

Aug. 4, 1953

W. F. BERCK
MANIFOLD WITH MANUALLY ACTUATED VALVES
FOR CONTROLLING FLUID FLOW

2,647,659

Filed June 24, 1949

3 Sheets-Sheet 1

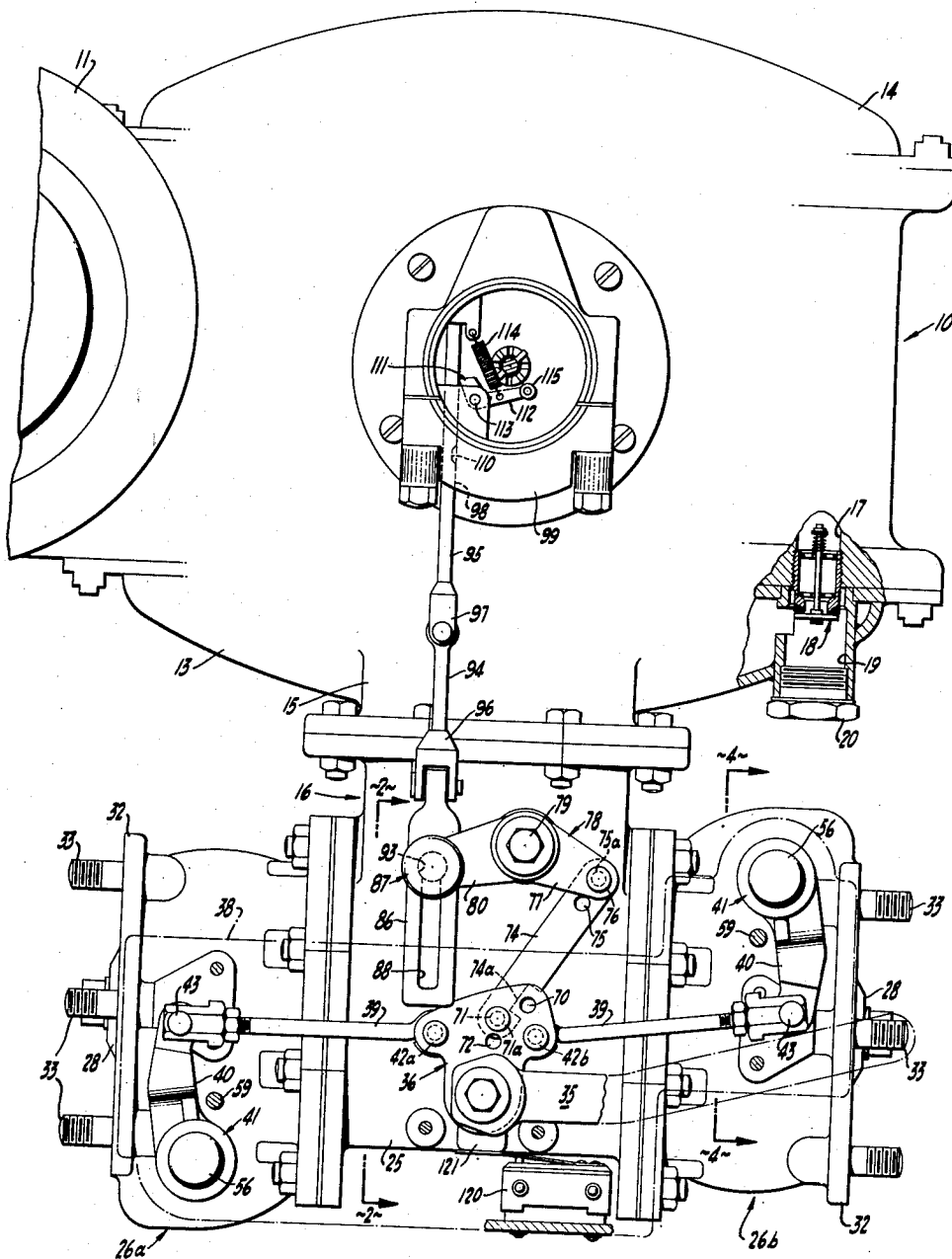


FIG. 1

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3 Sheets-Sheet 2

