Aug. 8, 1933. M. L. PIKE 1,921,775

PREPAYMENT GASOLINE PUMP METER

Filed Oct. 4, 1932 2 Sheets-Sheet 1

Fig. 1.

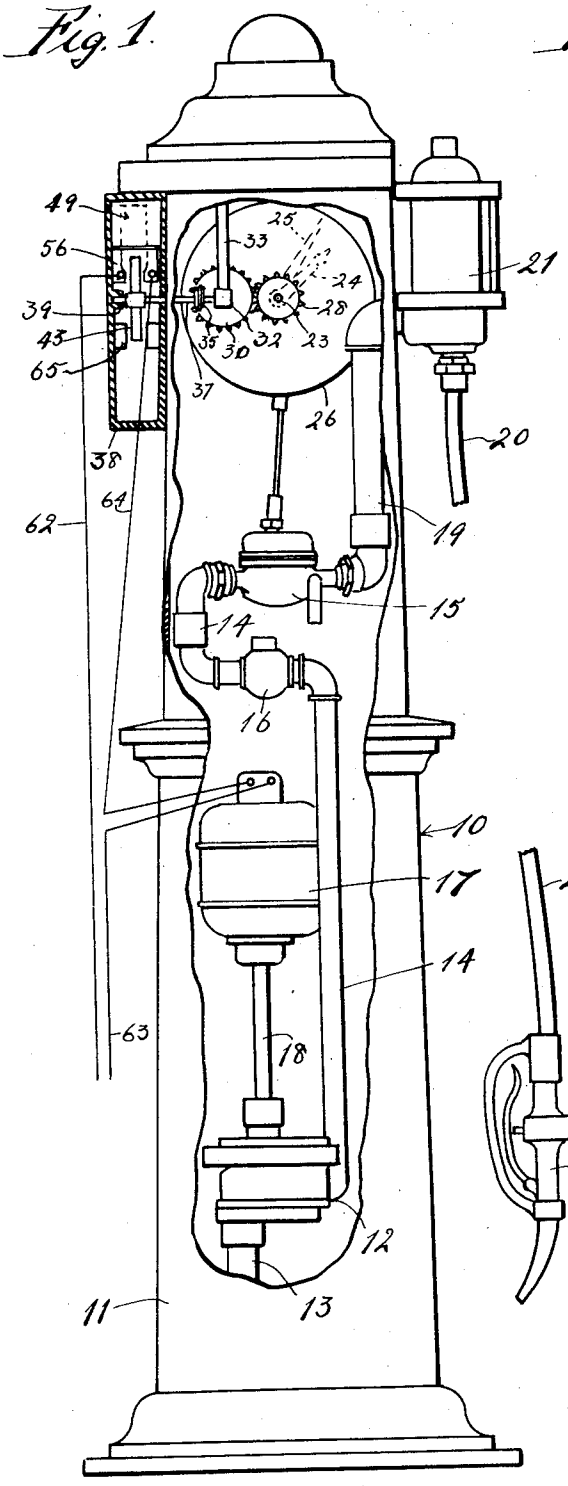
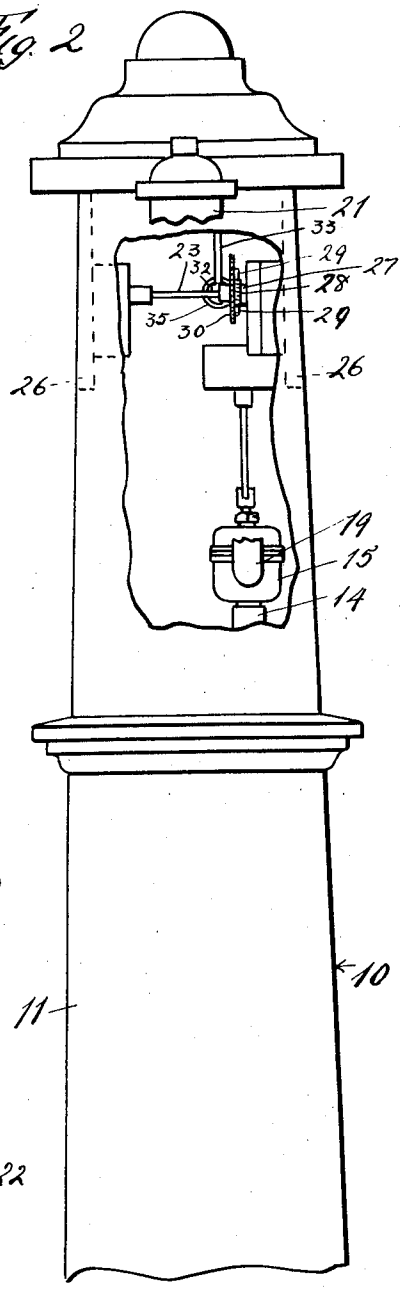


