Sept. 12, 1933. H. H. WOLFE 1,926,324

GASOLINE PUMP AND METER PUMP

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FIG. 1.

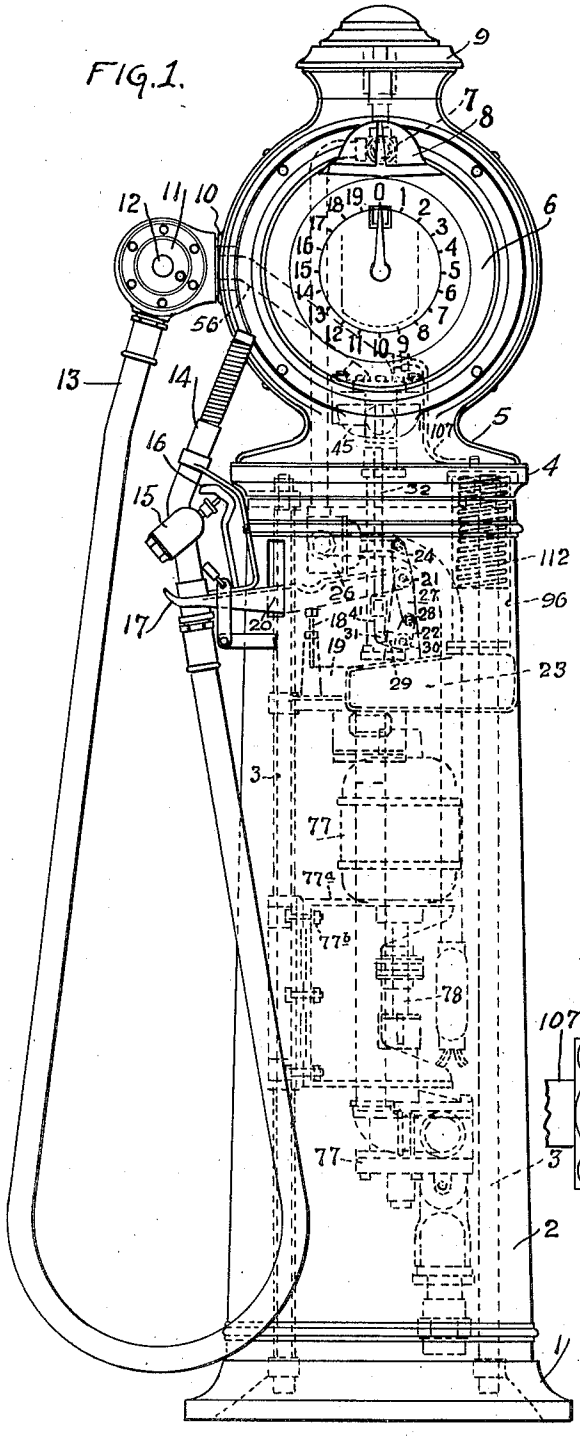


FIG. 23.

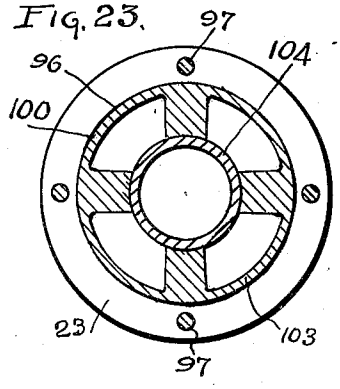
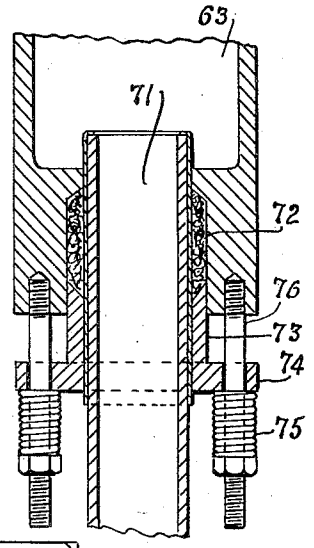


FIG. 22.



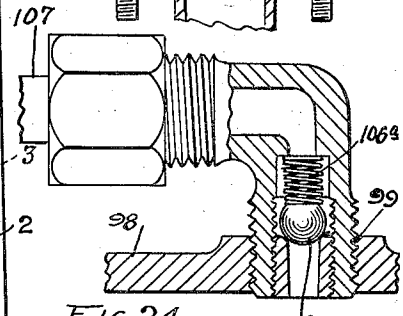


FIG. 24.

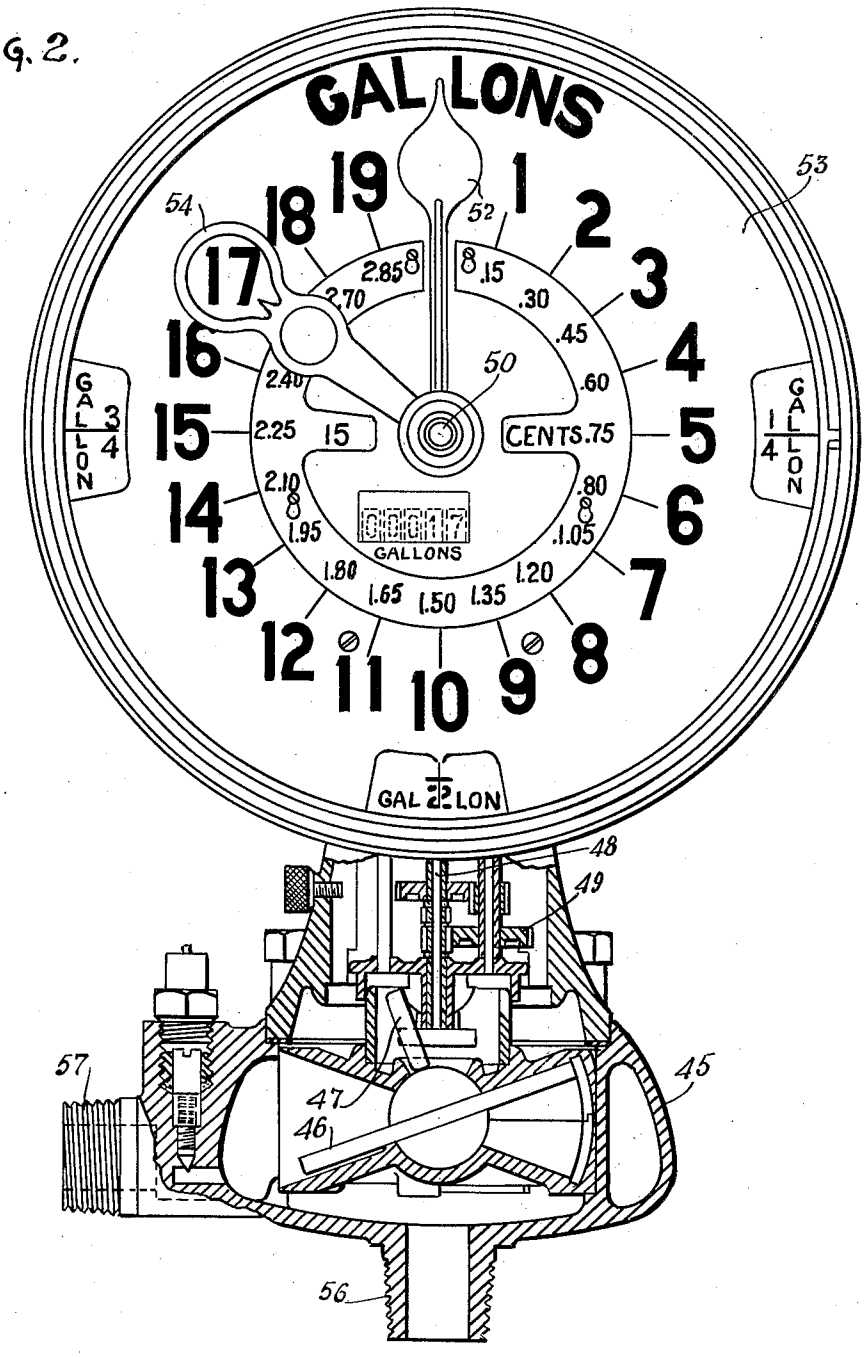
INVENTOR
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GASOLINE PUMP AND METER PUMP