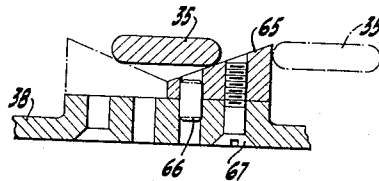
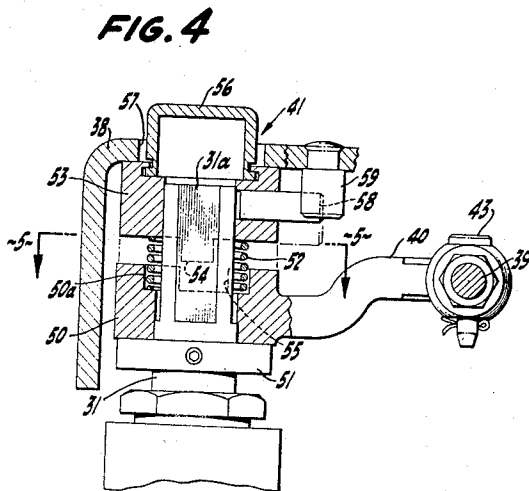
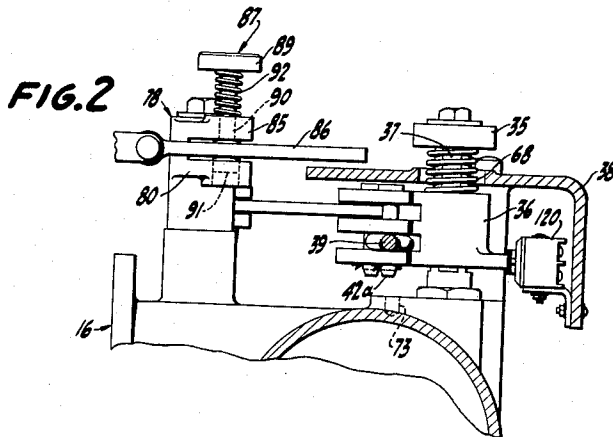


FIG. 6

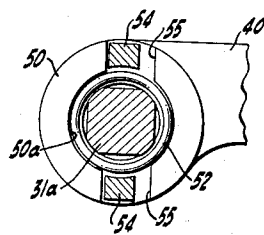
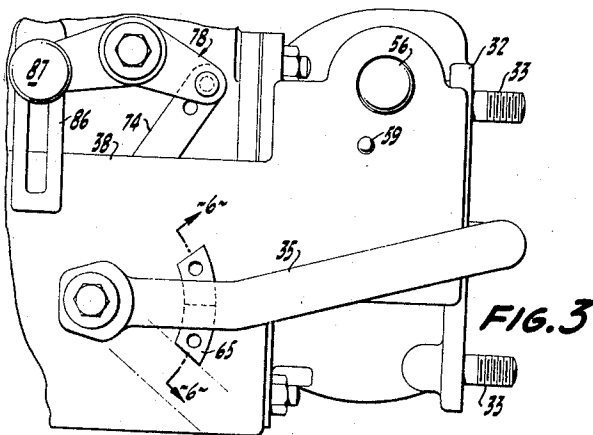