Fig. 2.



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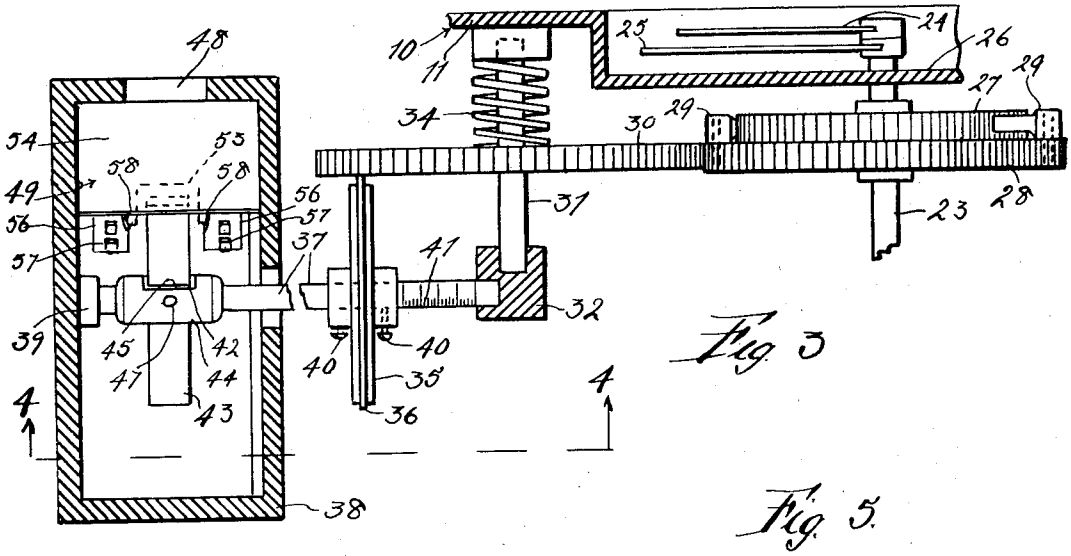


