

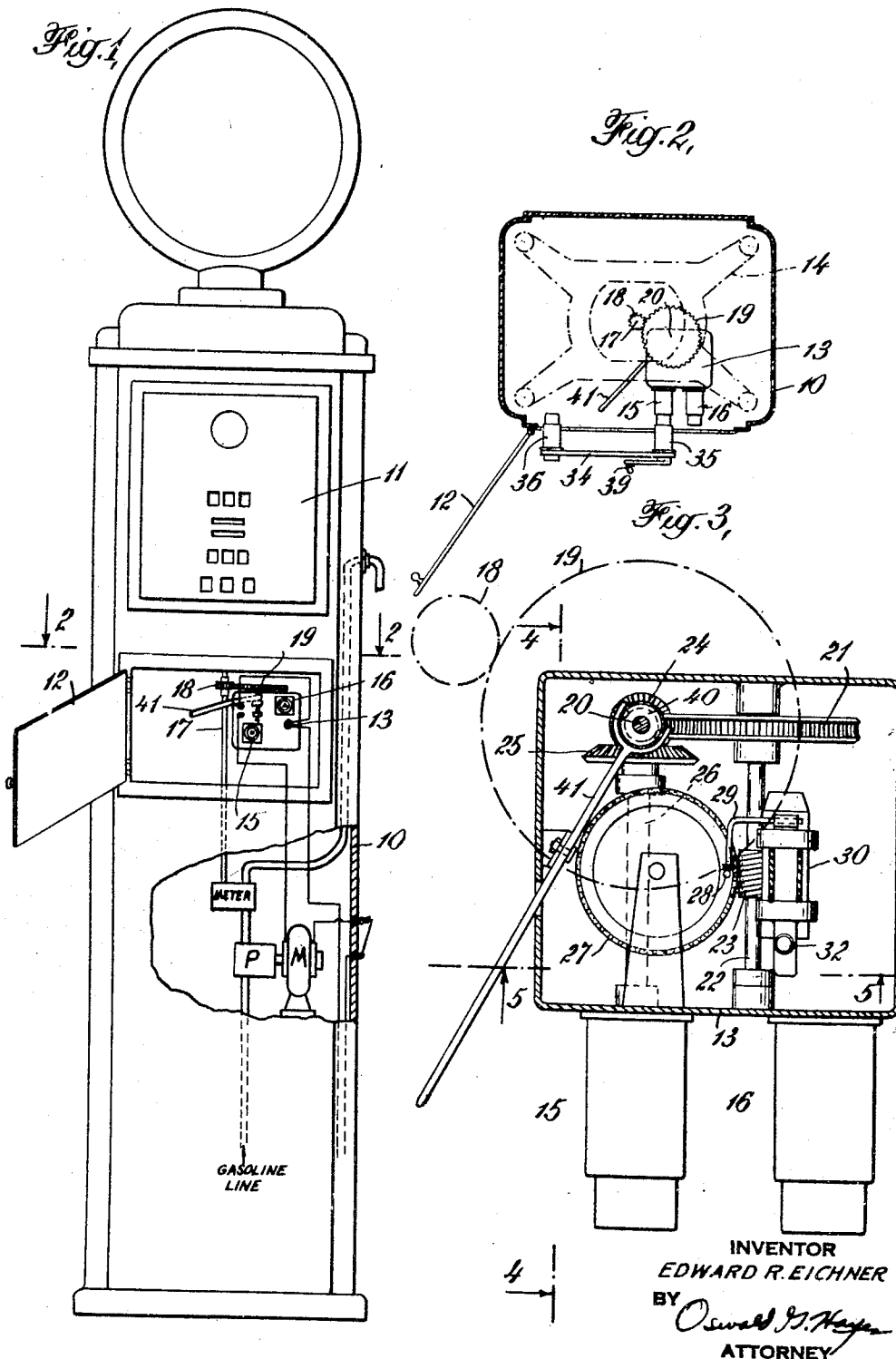
Jan. 7, 1947.