FIG. 5

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3 Sheets-Sheet 3

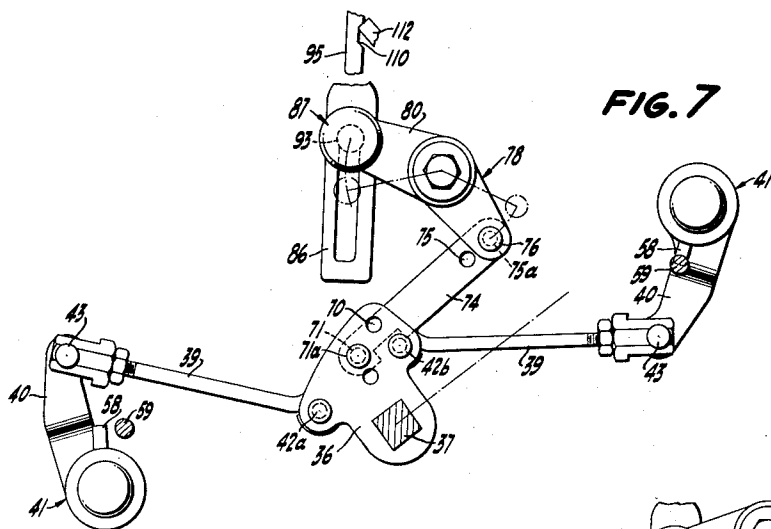


FIG. 7

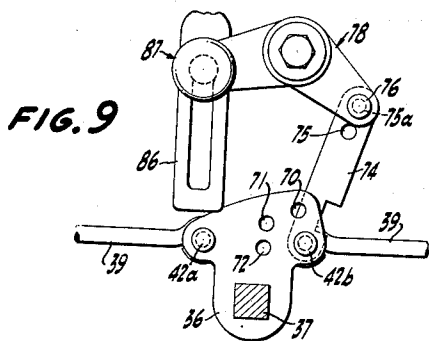


FIG. 9

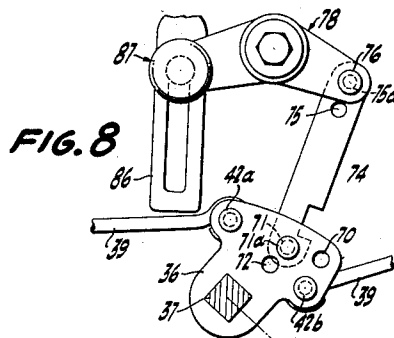


FIG. 8

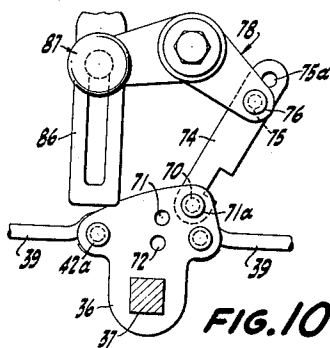


FIG. 10

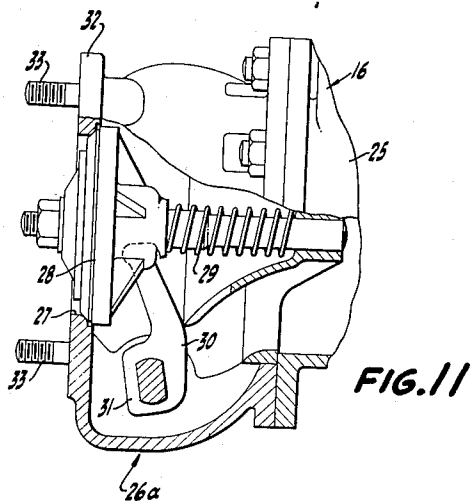


FIG. 11

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MANIFOLD WITH MANUALLY ACTUATED
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4 Claims. (Cl. 222-14)

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This invention relates to a manifold. More particularly, it relates to a manifold operable in conjunction with a meter mounted on a tank truck.

It is an object of the present invention to provide an improved manifold of the character described.

It is a further object of the invention to provide an improved outlet manifold for operation with a tank truck meter which is capable of delivering liquid from the meter to a pump or to a gravity line.

It is a still further object of the invention to provide an outlet manifold of the character described which is operable in connection with and is controllable by a tank truck meter and which is characterized by several safety features which ensure safe and fool-proof operation.

These and other objects of the invention will be apparent from the ensuing description and the appended claims.

One form which the invention may assume is exemplified in the following description and illustrated by way of example in the accompanying drawings, in which:

Fig. 1 is a top plan view, partly broken away and with the cover removed, of the manifold of the invention shown as being mounted upon a tank truck meter.