Fig. 3

Fig. 4

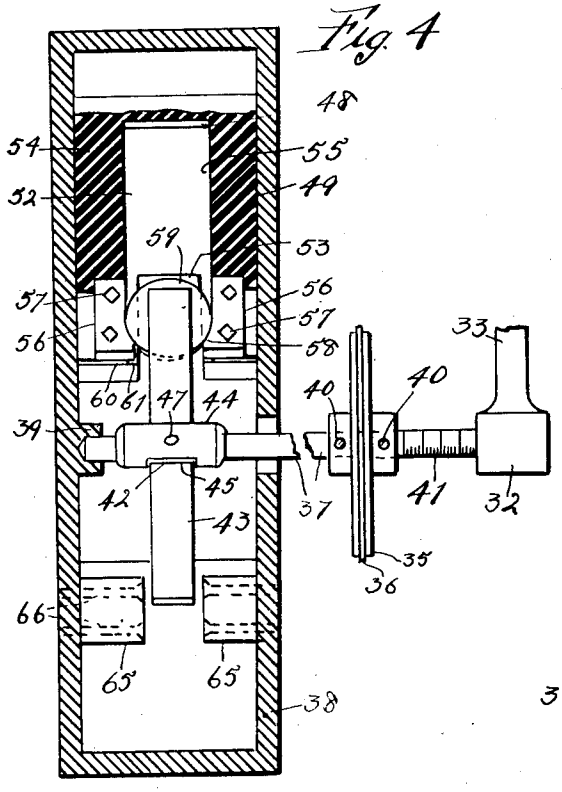
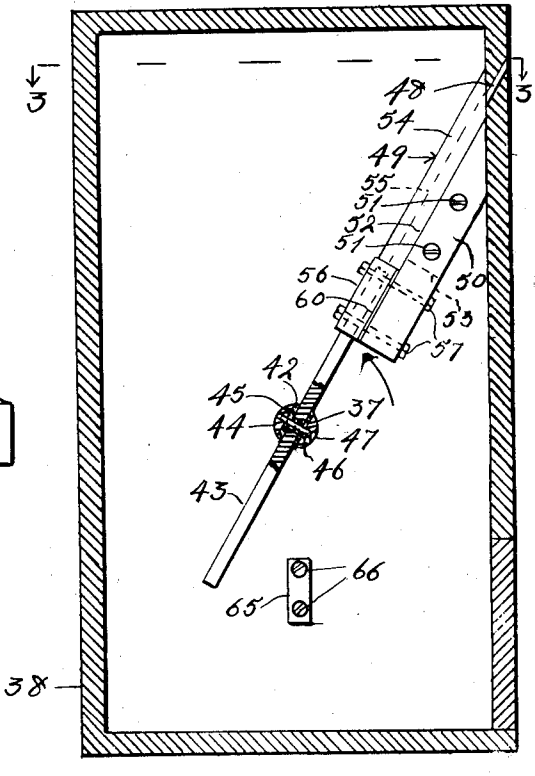


Fig. 5.



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UNITED STATES PATENT OFFICE

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PREPAYMENT GASOLINE PUMP METER

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6 Claims. (Cl. 194—6)

My invention relates to new and useful improvements in a prepayment gasoline pump meter and has for one of its objects to generally improve the construction of devices of this kind wherein a predetermined quantity of gasoline will be delivered by the pump in exchange for a coin of a certain denomination deposited in the machine.

Another object of the invention is to provide means for making and breaking an electric contact practically instantaneously, thus insuring the delivery of a definite predetermined quantity of gasoline.

Another object of the invention is to provide means for making or completing an electric circuit through the use of a coin of proper denomination and breaking or opening said circuit by kicking said coin from between a pair of contacts through the use of a rotating kick-out mechanism which will remove only the coin in the path of travel of one of the arms of said kick-out mechanism.

Another object of the invention is to so fashion and construct a coin receiving structure and the kick-out mechanism that operation of the device will be prevented or the device will not function when large, small or thin slugs are used or when said slugs are of a material subject to magnetic attraction.

Another object of the invention is to provide for making or completing and breaking or opening an electric circuit without the use of moving electrical contacts or brushes.

Another object of the invention is to construct a device of the kind described with the use of relatively few moving parts whereby it is unlikely to get out of order, is of simple construction and will be relatively inexpensive in the cost of manufacture.

Another object of the invention is to provide a structure which may be readily and easily attached to present day type of pumps or meters with very few changes or alterations in the meter to which it is to be attached.

Another object of the invention is to provide a combination of parts which require a small amount of lubrication and very little attention.

A further object of the invention is to provide for readily changing the quantity of gasoline to be dispensed which is accomplished by changing the position of a single gear.

A still further object of the invention is to provide for placing the device in operation and then permitting the delivery of the gasoline as desired by the purchaser through the manipulation of a valve controlled discharge nozzle.

