

May 1, 1928.

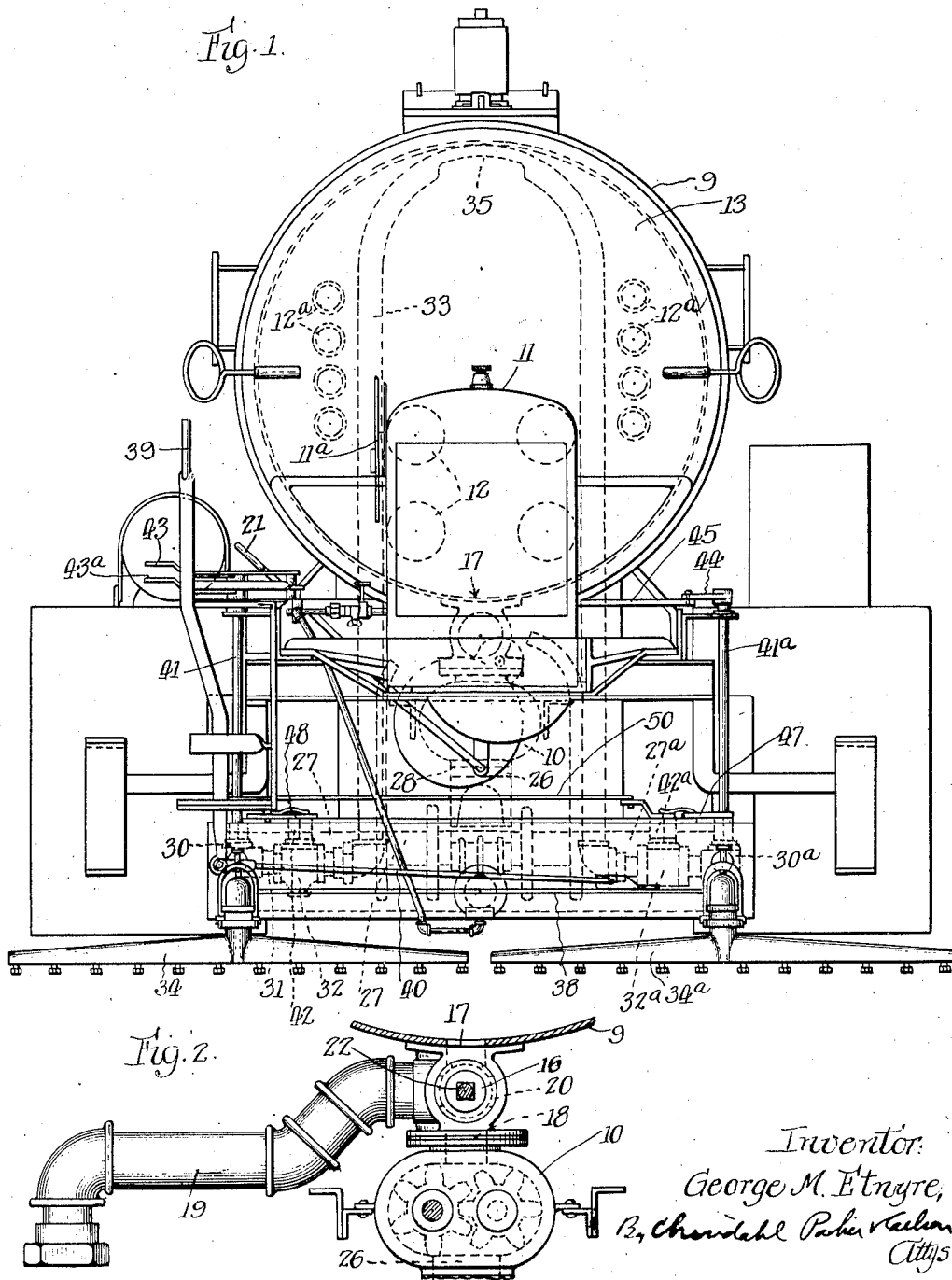
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ASPHALT AND LIKE DISTRIBUTOR

