carried by said actuating shaft and arranged to engage the projection on said lever once during each rotation of said shaft and thereby impart a predetermined movement to said pawl.

15. In a mechanism of the character described, a register, a rotatable device to set up on said register the items to be registered and comprising a toothed member, a pawl to engage said toothed member and actuate said rotatable device, a carrier for said pawl, a movable member operatively connected with said pawl carrier, a rotatable actuating device having a part to engage said movable member once during each rotation of said actuating device and thereby impart a predetermined movement to said pawl, a motor to operate said actuating device, and means for causing said motor to impart a single rotation to said actuating device upon each operation thereof.

16. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, and means to operate said apparatus, the combination with a register to register items relating to the units delivered, of a rotatable device to set up on said register the items to be registered, operating mechanism controlled by said operable means to cause a predetermined movement to be imparted to said rotatable device upon the delivery of each unit of said commodity, means for restoring said rotatable device to its initial position, means controlled in accordance with the movements of said rotatable device to render said operating mechanism inoperative when said rotatable device has been advanced to a predetermined position and to render said operating mechanism operative when said rotatable device has been restored to its initial position.

17. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, a motor to operate said apparatus, and a switch to control the operation of said motor, the combination with a register to register items relating to the units delivered, of a rotatable device to set up on said register the items to be registered, means controlled by said operable means of said dispensing apparatus to cause a predetermined movement to be imparted to said rotatable device upon the delivery of each unit of said

commodity, means for restoring said rotatable device to its initial position, and means controlled by said rotatable device to open said switch and prevent the further operation of said rotatable device when the latter has been advanced to a predetermined position and to close said switch when said rotatable device has been restored to its initial position.

18. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, a motor to operate said apparatus, and a switch to control said motor, the combination with a register to register items relating to the units delivered, of means comprising a rotatable device to set up on said register the items to be registered, mechanism for actuating said rotatable device, means controlled by said operable means of said dispensing apparatus to impart a predetermined movement to said actuating mechanism upon the delivery of each unit of said commodity, an actuating device for said switch, a member connected with said rotatable device and arranged to engage said switch actuating device and open said switch when said rotatable device has been advanced to a predetermined position, and means to restore said rotatable device to its initial position and move said member out of engagement with said switch actuating device.

19. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register to register items relating to the units delivered, of an accumulator, means controlled by said operable means of said dispensing apparatus to cause a predetermined item to be added to said accumulator upon the delivery of each unit of said commodity, and means for transferring to said register the total of the items accumulated by said accumulator and for restoring said accumulator to its zero position.

20. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register to register items relating to the units delivered, of an accumulator, a motor for operating said accumulator, means controlled by said operable means of said dispensing apparatus to cause said motor to impart a predetermined movement to said accumulator upon the delivery of each unit of said commodity, and manually operated means for transferring to said register the record accumulated on said accumulator and for restoring said accumulator to its zero position.

21. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register to register items relating to the units delivered, of an accumulator to compute the money value of successive units of said commodity delivered by said apparatus, an actuating device to add to said accumulator an item of predetermined value upon each operation of said actuating device, means controlled by said operable means of said dispensing apparatus to impart operative movement to said actuating device upon the delivery of each unit of said commodity, and means operable after the delivery of said commodity has been completed to transfer to said register the total of the items accumulated on said accumulator.

22. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register to register items relating to the units delivered, of an accumulator to compute the money value of successive units of said commodity, delivered by said apparatus, an actuating device to add to said accumulator an item of predetermined value upon each operation of said actuating device, adjustable means to vary the value of the item added to said accumulator by said actuating device in accordance with variations in the unit value of the commodity dispensed, means controlled by said operable means of said dispensing apparatus to impart operative movement to said actuating device upon the delivery of each unit of said commodity, and means operable after the delivery of said commodity has been completed to transfer to said register the total of the items accumulated on said accumulator.

23. In a mechanism comprising a dispensing apparatus having operable means for causing a commodity to be delivered in predetermined units, the combination with a recorder having means for printing a record of items relating to the units delivered by said apparatus, of an accumulator to totalize items relating to successive units delivered, an actuating device to cause an item to be added to said accumulator upon each operation of said actuating device, a motor normally connected with said actuating device, means controlled by said operable means of said dispensing apparatus to cause said motor to impart a predetermined movement to said actuating device upon the delivery of each unit of said commodity, and means for transferring the total of the items added to said accumulator to said recorder and for disconnecting said motor from said actuating device and connecting the same with said recorder to cause a record to be printed therefrom.

24. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of an accumulator normally disconnected from said register and comprising a gear, means controlled by said operable means for said dispensing apparatus to cause a predetermined movement to be imparted to said gear upon the delivery of each unit of said commodity, and means for establishing a geared connection between said accumulator and said register and for actuating said accumulator to transfer the accumulated record therefrom to said register.

25. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of an accumulator comprising a gear, means controlled by said operable means of said dispensing apparatus to cause a predetermined movement to be imparted to said gear upon the delivery of each unit of said commodity, a gear to actuate said register, a normally inoperative pinion to connect said gears, and means to move said pinion into operative relation to said gears and to actuate said accumulator gear to transfer the record therefrom to said register.

26. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of an accumulator comprising a gear, means controlled by said operable means of said dispensing apparatus to cause a predetermined movement to be imparted to said gear upon the delivery of each unit of said

commodity, an idle gear connected with said register, a second gear meshing with said accumulator gear, a pinion movable into and out of mesh with both last mentioned gears, cam operated means for moving said pinion into mesh with said gears, and means for restoring said accumulator gear to its initial position.

27. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of an accumulator, means controlled by said operable means of said dispensing apparatus to impart a predetermined movement to said accumulator upon the delivery of each unit of said commodity, a device movable into and out of a position to operatively connect said accumulator with said register, said device being supported normally in its inoperative position, an operating device, and means actuated by said operating device to first move said connecting device into its operative position and to then actuate said accumulator to transfer the record therefrom to said register and to reset said accumulator.

28. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of an accumulator, means controlled by said operable means of said dispensing apparatus to impart a predetermined movement to said accumulator upon the delivery of each unit of said commodity, a device movable into and out of a position to operatively connect said accumulator with said register, said device being supported normally in its inoperative position, a cam, means actuated by said cam to move said connecting device to its operative position, means for resetting said accumulator, and means for first actuating said cam to cause said accumulator to be connected with said register and then actuating said resetting means.

29. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register, of a normally stationary shaft, an accumulator rotatably mounted on said shaft, means controlled by said operable means of said dispensing apparatus to impart a predetermined movement to said accumulator upon the delivery of each unit of said commodity, a device movable into and out of a position to operatively connect said accumulator with said register, a cam rigidly secured to said shaft, means actuated by said cam to move said connecting device to its operative position, a resetting device for said accumulator comprising a part secured to and actuated by said shaft, and means for imparting rotatory movement to said shaft.

30. In a mechanism comprising a dispensing apparatus comprising operable means to cause a commodity to be delivered in predetermined units, the combination with a register having means for printing a record of the items registered thereon, of a rotatable device to set up on said register the items to be registered, said rotatable device being normally disconnected from said register, actuating mechanism for said rotatable device, a motor normally connected with said actuating mechanism, means controlled by the operable means of said dispensing apparatus to cause said motor to impart a predetermined movement to said actuating mechanism upon the delivery of each unit of said commodity, an operating device, means actuated by the initial movement of said operating device to connect said rotatable device with said register and to disconnect said motor from said actuating mechanism and connect the same with the printing means for said register, and means actuated by the further movement of said operating device to move said rotatable device to a zero position and thereby cause the same to actuate said register.

31. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register having means for printing a record of the items registered thereon, of a rotatable device to set up on said register the items to be registered, said rotatable device being normally disconnected from said register, actuating mechanism for said rotatable device, a motor normally connected with said actuating mechanism, means controlled by the operable means of said dispensing apparatus to cause said motor to impart a predetermined movement to said actuating mechanism upon the delivery of each unit of said commodity, an operating device, means actuated by the initial movement of said operating device to connect said rotatable device with said register and to disconnect said motor from said actuating mechanism and connect the same with the printing means for said register, means actuated by the further movement of said operating device to move said rotatable device to a zero position and thereby cause the same to actuate said register, and means actuated by said operating device after said rotatable device has been reset to cause said motor to actuate said printing means.

32. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register having means for printing a record of the items registered thereon, of a rotatable device to set up on said register the items to be registered, said rotatable device being normally disconnected from said register, actuating mechanism for said rotatable device, a motor, a part driven by said motor and normally connected with said actuating mechanism, a switch to control the operation of said motor, means controlled by said operable means of said dispensing apparatus to close said switch upon the delivery of each unit of said commodity, means to open said switch upon the completion of a single rotation of said motor driven part, an operating device, means actuated by said operating device to connect said rotatable member with said register and to disconnect said motor driven part from said actuating mechanism and connect the same with the printing means of said register, means actuated by said operating device to reset said rotatable device to a zero position and thereby cause the same to actuate said register, and means actuated by said operating device after said rotatable device has been reset to again close said switch.

33. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register having means for printing a record of the items registered thereon, of a rotatable device to set up on said register the items to be registered, said rotatable device being normally disconnected from said register, actuating mechanism for said rotatable device, a motor, a part driven by said motor and normally connected with said actuating mechanism, a switch to control the operation of said motor,

means controlled by said operable means of said dispensing apparatus to close said switch upon the delivery of each unit of said commodity, means to open said switch upon the completion of a single rotation of said motor driven part, an operating shaft, means for imparting operative movement to said operating shaft in one direction, a cam connected with said shaft, means actuated by said cam to connect said rotatable device with said register, a second cam connected with said shaft, means actuated by said second cam to disconnect said motor from said actuating mechanism and connect the same with the printing means for said register, and a resetting device comprising a part rotatably mounted on said shaft and a part rigidly secured to said shaft, the last mentioned part being so arranged that it will actuate the first mentioned part after initial movement has been imparted to said cams.

34. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register having means for printing a record of the items registered thereon, of a rotatable device to set up on said register the items to be registered, said rotatable device being normally disconnected from said register, actuating mechanism for said rotatable device, a motor, a part driven by said motor and normally connected with said actuating mechanism, a switch to control the operation of said motor, means controlled by said operable means of said dispensing apparatus to close said switch upon the delivery of each unit of said commodity, means to open said switch upon the completion of a single rotation of said motor driven part, an operating shaft, means for imparting operative movement to said operating shaft in one direction, a cam connected with said shaft, means actuated by said cam to connect said rotatable device with said register, a second cam connected with said shaft, means actuated by said second cam to disconnect said motor from said actuating mechanism and connect the same with the printing means for said register, a resetting device so connected with said shaft that said shaft may have initial movement before said resetting device is actuated and may have an additional movement after said resetting device has completed its movement, and means actuated by said additional movement of said shaft to close said switch.

35. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register having means for printing a record of the items registered thereon, of a rotatable device to set up on said register the items to be registered, said rotatable device being normally disconnected from said register, actuating mechanism for said rotatable device, a motor, a part driven by said motor and normally connected with said actuating mechanism, a switch to control the operation of said motor, means controlled by said operable means of said dispensing apparatus to close said switch upon the delivery of each unit of said commodity, means to open said switch upon the completion of a single rotation of said motor driven part, an operating shaft, means for imparting operative movement to said operating shaft in one direction, a cam connected with said shaft, means actuated by said cam to connect said rotatable device with said register, a second cam connected with said shaft, means actuated by said second cam to disconnect said motor from said actuating mechanism and connect the same with the printing means for said register, a pawl carrier rotatably mounted on said shaft, a pawl carried by said pawl carrier and arranged to engage said rotatable device and reset the same, an arm loosely mounted on said shaft and having a part arranged to engage said pawl carrier but normally spaced therefrom, an arm rigidly secured to said shaft, a spring connecting said arms, a stop to limit the movement of said pawl carrier, and means actuated by the movement of said shaft after said pawl carrier has engaged said stop to close said switch.

36. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, a motor to operate said apparatus, and a switch to control the operation of said motor, the combination with a register, of a rotatable device to set up on said register the items to be registered, said rotatable device being normally disconnected from said register, actuating mechanism for said rotatable device, a second motor normally connected with said actuating mechanism, means controlled by the operable means of said dispensing apparatus to cause said second motor to impart a predetermined movement to said actuating mechanism upon the delivery of each unit of said commodity, an operating device, means controlled by said operating device to cause said rotatable device to be connected with said register and to open the switch for the motor of said dispensing apparatus and to then reset said rotatable device to a zero position and thereby cause movement to be imparted to said registering device.

37. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered to predetermined units, a motor to operate said apparatus, and a switch to control the operation of said motor, the combination with a register having means to print a record of the items registered thereon, of a rotatable device to set up on said register the items to be registered, said rotatable device being normally disconnected from said register, actuating mechanism for said rotatable device, a second motor normally connected with said actuating mechanism, means controlled by the operable means of said dispensing apparatus to cause said second motor to impart a predetermined movement to said actuating mechanism upon the delivery of each unit of said commodity, an operating device, means actuated by the initial movement of said operating device to connect said rotatable device with said register, to disconnect said second motor from said operating mechanism and connect the same with the printing means for said register and to open the switch for the motor of said dispensing apparatus, means actuated by the further movement of said operating device to reset said rotatable device to a zero position and thereby cause said register to be actuated, and means controlled by a further movement of said operating device to cause said second motor to impart operative movement to said printing means.

38. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register having means for printing a record of the items registered thereon, of a rotatable device to set up on said register the items to be registered, said rotatable device

being normally disconnected from said register, operating mechanism for said rotatable device, a motor normally connected with said operating mechanism, means controlled by the operable means of said dispensing apparatus to cause said motor to impart a predetermined movement to said actuating mechanism upon the delivery of each unit of said commodity, an operating device, means actuated by said operating device to connect said rotatable device with said register and to disconnect said motor from said actuating mechanism and connect the same with the printing means of said register and to then reset said rotatable device to zero position and thereby impart movement to said register, and means actuated by said operating device to render said dispensing apparatus inoperative prior to the resetting of said operating device and to retain the same in an inoperative condition until the operation of said printing means has been completed.

39. In a mechanism comprising a dispensing apparatus having operable means to cause a commodity to be delivered in predetermined units, the combination with a register to register items relating to the units delivered, of a device for setting up on said register the items to be registered, means for operatively connecting said device with said register, motor operated means for actuating said setting up device, and means controlled by said operable means of said dispensing apparatus to cause said motor operated actuating means to impart a predetermined movement to said setting up device upon the delivery of each unit of said commodity.

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