With these and other ends in view, this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, I will describe its construction in detail, referring by numerals to the accompanying drawings forming a part of this application, in which:—

Fig. 1 is a view of a present day conventional gasoline meter pump with a part of the casing broken away to illustrate the interior mechanism and showing my invention applied thereto with the coin housing shown in section.

Fig. 2 is a view of the same pump at right angles thereto and with a part of the casing broken away to show in a general manner the relation of the parts.

Fig. 3 is an enlarged sectional view on the line 3—3 of Fig. 5, showing the driving mechanism in elevation looking down on top of the same and with one of the bearings shown in section.

Fig. 4 is a section on the line 4—4 of Fig. 3, with some of the gears removed and the cover of the coin slot broken away and shown in section.

Fig. 5 is a side elevation of Fig. 4, with the walls of the housing shown in section and a part of the shaft broken off and illustrated in section to show details of construction.

In carrying out my invention as herein embodied, 10 represents a conventional gasoline pump of any suitable construction, design and configuration including a casing 11 enclosing any suitable liquid pump 12 having a conduit 13 leading thereto from a source of gasoline supply and other conduit 14 leading from the discharge of said pump 12 to the meter 15, and said conduit 14 may have a throttle valve 16 interposed therein.

An electric motor 17 also located within the casing 11 has its shaft 18 connected with the operating part of the pump 12 for actuating the latter.

From the meter 15 leads on outlet conduit 19 to which the filling hose 20 is connected, either directly or indirectly. In the latter case it is preferred that a visible flow indicator 21 be interposed between the outlet conduit 19 and the filling hose 20, and said visible flow indicator can function as a temporary reservoir for gasoline pumped from the storage tank and can be used

or drawn off by the purchaser as desired by manual manipulation of the discharge nozzle 22 carried by the free end of the filling hose.

When the meter 15 is being operated due to flow of gasoline therethrough, it will drive the clock shaft 23 through suitable mechanism and operate the hands 24 and 25 of a clock or clocks 26 which indicate the amount of gasoline dispensed.

On said clock shaft 23 is fixed a ratchet wheel 27 so as to revolve with the clock shaft and contiguous to said ratchet wheel is a gear wheel 28 which is loosely mounted on said clock shaft 23 whereby one may revolve free or independently of the other. The gear wheel 28 carries one or more pawls 29 which cooperate with the ratchet wheel 27 so that when said ratchet wheel is revolved in one direction, the gear wheel 28 will be carried along therewith, whereas when said ratchet wheel is revolved in the opposite direction, the gear wheel 28 will remain stationary.

The gear wheel 28 meshes with another gear wheel 30 mounted upon a counter shaft 31 which is mounted in suitable bearings, one of which is illustrated at 32 suspended by a bracket or hanger 33. The gear wheel 30 is laterally movable, either by splining said gear to its shaft 30 or by providing sufficient "play" in the bearings for the shaft 31 to permit the latter to move longitudinally and said gear is normally positioned in one direction by a spring 34 bearing against a wall of the casing 11 or other suitable fixed part of the machine as the stationary element and against one face of the gear wheel 30 as the movable element.

Contacting with a face of the gear 30 is a friction wheel 35 having a tread member 36 of suitable friction material, such as rubber, whereby motion may be transmitted from the gear wheel 30 through the friction wheel 35 to a control shaft 37, one of which may be journalled in the bearing 32 with the other end projecting through the casing 11 of the gasoline pump and thence through a wall of the housing 38 of the coin mechanism and said other end of the shaft may be supported in a bearing 39 within said housing.