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FIG. 2.



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FIG. 14.

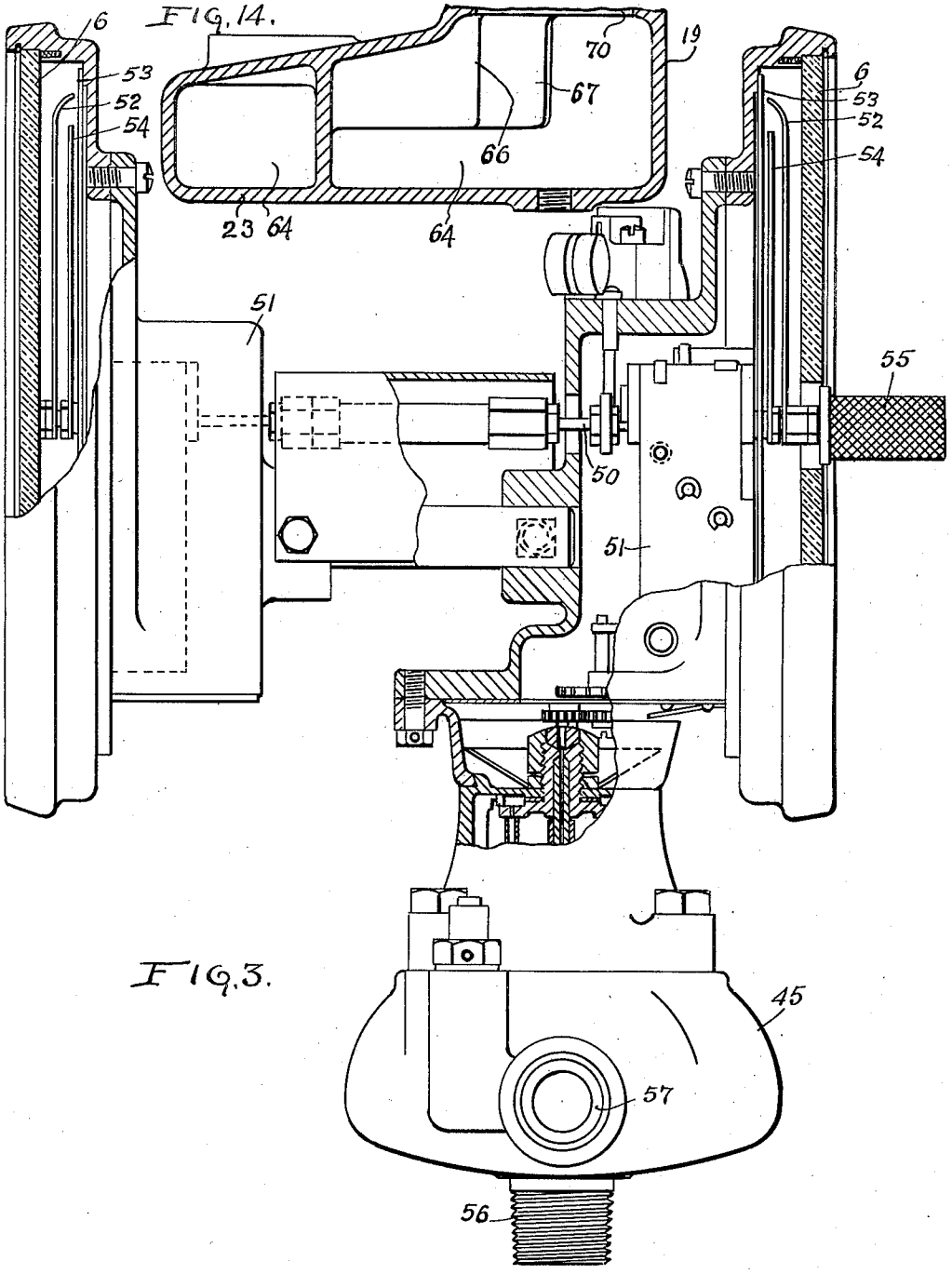


FIG. 3.