E. R. EICHNER
CURB PUMP

2,414,030

Filed May 27, 1942

2 Sheets-Sheet 1



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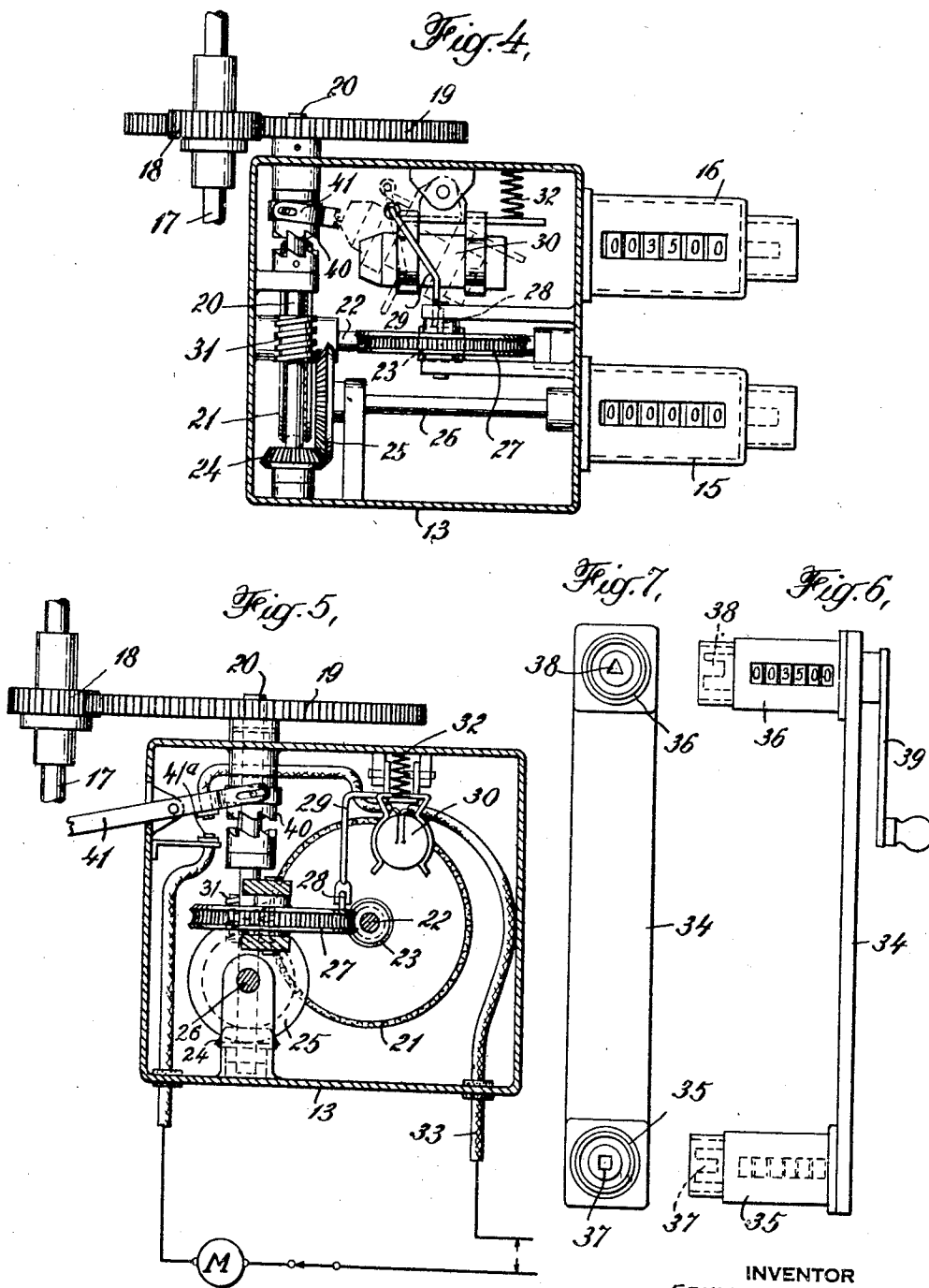
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INVENTOR
EDWARD R. EICHNER

BY *Oswald S. Hayes*
ATTORNEY

UNITED STATES PATENT OFFICE

2,414,030

CURB PUMP

Edward R. Eichner, Montclair, N. J., assignor to
Socony-Vacuum Oil Company, Incorporated,
New York, N. Y., a corporation of New York

Application May 27, 1942, Serial No. 444,655

3 Claims. (Cl. 222-2)

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This invention is directed to a retail dispenser of the type commonly known as curb pumps designed for delivery of gasoline and the like from a storage tank to the gasoline tank of an automobile or other container of small size for use by the ultimate consumer. More specifically, the invention is concerned with a novel element for use in connection with said pumps whereby wholesale deliveries to the retailer can be made on a more satisfactory basis.