The friction wheel 35 is movable lengthwise of the control shaft 37 and may be held in any adjusted position thereon by means of fastening devices 40, such as screws or their equivalent, and as herein shown said screws are threaded in the hubs of the friction wheel and impinge on the shaft 37, which latter is provided with graduations 41 in order to readily determine the desired position of the friction wheel on its shaft and relative to the axis of the gear wheel 30. By changing the point of contact of the friction wheel with the gear wheel 30 relative to the axis of the latter, the relative rotation of the gear 30 to the friction wheel 35 will be varied for changing the quantity of gasoline to be dispensed as will be hereinafter more fully brought out.

That portion of the control shaft 37 within the housing 38 has an opening 42 through it for the reception of a blade 43 of magnetic material and said shaft may be enlarged in the region of the opening 42 as indicated at 44. The entire blade 43 being magnetized, it is desirable to electrically insulate the same from surrounding parts of the machine and therefore insulating material 45 is interposed between the blade and the surrounding surface of the shaft 37 and other insulating material 46 is interposed between said blade and the fastening device 47 which extends through the shaft and blade and is threaded into one part of said shaft.

In one wall of the housing 38 is a coin slot 48 which may be of any suitable construction, preferably such as will prevent the insertion of wires or other instrumentalities into the mechanism and said coin slot aligns with a coin chute 49 which may be of any suitable construction, but it is essential that the same be arranged at a steep angle.

For convenience of illustration, the coin chute may include a base 50 formed from a slab or block of insulating material extending between the side walls of the housing 38 and held in place by fastening devices 51 with one face in alignment with the lower edge of the coin slot. Said base is inclined from the coin slot toward the shaft 37 with the upper surface 52 of said base below the under-surface of the blade 43 when the latter is in its rest position which is at an acute angle to a vertical line through the axis of the control shaft 37 as illustrated in Fig. 5, whereby a space equal to the thickness of a coin designed to be used in the device is formed between the plane of the upper surface 52 of the base 50 and the underside of the blade 43.

The inner end of the base 50 or the end thereof adjacent the shaft 37 has a notch 53 formed therein through which the ends of the blade 43 may pass as said blade rotates.

On the base 50 is mounted a top 54 having a groove 55 lengthwise thereof in its inner surface which functions as the coin guide or track of the coin chute and said top terminates short of the inner end of the base 50.

For convenience of description, it will be assumed that the guide or track 55 is designed to accommodate a twenty-five cent piece, in which case the width of said track or groove is slightly greater than the diameter of the coin so that the latter will have sufficient freedom to pass through the chute.

At the lower end of the chute and just beyond the track or groove 55 at both sides thereof are located the electrical contacts 56 which are secured to the projecting end of the base 50 by suitable fastening devices 57.

Each contact 56 has a straight inner edge flush with the contiguous side edge of the groove or track and a shoulder 58 near its lower or outer end at the inside in the path of travel of a coin falling through the chute and the space between the shoulders of the two contacts is less than the diameter of the proper coin to be used in order that said coin, which is designated by the numeral 59 will be stopped and bridge the space between the two contacts for completing the electrical circuit.

To permit thin coins, slugs or token to pass through the coin chute without completing the electrical circuit, shims 60 are located between the contacts and the base 50, the inner edges of said shims being in line with the edges of the groove or track 55 or located back of the projecting parts of the contacts which form the shoulders so that spaces 61 are provided between the uppermost face of the base 50 and the undersides of the contacts.

A conductor 62 leads from a source of electrical energy is connected to one of the contacts. Another conductor 63 leads from said source of electrical energy is connected with one pole of the motor 17, while a third conductor 64 is connected

to the other pole of the motor and to the other contact 56.

As the blade 43 is magnetized, any slug of a material that will be magnetically attracted, which is inserted in the coin chute will be picked up by the blade 43 and in order to dislodge such slug from the blade, I provide a pair of spaced stripping blocks 65, one of which may be secured to each side wall of the housing 38 by means of fastening devices 66 and said blocks are located at the sides of the path of travel of the blade 43 so that said blade will pass thereo-between and the edges of a projecting slug engaged by the blocks and stripped from said blade. The stripping blocks are preferably of insulating material.