Fig. 2 is a section taken along the line 2-2 of Fig. 1 showing certain details of construction of the manifold operating mechanism.

Fig. 3 is a fragmentary view similar to that of Fig. 1 but with the manifold cover in place.

Fig. 4 is a section taken along the line 4-4 of Fig. 1 showing the clutch mechanism.

Fig. 5 is a section taken along the line 5-5 of Fig. 4.

Fig. 6 is a section taken along the line 6-6 of Fig. 3.

Fig. 7 is a top plan view of certain of the operating elements of the manifold operating mechanism with other parts removed and showing the operating mechanism in one adjusted position.

Figs. 8, 9 and 10 are similar views to that of Fig. 7 showing the operating mechanism in other adjusted positions.

Fig. 11 is a view partly in section and partly in elevation of one of the outlet valves.

Referring to the drawings, and more particularly to Fig. 1, a meter 10 of known construction is shown, such meter having an air strainer 11 of known construction mounted at its inlet, a front dome 13, a rear cover 14 and an outlet 15 on which a manifold 16 is mounted. The usual

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air by-pass means are provided, to prevent air entrapped in the liquid being metered from passing through the meter. The air by-pass means includes the air strainer 11, an air manifold, a simple check valve and a collector tank (none of which is shown) and a passage 17 and check valve 18 for use during gravity operation to provide the necessary siphon breaking action. An opening 19 and plug 20 are provided for purposes of inspection and repair.

The manifold 16 includes a central chamber 25 and left and right hand valve structures 26a and 26b which, for purposes of illustration, will be regarded as intended for connection to a pump and to a gravity line, respectively. The valve structures 26a and 26b are identical and are of known construction. Each comprises an outlet 27 normally closed by a valve 28 under pressure of a spring 29, and for opening the valve, a lever 30 and a squared shaft 31 are provided. The lever 30 is connected at one end to the valve 28 and at its other end to the squared shaft 31. The shaft 31 is operated by the manifold operating mechanism described hereinafter. A flange 32 and studs 33 are provided for attachment of a hose, pipe or other outlet means.

An operating lever 35 is provided which is mounted, together with a lever 36, on a squared shaft 37 which is journaled in the frame of the manifold (see Fig. 2). As is shown in Figs. 2 and 3, a cover 38 is provided for the manifold and the lever 35 is disposed above the cover while the lever 36 is disposed below the cover.

An operative connection is established between the lever 35 and each valve operating shaft 31, by means of the lever 36, a connecting rod 39, a lever 40 and a clutch assembly 41 which is shown in Fig. 4. The rods 39 are pinned to the lever 36 at 42a and 42b, as illustrated, and at its other end each rod is pinned at 43 to the lever 40.

Referring to Figs. 4 and 5, it will be seen that lever 40 is provided with a collar 50 which rests on a collar 51 fixed to the shaft 31 so that the lever 40 and shaft 31 are freely rotatable relatively to one another. The upper end 31a of the shaft 31 is squared, as shown, and the collar 50 is recessed at 50a to receive a compression spring 52 which urges a shiftable clutch member 53 upwardly against the manifold cover 38, so that its teeth 54 do not engage slots or grooves 55 formed in the collar or fixed clutch member 50. A button 56 is provided, which is freely rotatable in the shiftable clutch member 53, and which protrudes through an opening 57 formed in the manifold cover so as to be accessible to

an operator. A pin 58 projects laterally from the shiftable clutch member 53, and in the position shown in Fig. 4 its outer end lies adjacent but above the lower end of a vertical pin 59 fixed to and depending from the manifold cover.

It will thus be apparent that when, and only when, one of the buttons 56 is depressed and held depressed will an operative connection be established between the operating lever 35 and a valve 28; otherwise, movement of the lever 35 to right or to left will not affect either of the valves, which will remain closed. However, if a button 56 is depressed and is held depressed while the operating lever 35 is moved in the appropriate direction (i. e., to the left for the left hand valve structure 28a and to the right for the right hand valve structure 28b), the appropriate pin 58 will pass under the pin 59 and the clutch mechanism 41 will be locked in engaged position, thus holding the selected valve in open position.