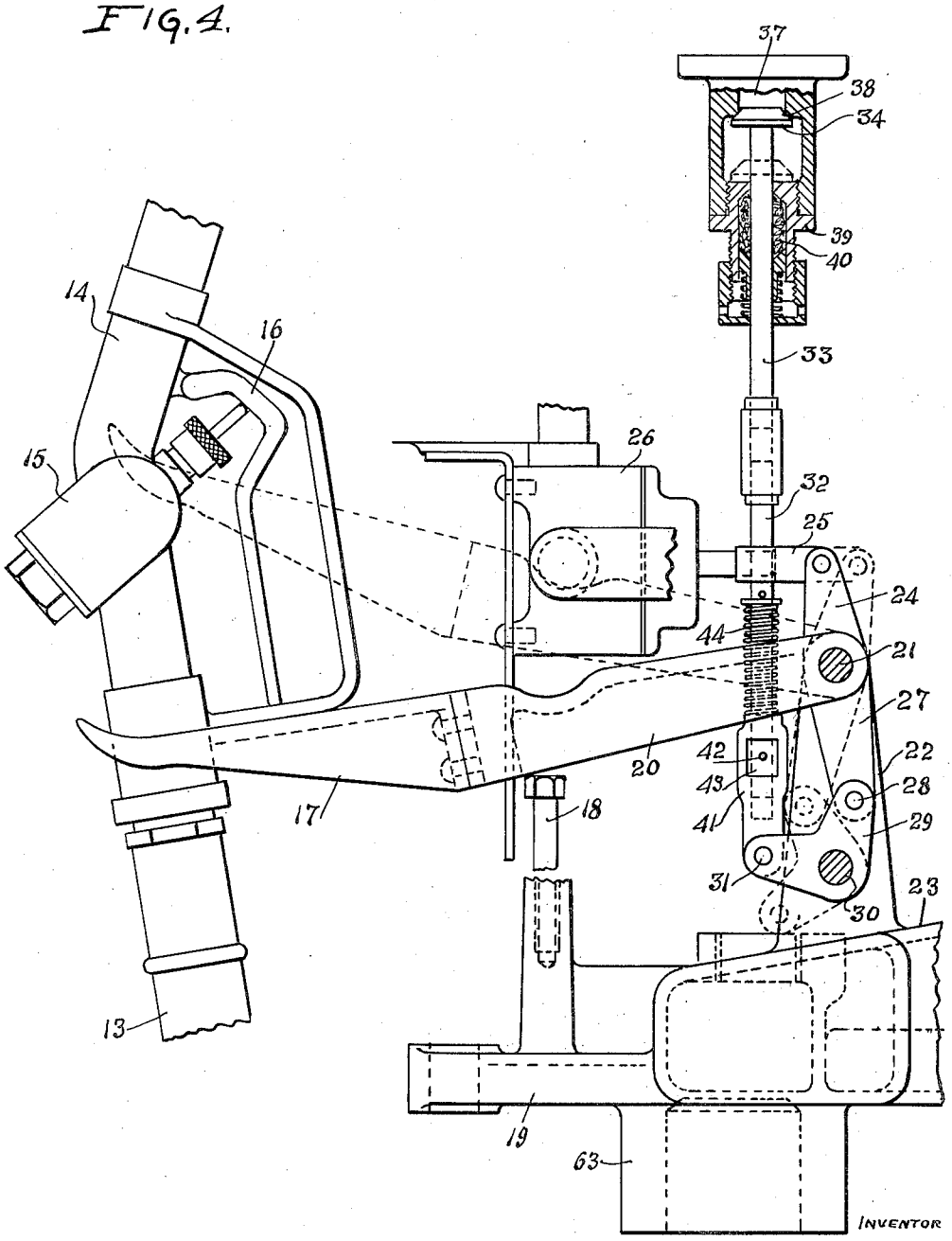
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GASOLINE PUMP AND METER PUMP

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FIG. 4.



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FIG. 5.

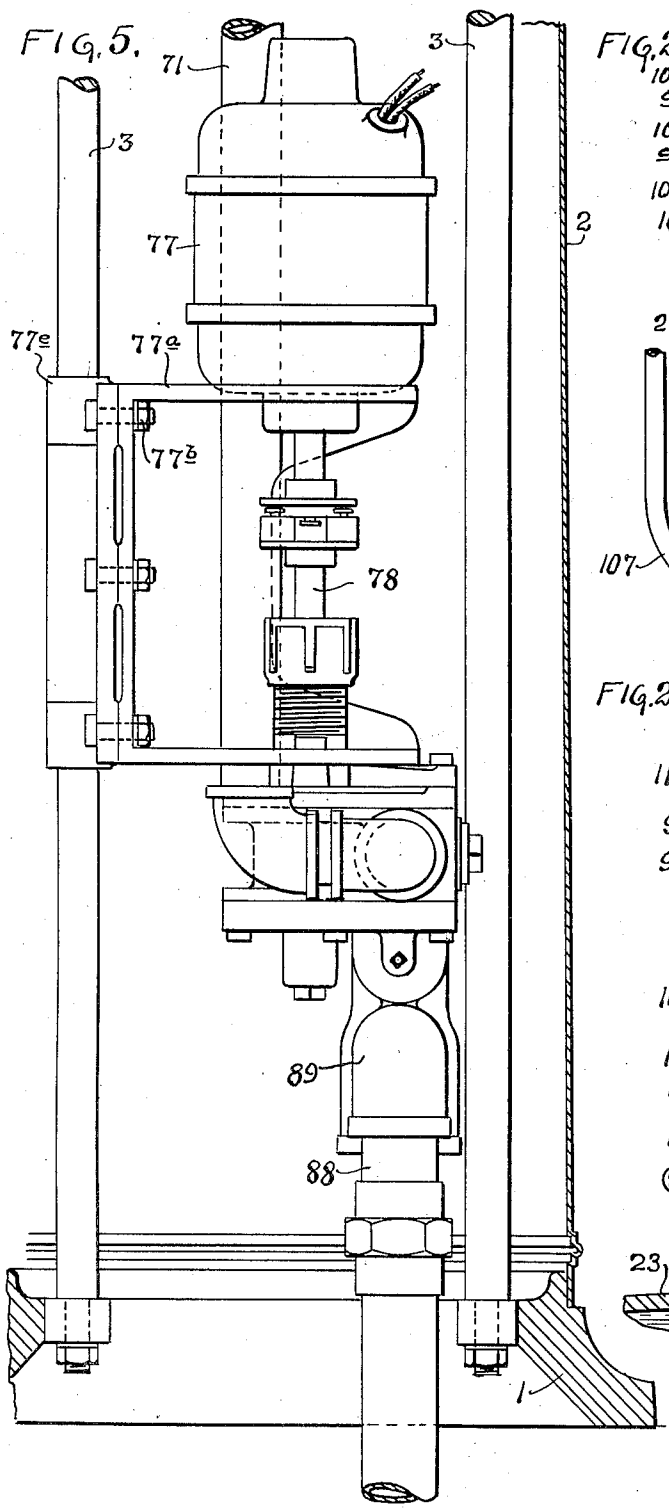


FIG. 20.

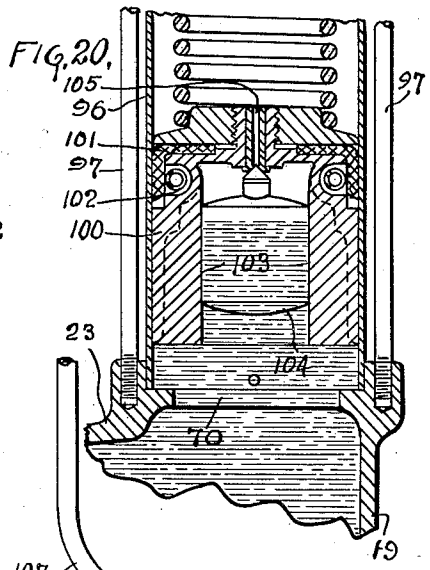
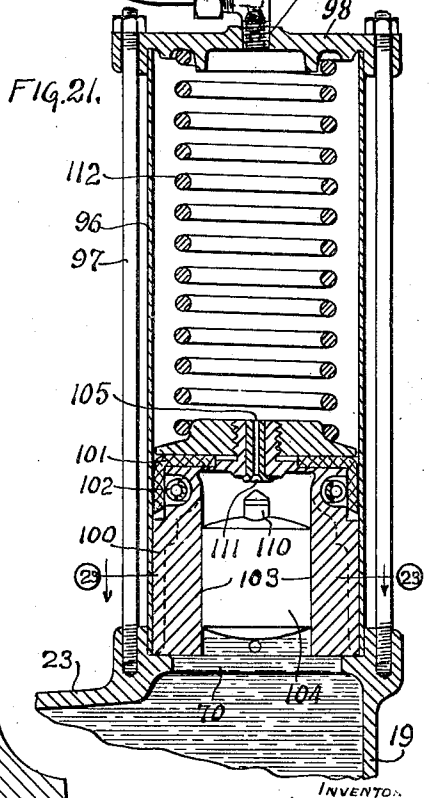


FIG. 21.