Many gasoline retailers, or service stations, handle relatively small amounts of gasoline per unit time and have limited cash and/or credit to pay for wholesale deliveries and must of necessity take small deliveries. This involves considerable expense which should be avoided if possible.

I have designed a curb pump control which enables the supplier of such small retailers to make large deliveries, with the economy attendant thereon, while avoiding unjustifiable extension of credit. Primarily, the apparatus consists of means for setting the pump making deliveries from a storage tank to deliver a predetermined quantity of fluid, after which it is necessary to reset the device before further retail deliveries can be made.

The nature of the invention, together with additional objects and advantages thereof, will be apparent from the following detailed description of a preferred embodiment thereof illustrated in the annexed drawings, wherein:

Figure 1 is an elevation of a conventional curb pump showing the device of this invention in operative position;

Figure 2 is a section on line 2-2 of Figure 1;

Figure 3 is a plan view of the control device, the clutch operated interlock being omitted in the interest of convenience of illustration;

Figure 4 is a section on line 4-4 of Figure 3, the clutch operated interlock being omitted in the interest of convenience of illustration;

Figure 5 is a section on line 5-5 of Figure 3 including a circuit diagram showing schematically a clutch operated circuit controlling switch;

Figure 6 is a side view of reset key mechanism used in connection with the control device; and

Figure 7 is an end view of the reset keys.

The curb pump shown somewhat diagrammatically in Figure 1 is of generally conventional design, including a casing 10 and a register panel indicated generally at 11. In the wall of the casing 10 is the usual door 12 to permit access to the interior of the pump and immediately behind said door is a control box 13 mounted in any suitable manner, as from the spider 14 (not shown

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in Figure 1). The box 13 carries two totalizers 15 and 16, the former being connected with the meter forming part of the operative pump mechanism in a manner more fully discussed below while the latter is independent of the pump except for the support it receives from the main structure. Connection between the meter (not shown) and the totalizer 15 is by means of the shaft 17 of the pump meter, which shaft usually is designed for 8 revolutions per gallon delivered. A pinion 18 is keyed to the meter shaft 17.

The pinion 18 meshes with a gear 19 rotatable about a shaft 20 passing through and carried by the control box 13, which shaft drives a bevel gear 24 keyed thereto and meshing with a bevel gear 25 on the shaft 26 of totalizer 15. Shaft 20 is driven from gear 19 through a jaw clutch 40, operated by clutch lever 41, the purpose of which will appear hereinafter. The elements are so arranged that rotation of the meter shaft 17 will cause reverse motion of the register in totalizer 15, reducing the number thereon by one for each eight rotations of shaft 17, indicating one gallon dispensed.

Also carried by and keyed to shaft 20 is a worm 31 in driving relation with a worm wheel 21 on shaft 22. A second worm 23 on shaft 22 is in driving relationship with a worm wheel 27 carried in bearings on brackets from the wall of the control box. This latter worm wheel is adapted, when a predetermined position is reached, to operate a relay opening the pump circuit or to otherwise render the pump inoperative. In the embodiment shown, a pin 28 on the worm wheel 27 engages an arm 29 carried by the mounting of a mercury switch 30 which is normally biased to closed position by a spring 32. The gear trains driving totalizer 15 and worm wheel 27 from shaft 20 are so related that mercury switch 30 will be opened when the reading on totalizer 15 is zero. The switch 30 is in series with the pump motor by line 33, and it will be seen that no deliveries may be made from the curb pump after totalizer 15 reaches the zero position.

Resetting of totalizer 15 and operation of totalizer 16 is by means of a key mechanism shown in Figures 6 and 7. This consists of a bar 34 carrying two combined totalizer keys 35 and 36 corresponding to the totalizers 15 and 16 of the curb pump. The totalizers 35 and 36 each have shafts adapted at one end to engage and drive the shafts of totalizers 15 and 16 as by the keys 37 and 38, shown here as square and triangular in cross-section, respectively. At their opposite ends, the shafts of totalizers 35 and 36 are adapted to

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receive a keyed handle 39 in driving relationship. Thus, the totalizers 15 and 16 can only be operated by means of the keys 37 and 38 driven by shafts of totalizers 35 and 36, respectively, thus maintaining a record of the extent to which the totalizing key mechanism has been used.