Thus, the operator requires both hands to open a valve, and only one valve can be opened at a time. Thus, if the left hand button 56 is depressed and, by mistake, lever 35 is moved to the right, the left hand valve 28, being already closed, will resist movement of the lever while no force will be applied to the right hand valve 28. If it is desired to set either valve for manual control and to relieve the operator of the necessity of holding lever 35 in open position, a latch block 65 (see Fig. 6) is provided which is fixed to the manifold cover 38 by means of a dowel pin 66 and a screw 67. A pair of such blocks, one being shown in full lines and the other in broken lines, will be provided, one of which will be employed for manual control of the right hand valve and the other for manual control of the left hand valve. Referring to Fig. 2, it will be seen that a compression spring 68 is provided which yieldably pivots the lever 35 so that it can be lifted up and over the latch block 65 and will remain latched in neutral or in open position, as shown in Fig. 6.

Operation of the manifold as thus far described is manually controlled by the operator. Means are also provided for controlling either one or both of the halves 28 by means of the meter 10. Thus, if it is desired to open the right hand valve, latch it in open position and close it automatically after delivery of one thousand gallons, such can be accomplished by the meter control means now to be described.

Referring again to Fig. 1, the lever 36 is provided with holes 70 and 71 and with a pivot and connecting pin 71a in addition to the pins 42a and 42b described above. (It is also provided with a hole 72 to register with a hole 73 formed in the meter cover [see Fig. 2] and to receive a dowel pin for aligning the lever properly to make adjustments and connections in the several moving parts.)

An operative connection is established between the lever 36 and the meter 10 as follows: A link 74 having a clearance notch 74a is connected at one end to the lever 36 by the pin 71a. At its other end, it is formed with axially spaced holes 75 and 75a for attachment to a pin 76 at the end of an arm 77 of a bell crank lever 78. The bell crank lever 78 pivots on a stud 79, and its other arm 80 is bifurcated at its outer end at 85 (see Fig. 2) to receive a slotted guide member 86 and a pin 87 passing through the bifurcated portion of the lever and through the slot 88 in the guide member 86. The pin 87 is formed with a head 89, a narrow shank portion 90 and a

thicker end portion 91. A compression spring 92 urges the pin 87 upwardly so as normally to engage the thick end portion 91 of the pin 87 with the widened end portion 93 of the slot 88. Rods 94 and 95 having clevis connections 96 and 97 with the guide member 86 and with one another, are provided, the rod 95 being slidable through a passage 98 formed in a clamp member 99 forming a part of the meter. The rod 95 is formed with a notch 110 which is intended to engage the nose 111 of a pawl 112 which is pivoted at 113 on the meter. A tension spring 114 urges the pawl 112 in a counterclockwise direction, and the other end or arm of the pawl is provided with a roller 115. The roller 115 is intended to be actuated by a cam (not shown) which is operated by the counter (not shown). Such counter-operated cam means are well known in the art, and they are adjustable to operate the cam after a predetermined quantity of liquid has been metered.

Referring now to Fig. 7, if it is desired to place the right hand valve on meter control and to leave the left hand valve on manual control, link 74 is connected as illustrated; i. e., at one end to pin 71a through hole 71 and at its other end to pin 76 through hole 75a. It will be apparent that, by this mode of attachment, when the lever 35 and shaft 37 are turned counterclockwise (or upwards as viewed in Fig. 7), the link 74 will be pulled downwardly and will pivot the bell crank lever 78 in a clockwise direction sufficiently to push the guide member 86 and the rods 94 and 95 until the pawl 112 engages the notch 110 in rod 95. Thus the right hand valve 28 will be opened and will be latched in open position until pawl 112 is rocked out of engagement with the notch 110. Spring 29 on the stem of valve 28 will then immediately operate to close the valve.