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FIG. 6.

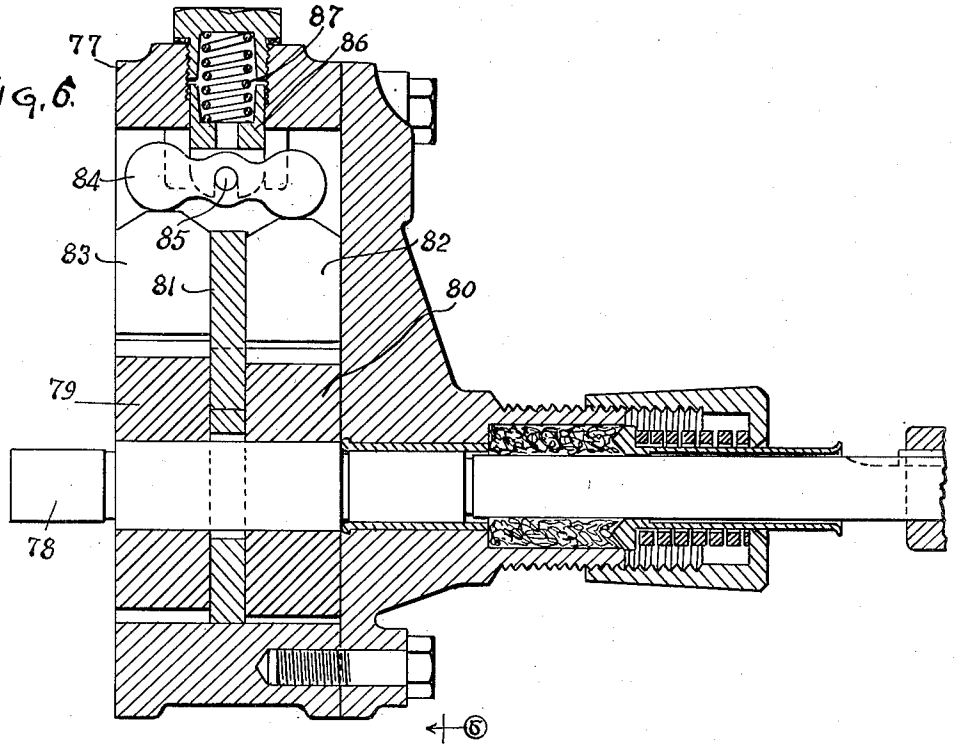
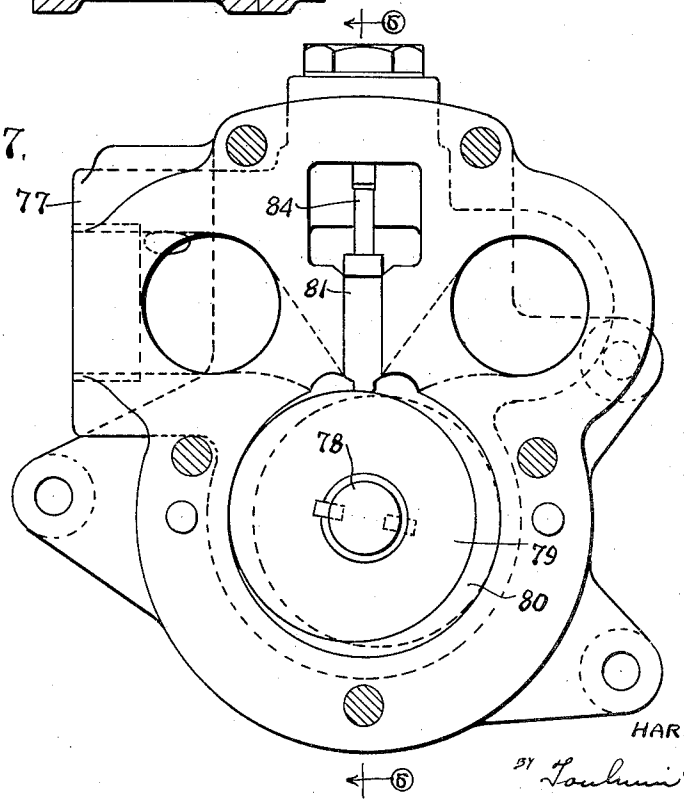


FIG. 7.



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GASOLINE PUMP AND METER PUMP

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FIG. 8.