The general operation of the device is as follows:—

A coin 59 of proper denomination is deposited in the coin chute and will engage the shoulders 58 of the contacts 56 and will fall or pass through said coin chute behind the end of the kick-out blade 43 which is lined between the two contacts because when the blade 43 is at rest its rear face is spaced from the surface of the chute on which the coin is resting. The coin being brought to rest by the shoulders 58, the electrical circuit will be closed thereby starting the motor 17 which will operate the liquid pump 12 to force gasoline through the conduits into the hose 20. The hose having a manually operated valve control discharge nozzle 22, the gasoline will not be dispensed until said nozzle is actuated.

The flow of the gasoline through the conduits and the meter 15 will operate the clock shaft 23 so that the clock or clocks will indicate the amount of gasoline being dispensed. The revolving of the shaft 23 will revolve the ratchet wheel 27 and carry the gear wheel 28 along therewith because motion will be transmitted thereto through the pawls 29. Motion from the gear wheel 28 will be transmitted to the gear wheel 30 and since a face of the latter is held in constant engagement with the periphery of the friction wheel 35 including a tread 36 due to the action of the spring 34, motion will be transmitted to said friction wheel 35 and since the latter is fixed to the shaft 37, said shaft will be rotated and cause the kick-out blade 43 to be rotated. That portion of the blade when at rest which is between the electric contacts will move away from the contacts and coin but within a predetermined time another part of said blade will travel up behind the coin between the contacts and push or move said coin out from between the contacts, thus breaking the electric circuit and stopping the operation of the machine. The coin will drop into the bottom of the housing 38 or into a suitable receptacle in said housing.

Where the blade 43 is positioned so that both ends may operate to remove a coin from the contacts, the shaft 37 will only make one-half of a revolution during each operation of the machine, but where only one end of the blade 43 is used to remove a coin from the contacts, then said shaft 37 will make a complete revolution for each operation of the machine.

After each operation of the machine the hands of the clock or clocks may be reset by rotating the shaft 23 in a reverse direction, which will cause the ratchet wheel 27 to ride under or past the pawls 29 and no motion will be transmitted to the gear wheel 28 and associated parts.

If a coin of smaller denomination than is required to operate the machine is inserted in the coin chute, it will not be stopped by the shoulders 58 and will fall into the housing 38 without causing an operation of the machine and if a thin wafer of metal is inserted in the coin chute and is of the same size as the proper coin to cause an operation of the machine, said wafer of metal will pass under the shouldered portions of the contacts between the opposed inner edges of the shims without causing an operation of the machine.

Should an iron, steel or similar slug be deposited in the coin chute, it will be attracted by the magnetic blade 43 and its progress arrested before contacting the shoulders 58 and even if such a slug did close the circuit, the operation of the machine would be very slight because such slug would be carried along with the blade 43 and the contact broken almost immediately.

During a future legitimate operation of the machine, the slug adhering to the blade 43 will engage the stripping blocks 65 and be removed from the blade. There is a possibility that the stripping blocks can be eliminated and permit the slug to be stripped from the blade by contact with the underside of the base 50 as the blade enters the notch 53 in said base.

Of course I do not wish to be limited to the exact details of construction herein shown, as these may be varied within the limits of the appended claims without departing from the spirit of my invention.

Having thus fully described my invention, what I claim as new and useful is:—

1. In a prepayment gasoline dispensing device, a casing, an electric circuit, an electrically controlled pump in said circuit, a pipe line leading from said pump, a meter in said pipe line, coin controlled means for closing said circuit, means actuated by the meter for removing a coin from the coin controlled means to open said circuit said coin removing means being magnetic for extracting magnetically attractive slugs from the coin controlled means, and means for stripping slugs from the coin removing means.