In Fig. 7, the manifold operating mechanism is shown in appropriate position for latching the right hand valve open and in Fig. 8 it is shown in appropriate position to open the left hand valve 28. It will be noted that in moving lever 35 to the position shown in Fig. 8, guide member 86 will not be moved sufficiently to engage notch 110 with pawl 112. Hence, the left hand valve will be on manual control.

Similarly, if it is desired to place the left hand valve 28 on meter control, the link 74 will be attached to pin 42b (see Fig. 9). If it is desired to place both valves on meter control, the link 74 will be attached to pin 71 through hole 70 and at its other end it will be connected to pin 76 through hole 75 (see Fig. 10).

An additional safety feature is provided in the form of a micro switch 120 (see Fig. 1) which is actuated by a cam 121 operated by lever 35. The switch 120 may, for example, be connected to the ignition system of the tank truck on which the meter and manifold are mounted. In such case, when lever 35 is moved in either direction from neutral, cam 121 will be operated to actuate switch 120, thus opening the ignition circuit to ensure that the truck motor is not operating while fuel is being delivered.

It will thus be apparent that a manifold has been provided which achieves the objects set forth hereinabove. Thus it is operable in connection with a tank truck meter. It may be operated manually or it may be operated automatically under meter control. It is provided with numerous safety features. Thus it is necessary that the operator use one hand to engage the operating lever with the selected valve, and

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to use the other hand on the lever and turn it in the proper direction.

While I have shown the preferred form of my invention, it is to be understood that various changes may be made in its construction by those skilled in the art without departing from the spirit of the invention as defined in the appended claims.

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

1. An outlet manifold having an inlet, first and second outlets, first and second valves for said first and second outlets, respectively, resilient means for each said valve normally urging it to closed position, a lever mounted for rotation, means connecting said lever with said valves for opening one of the valves when the lever is rotated in one direction and for opening the other valve when rotated in the opposite direction, each said connecting means including a clutch yieldably urged to disengaged position and operable under application of manual pressure to engage, and latch means for latching each clutch in engaged position after movement of said lever to a substantial extent.

2. A structure of the character described comprising a meter, an outlet manifold having first and second outlets, first and second valves for said first and second outlets, respectively, means normally urging said valves to closed positions, operating means movable to one position to open one of the valves and to another position to open the other of the valves, means for latching the selected valve in open position including means actuated by said operating means and cooperable means actuated by said meter, said latching means and cooperable means being operable to co-engage and to latch the operating means when the latter is actuated to open either of said valves and being further operable to unlatch when a predetermined quantity of fluid has been metered, said latching means and cooperable means being also operable to control either or both of said valves.

3. A device of the character described comprising a meter, an outlet manifold having an inlet for receiving metered fluid, first and second outlets and first and second valves for said first and second outlets, respectively, means urging said valves to closed positions, means for opening either valve including a lever operable by movement in one direction to open said first valve and by movement in the opposite direction to open said second valve, latch means for latch-

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ing said lever in valve-opening position including means actuated by the lever and cooperable means actuated by the meter, said latch means including an adjustable member operable to operatively connect it with either or both of said valves, said latch means being also operable to unlatch when a predetermined quantity of fluid has been metered.

4. A device of the character described comprising a meter having an inlet and an outlet, a manifold having an inlet communicating with the meter outlet and having first and second outlets, first and second valves for said first and second outlets, respectively, resilient means for each valve normally urging it to closed position, a rotatable lever, means for each valve providing an operative connection between said lever and valve, said means including a clutch yieldably urged to disengaged position, operable by application of manual pressure to engage and including latch means operable to hold the clutch in engaged position after the lever has been rotated in one direction from a neutral position, said connecting means being such that rotation of the lever in one direction opens one valve and rotation in the opposite direction opens the other valve, and adjustable latch means for placing either or both valves on meter control, said adjustable latch means including a member actuated by said lever and a member actuated by the meter, said adjustable latch means being operable when appropriately adjusted to latch either or both valves in open position and said meter actuated member being actuated by said meter to unlatch the adjustable latch means when a predetermined quantity of fluid has been metered.

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