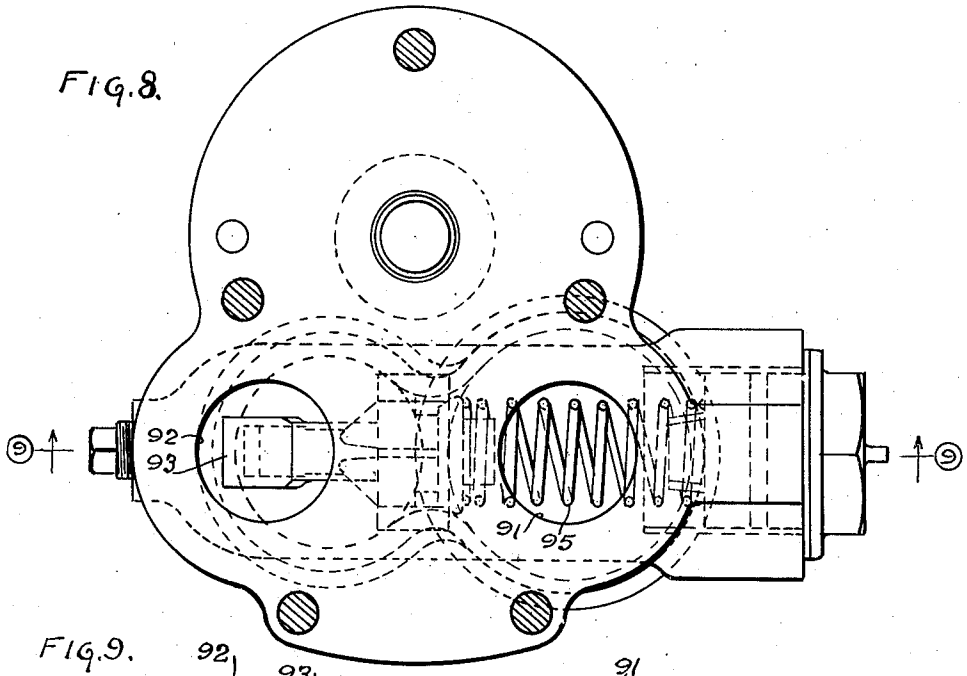
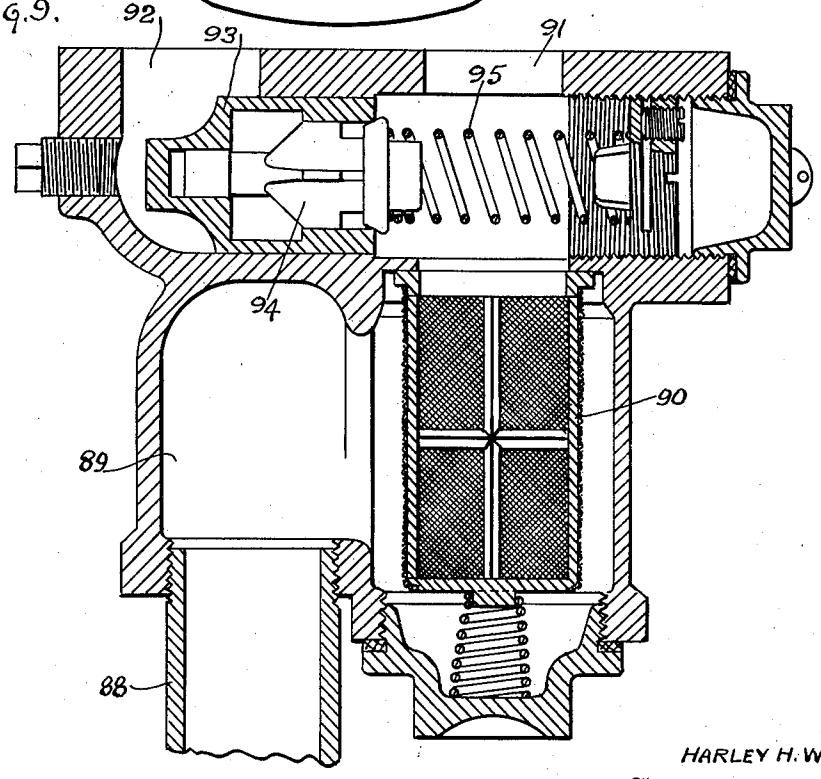


FIG. 9.



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FIG. 10.

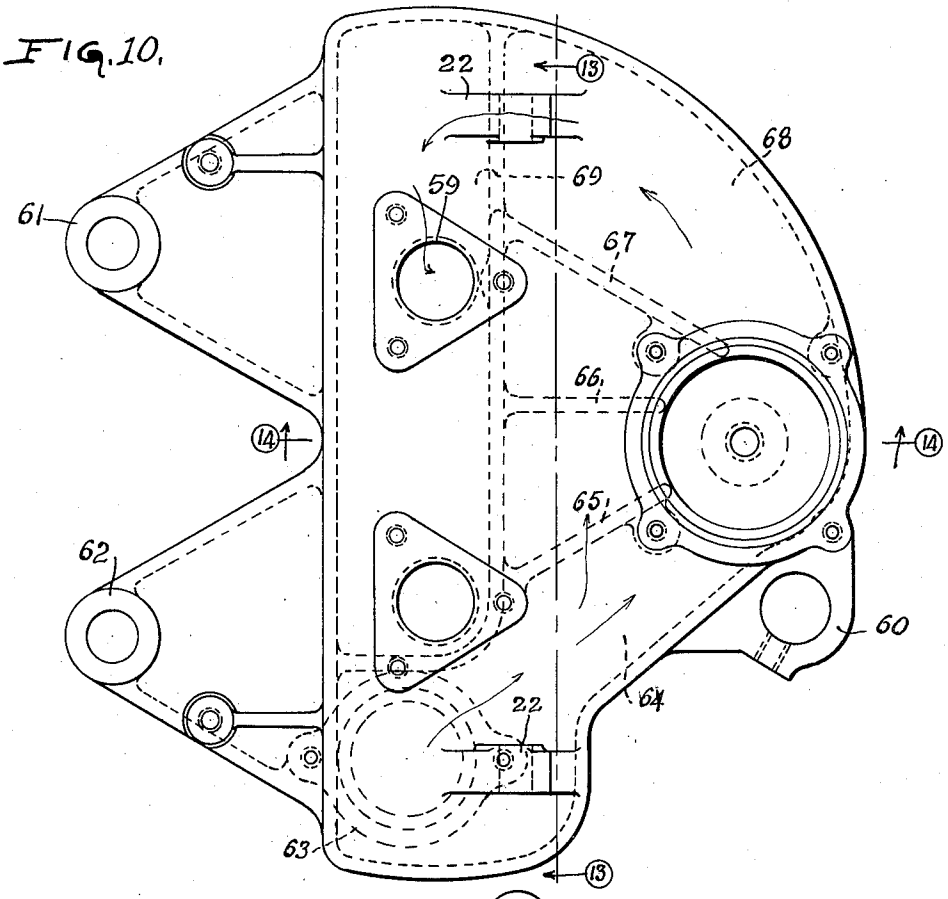
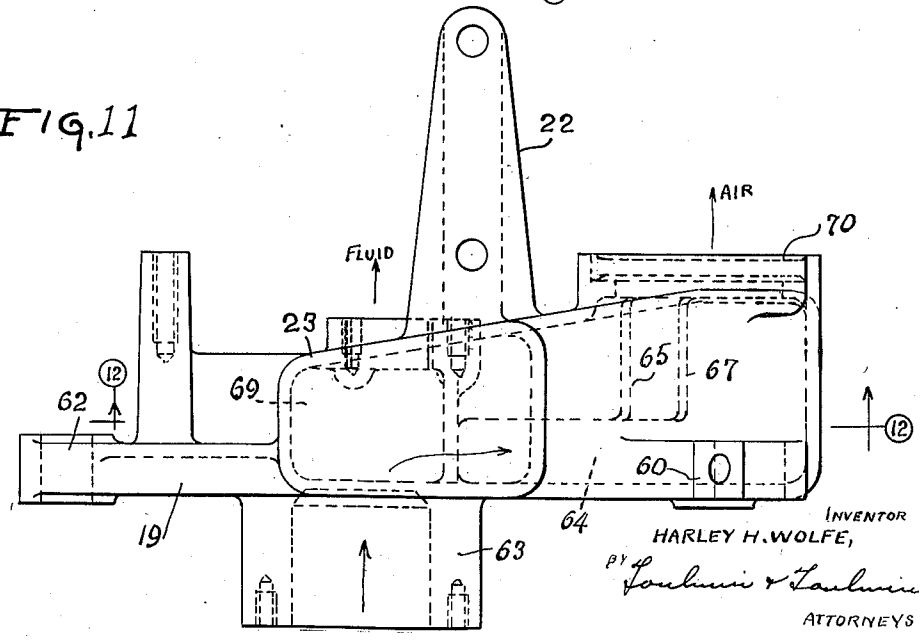


FIG. 11



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GASOLINE PUMP AND METER PUMP

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Fig. 12.