2. In a prepayment gasoline meter, a casing, an electrically controlled pump, a pipe line leading from said pump, a meter in said pipe line actuated by gasoline forced through the pipe line by the electrically controlled pump, a coin chute for receiving a coin, electric contacts on said chute and having shoulders to arrest the passage of the coin which then bridges said contacts, an electric circuit including said contacts and the electrically controlled pump, a rotatable coin remover for passage between the contacts to remove the coin from between said contacts to open the electric circuit, said coin remover being magnetic for catching magnetically attractive slugs, and means for transmitting motion from the meter to coin remover.

3. The structure in claim 2, wherein the motion transmitting means includes an indicator shaft, a ratchet wheel fixed to said shaft for rotation therewith, a gear free on said shaft, pawls carried by said gear and coacting with the ratchet wheel to cause said gear to revolve with the ratchet wheel in one direction while permitting the ratchet wheel to revolve free of the gear in the opposite direction to reset the indicator shaft, a gear meshing with the first mentioned one and slidable sidewise, a friction gear connected with the coin remover and engaging a side surface of the second gear and adjustable between the axis and perimeter of asid second gear for changing the ratio of operation between the meter and coin

remover, and means to normally force said second gear toward the friction gear.

4. In a prepayment gasoline meter, a casing, an electrically controlled pump, a pipe line leading from said pump, a visible flow indicator with which the pipe line is connected, a hose also connected with said visible flow indicator, a manually operated valve controlled nozzle on the free end of said hose, a meter in the pipe line to be actuated by gasoline forced through said pipe line by the electrically controlled pump, a coin chute for receiving a coin, electric contacts on said chute to be bridged by the coin inserted in the chute, an electric circuit including said contacts and the electrically controlled pump which circuit is closed by the bridging of the contacts with the coin, a coin remover shaft, graduations thereon, a rotatable coin remover mounted on said shaft for passage between the contacts to remove the coin and open the electric circuit, said coin remover being of magnetic material whereby it will catch magnetically attracted slugs and prevent the closing of the electric circuit, or if closed by the slug, to quickly open the same by a removal of the slug from between the contacts, an indicator shaft, means for transmitting motion from the meter to said indicator shaft, an indicator actuated from said shaft, a ratchet wheel fixed to said shaft for rotation therewith, a gear free on said shaft, pawls carried by said gear and coacting with the ratchet wheel to cause said gear to revolve with the ratchet wheel in one direction while permitting said ratchet wheel to revolve free of the gear in the opposite direction in resetting the indicator, a second gear meshing with the first mentioned one and slidable sidewise, a friction gear adjustably mounted on the shaft of the coin remover and engaging a side surface of the second gear whereby motion may be transmitted from said second gear to the coin remover at various ratios in order to regulate the amount of gasoline to be dispensed in accordance with the value of gasoline, and means to normally force the said second gear toward the friction gear to prevent lost motion.

5. In a prepayment gasoline pump including a meter, the combination with a coin-controlled circuit maker comprising a pair of spaced contact plates having shoulders to arrest a coin, of a rotatably mounted coin ejector adapted to pass between said plates, a train of gears for transmitting motion from the meter to the coin ejector, said train of gears including means for changing the ratio of rotation of the coin ejector relative to the operations of the meter.

6. In combination, a gasoline pump including a casing enclosing an electrically operated liquid pump, a meter, and the shaft of an indicator clock actuated by the meter, a housing on said casing, a coin-controlled circuit maker for the circuit of the electrically operated liquid pump enclosed within said housing and comprising a pair of spaced contact plates, a coin chute in said housing leading to the contact plates, a shaft having one end located in said housing and the other end located in the casing, a coin ejector carried by the end of the shaft within the housing and rotating with said shaft to pass between the contact plates, said coin ejector being magnetized, stripping means at the sides of the path of travel of the coin ejector, a friction gear on the end of said shaft which is within the casing, a spur gear having a face engaging the rim of the friction gear, and means for transmitting motion from the indicator clock shaft to said spur gear.

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