Let it be assumed that a delivery of 3000 gallons of gasoline is made to a retailer who can pay for only 500 gallons. The driver of the delivery tank truck disengages clutch 40 and advances totalizer 16 by 3000 units after delivering that amount, takes pay for 500 gallons and advances totalizer 15 by 500 units, after which the jaw clutch is again engaged. As the retailer dispenses gasoline, the reading on totalizer 15 decreases until the operator deems it expedient to pay for additional gasoline and have the totalizer 15 reset. Payment may be accepted by a special agent or by a tank driver who happens to be in the neighborhood and the totalizer 15 is correspondingly reset. If, however, the retailer fails to pay for all the gasoline in his storage tank, he will be unable to dispense an amount in excess of that for which he has paid. If desired, an interlock may be provided to prevent pumping when the clutch 40 is disengaged. Such an interlock is diagrammatically illustrated in Figure 5. Note that switch 41a in the circuit including mercury switch 30 and the pump driving motor closes said circuit when the clutch is engaged, while if the clutch is disengaged the motor may not be operated. This arrangement serves to prevent frauds on the part of retail service station attendants since the amount of gasoline dispensable is entirely dependent upon the pre-set condition of register 15. If an attempt were made to operate the pump without the register, it would be necessary to disengage clutch 40 which would automatically open the motor circuit.

It will be further apparent that both retail operator and truck driver have accurate records of net transactions. The driver, and his employer, can readily determine both the amount delivered and the amount for which payment was accepted; and the retailer has a record of total deliveries and of the amount he can dispense without making additional payment.

I claim:

1. In a dispensing device including metering means and a motor for driving the same, means normally conditioning the motor for operation, means movable from a starting position to a position biasing said conditioning means from normal position so that the motor cannot be operated, a register, means including a clutch for driving said movable means toward biasing position and said register toward zero position both in timed relation with the metering means, and key means for resetting said register, whereby the clutch may be disengaged and the movable means reset

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to a predetermined registered starting position by key operation of the register in a direction contrary to that in which it is driven by the means including a clutch.

2. Predetermined volume dispensing apparatus comprising a pump, means for metering the output of the pump, means for driving said pump, a clutch having its driving side positively geared for movement in timed relation to said metering means, a resettable control mechanism for limiting the period of operation of said driving means, said control mechanism including a permanently meshed gear train, the driven side of said clutch being keyed for movement in timed relation with the gear train of said control mechanism, means for operating said clutch to establish or disestablish a positive driving connection between said control mechanism and said metering means, means responsive to disengagement of said clutch for deenergizing said pump driving means to prevent operation of said pump except when it is positively connected to said control mechanism, a lock means acting directly on an element of said gear train of said control mechanism for resetting the latter to a predetermined period of operation of the pump, the disengagement of said clutch being prerequisite to the operation of said lock means, whereby said pump may not be operated beyond a period predetermined by said control mechanism without manipulation of the means for operating said clutch.

3. Predetermined volume dispensing apparatus comprising, a pump, means for metering the output of the pump, an electric motor for driving said pump, a circuit controlling the flow of electrical energy to said motor, a clutch having its driving side positively geared for movement in timed relation to said metering means, resettable control mechanism for breaking said circuit after a period of operation, said control mechanism including a gear train, the driven side of said clutch being positively geared for movement in timed relation to the gear train of said control mechanism, means for operating said clutch to establish or disestablish a positive driving connection between said control mechanism and the metering means, means responsive to disengagement of said clutch for breaking said circuit to prevent operation of said pump out of the control of said control mechanism, and lock means acting directly on an element of the gear train of said control mechanism for resetting the latter to predetermine the period of operation of said pump, the disengagement of said clutch being prerequisite to operation of said lock means whereby control over both the lock means and the means for operating said clutch is necessary to extend the period of pump operation beyond that predetermined by setting the control mechanism.

EDWARD R. EICHNER.

Certificate of Correction

Patent No. 2,414,030.

January 7, 1947.

EDWARD R. EICHNER

It is hereby certified that errors appear in the printed specification of the above numbered patent requiring correction as follows: Column 1, line 21, for "Primarily" read *Primarily*; column 2, line 7, strike out "(not shown)"; line 9, strike out the words "the pump meter" and insert instead *a meter which measures the liquid delivered by the pump P driven by the motor M*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 15th day of April, A. D. 1947.

[SEAL]

LESLIE FRAZER,
First Assistant Commissioner of Patents.