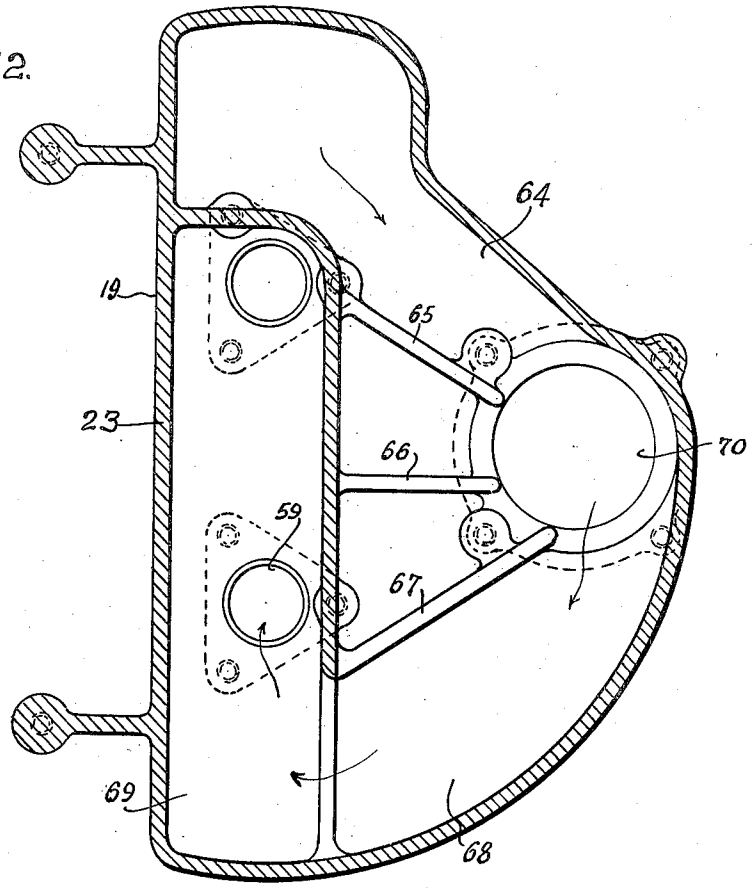
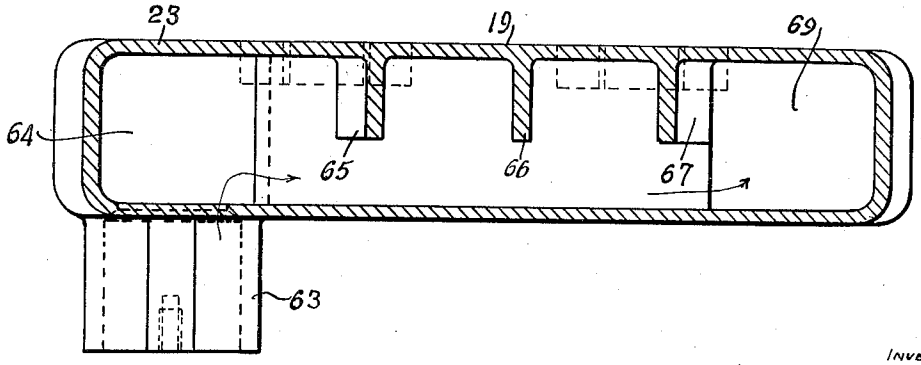


Fig. 13.



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FIG. 15.

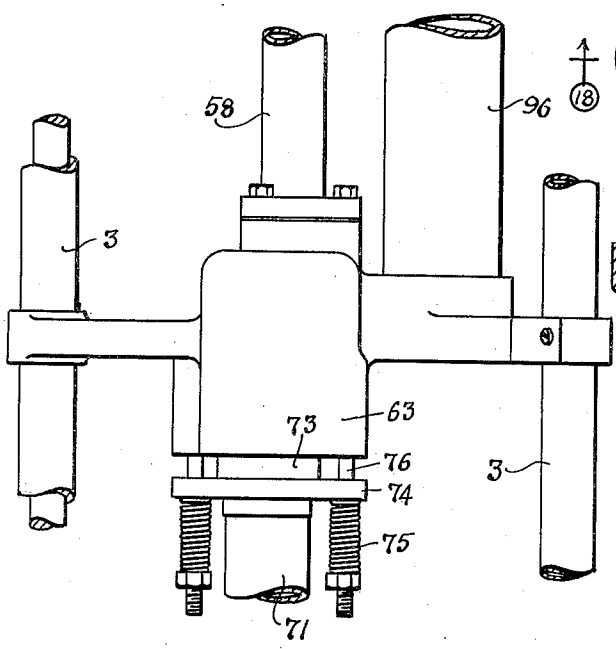


FIG. 17.

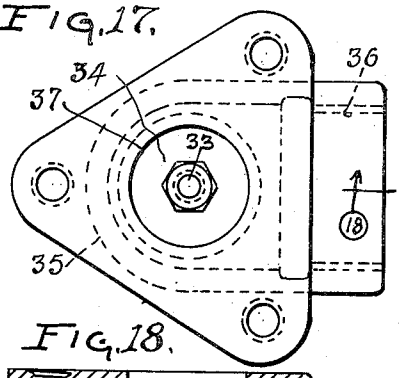


FIG. 18.

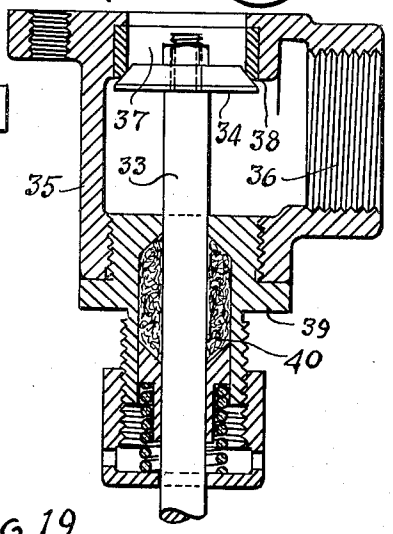


FIG. 16.

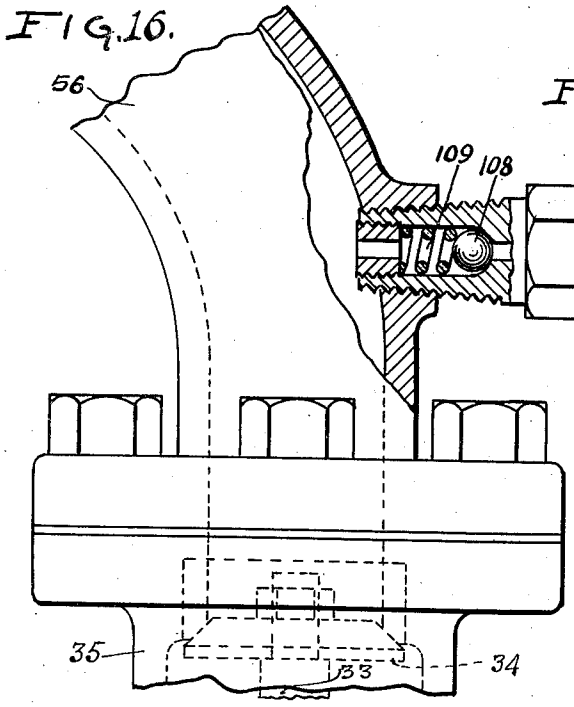
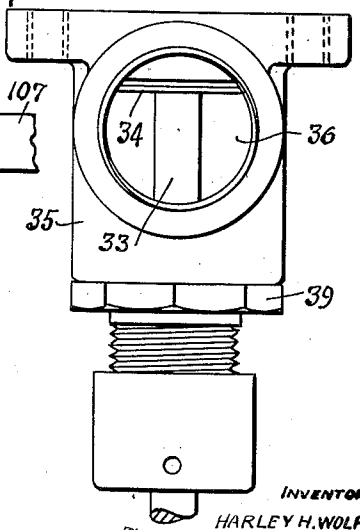


FIG. 19.



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Patented Sept. 12, 1933 1,926,324

UNITED STATES PATENT OFFICE

1,926,324

GASOLINE PUMP AND METER PUMP

Harley H. Wolfe, Dayton, Ohio, assignor to The Dayton Pump and Manufacturing Company, Dayton, Ohio, a corporation of Ohio

Application May 14, 1930. Serial No. 452,244

6 Claims. (Cl. 221—95)

My invention relates to gasoline pumps and in particular to meter pumps. The object of my invention is to provide a wet hose meter pump in which the act of placing the hose end on or taking it off a supporting hook will control the opening and closing of an electric switch which in turn controls the motor circuit of a motor that operates the pump for delivering the gasoline.

It is a further object to control simultaneously the opening and closing of the delivery valve from the source of supply to the hose.

It is a further object to provide means of removing the air from the discharge passageway to eliminate liquid knock.

It is an additional object to provide a discharge chamber so arranged as to cause the gasoline to move to release air from the gasoline in order that the gasoline may be delivered through the meter substantially free of air to insure accuracy of measurement.

Referring to the drawings, Figure 1 is a front elevation of a meter pump.

Figure 2 is a detail view of the dial showing a modified form of dial and also showing in section a conventional meter.

Figure 3 is a detail side elevation of the meter partially in section and the dial mechanism partially in section showing the method of driving the dial indicators from a common meter actuating source.

Figure 4 is a skeleton view of the hose nozzle supporting rack, electric switch and outlet valve mechanism.

Figure 5 is a skeleton view of the motor pump inlet and discharge lines with the framing of the pump disclosed and the casing of the pump in section to show the relationship and method of mounting of the several parts.

Figure 6 is a section on the line 6—6 of Figure 7 showing a pump.

Figure 7 is an end elevation of the pump with one cover removed.

Figure 8 is a plan view of the relief valve.

Figure 9 is a section on the line 9—9 of Figure 8.

Figure 10 is a top plan view of the air elimination chamber.

Figure 11 is a side elevation thereof.

Figure 12 is a section on the line 12—12 of Figure 11.

Figure 13 is a section on the line 13—13 of Figure 10.

Figure 14 is a section on the line 14—14 of Figure 10.

Figure 15 is a side elevation in detail of the connection and method of support of sections of the flow line and the air elimination chamber.

Figure 16 is a side elevation partially in section of the ball check valve air relief which discharges into the outlet side beyond the meter of the gasoline flow line.

Figure 17 is a top plan view of the outlet valve casing.

Figure 18 is a section on the line 18—18 of Figure 17.

Figure 19 is a side elevation of the side valve mechanism.

Figure 20 is a section through the by-pass air eliminator showing the float in its upper position.

Figure 21 is a similar view showing the float in its lower position.

Figure 22 is a section on the line 22—22 of Figure 15.

Figure 23 is a section on the line 23—23 of Figure 21.

Figure 24 is a section through the check valve on top of the air relief cylinder.

Referring to the drawings in detail, 1 is the base of a meter pump having an outside sheet metal housing 2 and a plurality of equally spaced vertical supporting frame rods 3. These rods carry on their upper ends a supporting ring 4. On this ring is mounted the dial and meter housing 5 having a glass face 6 on either side thereof illuminated by a bulb 7 within the reflector dome 8. Upon the housing 5 may be mounted in the place of the cap 9 any suitable form of illuminated glass bulb or bowl carrying advertising. One side of this casing as at 10 carries a fitting having glass side walls 11 through which gasoline may be seen flowing by reason of the movement of indicator disks 12 which pass by the line of vision through the glass walls 11. A delivery hose 13 is connected to the box or fitting, which hose terminates in a nozzle 14 that has thereon a valve 15 of the usual kind controlled by the handle 16. This nozzle is supported upon a rack or fork 17.

Fork operating mechanism

The fork 17 rests in the lower position upon a supporting stud 18 carried in the frame 19 that is in turn mounted upon the rods 3. The inner end of this fork as at 20 is rigidly attached to a shaft 21 mounted upon a supporting fulcrum 22 formed as a part of the casting support 19, which also contains the air elimination chamber 23. Rigidly attached to the shaft 21 is an arm 24 pivotally connected to a switch arm 25 that opens and closes a switch in the switch box 26. The

switch may be of any conventional character. Another arm 27 is pivotally connected at 28 with a bell crank 29 which is pivoted on the bracket 22 as at 30. The other end of this bell crank as at 31 is connected to a pitman 32 which in turn is connected to a valve rod 33 carrying a valve member 34 which operates within a casing 35 having an inlet 36 and an outlet 37. The valve member 34 rests upon a seat 38 at the mouth of this outlet 37 when the valve is in its closed position. The bottom of the casing 35 is closed by a screw plug 39 containing a spring-pressed packing 40.

Returning to the pitman 32, it will be observed that it is loosely connected to the fitting 41 with the bell crank 29. This loose connection consists of a pin 42 working in a slot 43. A spring 44 takes up the loose connection. The fork 17 is moved by hand to switch closing position as it is now required by the municipal authorities, but in some jurisdictions it may be automatically closed upon lifting the hose valve from the hook.

Thus the removal of the hose from the fork 17 will permit the closing of the switch, thereby put the motor into operation and at the same time open the valve 34 so that the gasoline can flow through the meter. When this occurs the dial mechanism is operated and the gasoline can proceed through the hose nozzle 14 when the handle 16 is operated to open the valve 15.

Meter and dial mechanism

The meter is generally designated 45 and may be of any desired character such as an ordinary wabble plate meter as shown in section in Figure 2. 46 designates the wabble plate which through the pin 47 operates the shaft 48 and the gears designated generally 49. The exact detailed arrangements of the gearing in relation to the meter are not important. The result of this actuation is to indicate the movement of the meter by rotating the main indicator finger shaft 50 through the gear box 51, thus moving the indicator finger 52 over the dial 53. 54 indicates a setting finger indicating the gallonage desired. The setting of the indicator 54 is checked through a knurled finger piece 55. The outlet from the meter is the pipe 56 while the inlet is designated 57. Gasoline is supplied to the inlet port 36 of the casing 35 by the pipe 58. This pipe is connected with the air eliminator chamber as at 59. There are two of these outlet openings, depending upon whether the apparatus is to be a single or dual pump. In the form shown it is a single meter pump. The casing is supported on the rods 3 in the eyes 60, 61 and 62. An inlet to this air elimination chamber is provided at 63. The gasoline with any air content enters this chamber at 63, passes through the passageway 64 and beneath the ribs 65, 66, 67, through the passageway 68 into the passageway 69, and thence out through one of the openings 59. The circulation of the gasoline under and between the ribs causes it to give up its free air, which passes upwardly through the opening 70. The pipe connected to the opening 59 is designated 58.

The supply pipe connected to the opening 63 is designated 71. It is resiliently connected as shown in Figures 15 and 22 by being slipped into the collar 63 in which it is slidably mounted. A packing 72 is mounted within this collar around the pipe 71 and held in position by the packing retainer 73 having cross-arms 74 which are yieldingly pressed inwardly by the spring 75 on the bolts 76.

Pump mechanism

The motor 77 carried on the bracket drives the shaft 78 on which are mounted a pair of eccentric liquid impellers 79 and 80 which are separated from one another by the partition 81. On the peripheries of these impellers parts 82 and 83 are guided by the partition 81. These parts are yieldingly held in position by the arms 84 rocking on the pin 85 in the spring-pressed yoke 86 pressed downwardly by the spring 87. Liquid is taken in by the rotation of these eccentric impellers from the supply pipe 88 and discharged from the exit pipe 71. The precise details of the pump are not important except that some type of impeller pump should be used.

But in order to take care of the condition of the apparatus when the nozzle has been lifted from the rack 17 and the motor and pump are started before the valve 15 in the hose has been opened, a safety device is provided.

Gasoline relief valve

As the gasoline is drawn through the pipe 88, it enters the chamber 89 and thence passes through the screen 90 through the port 91 into the pump, and thence outwardly from the pump to the pipe 71. If, however, the fluid cannot make its exit in that direction it will return through the port 92 around the gate 93 and lift the valve 94 against the spring 95 continuing to circulate in a short circuit without drawing any more liquid from the source of supply until the valve 15 is opened.

Air relief

In order to relieve the air through the port 70 which has been allowed to rise from the gasoline passing around and under the baffle plates 65, 66 and 67, I provide the following mechanism. The tube 96 is mounted on the casing in which the baffles are located and yieldingly held in position by the bolts 97, which also hold a cover 98 with an aperture 99 in position on top of the tube 96. This tube acts as a cylinder for the movement of the relief valve 100 which reciprocates therein and which carries on its upper end a leather washer 101 pressed outwardly by the spring 102. This relief piston is provided with a plurality of inwardly extending ribs 103 which act as guides for a relief valve or float 104. Thus air can escape from the air chamber by rising and passing between the ribs 103, around the float 104, through the aperture 105, the aperture 99 lifting the ball 106 against the spring 106*a* and pass out through the pipe 107 lifting the ball 108 against the spring 109 and discharge into the line 56 beyond the meter. If the air is all exhausted, the pressure of the liquid will lift the float 104, causing the valve member 110 to close the valve seat 111 of the aperture 105. The continued elevation of the piston 100 will be resisted by the spring 112.

General method of operation

When a car approaches the pump to be filled the attendant lifts the nozzle 14 off the hook 16 without actuating the valve 15. This closes the switch 26 and opens the valve 24, placing the pump in operation. Gasoline is pumped into the air extraction chamber 23. As soon as the line is thoroughly filled with gasoline the pump will begin to by-pass the gasoline and cause it to circulate through the relief valve mechanism shown in Figures 8 and 9. In the meanwhile the dial

has been set to indicate the desired number of gallons. The gasoline continues to flow until the desired number of gallons have been discharged.

It will be further understood that I desire to comprehend within my invention such modifications as may be clearly embraced within the scope of my claims and invention.

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

1. In a dispensing pump, the combination of a motor, a switch for controlling the motor, a hose, a pump connected to said hose and driven by the motor, a valve controlling the flow of liquid so pumped and interconnected to said switch, and a lever having on one end a pair of arms, one for actuating the valve and another for actuating the switch and on the other end means for supporting the free end of the hose.

2. In a dispensing pump, the combination of a motor, a switch for controlling the motor, a hose, a pump connected to said hose and driven by the motor, a valve controlling the flow of liquid so pumped, and interconnected to said switch, and a lever having on one end a pair of arms, one for actuating the valve and another for actuating the switch and on the other end means for supporting the free end of the hose, a meter through which liquid passes from said pump and means for extracting air from the liquid before it reaches said meter.

3. In a dispensing pump, the combination of a motor, a switch for controlling the motor, a hose, a pump connected to said hose and driven by the motor, a valve controlling the flow of liquid so pumped, and interconnected to said switch, and a lever having on one end a pair of arms, one for actuating the valve and another for actuating the switch and on the other end means for supporting the free end of the hose, a meter through which liquid passes from said pump and means for extracting air from the liquid before it reaches said meter, and means for delivering the extracted air into the outgoing side of the liquid after it passes through the meter.

4. In a dispensing apparatus, a pump having a discharge pipe, an electrical apparatus for operating the pump, a valve in said pipe, a switch for starting and stopping the electrical apparatus, and means for operating the valve and the switch, said means consisting of a lever having at one end a pair of arms, one connected to the valve and the other connected to the switch.

5. In a dispensing apparatus, a pump having a discharge pipe with a hose thereon, an electrical apparatus having a circuit with a switch therein for operating the pump, a valve in the pipe, and means for operating the switch and the valve, said means consisting of a lever pivoted at one end and having means on the other end for supporting the hose, and a pair of arms connected to the pivot end of the lever, one arm being connected by a link to the switch and the other arm being connected by means of a bell-crank lever and a link to the valve.

6. In a dispensing apparatus, a pump having an exit line, a valve for controlling the exit of liquid pumped thereby, a motor for actuating the pump, a switch for the motor, a lever pivoted at one end and having means on the other end for supporting the free end of the exit line, and means on the pivot end of the lever for operating the switch and the valve.

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