Filed July 10, 1925

2 Sheets-Sheet 1



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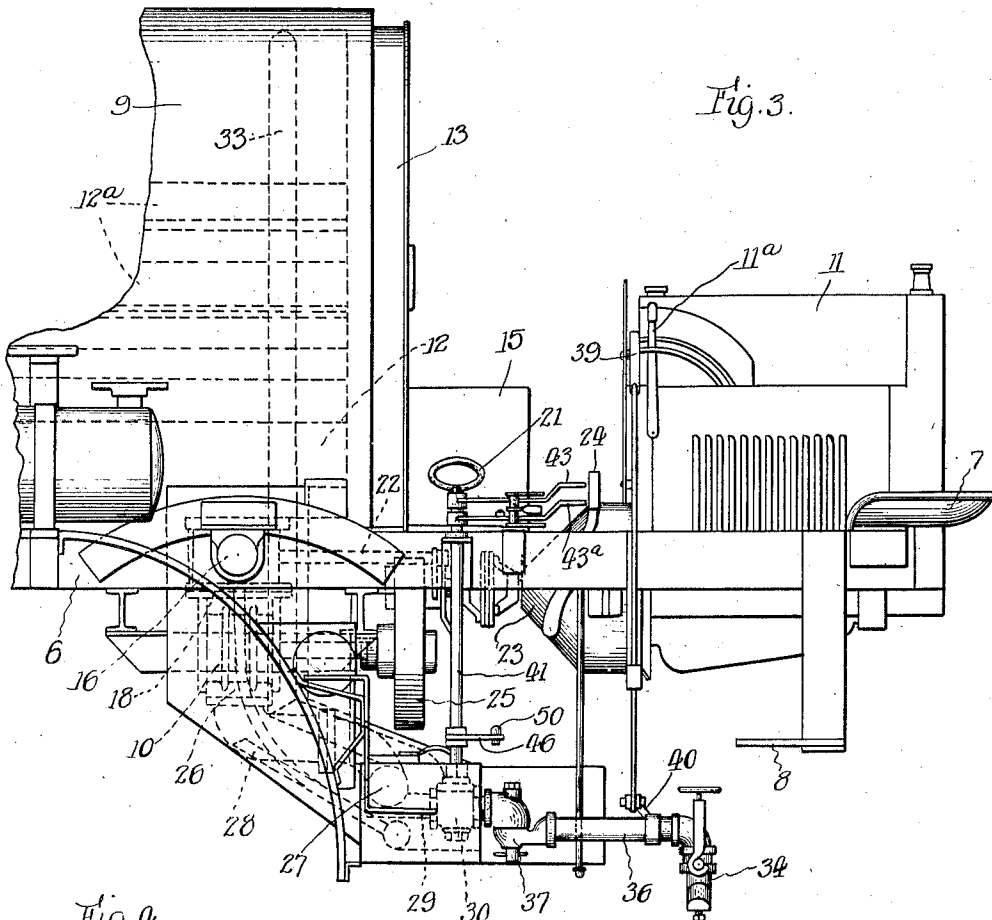
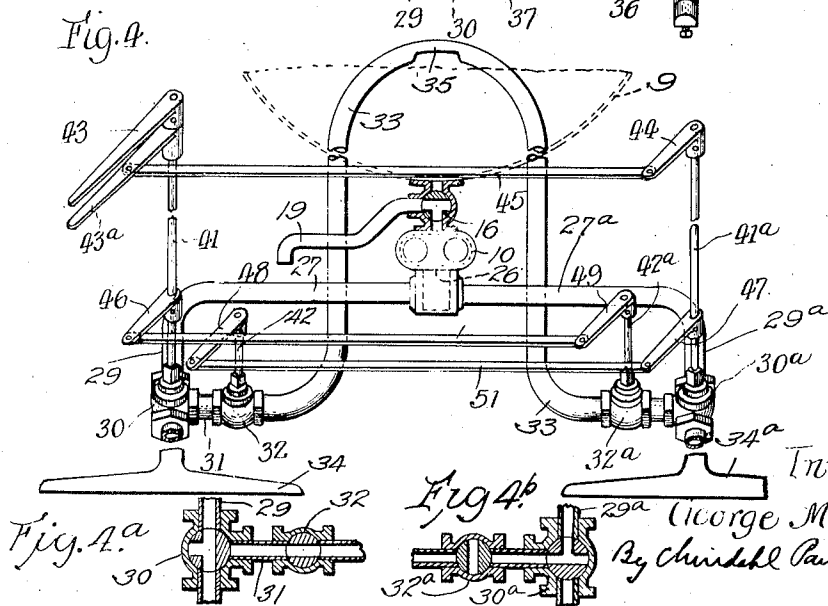
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ASPHALT AND LIKE DISTRIBUTOR

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

GEORGE M. ETNYRE, OF OREGON, ILLINOIS, ASSIGNOR TO JUNE S. AND GEORGE M. ETNYRE, OF OREGON, ILLINOIS, COPARTNERS DOING BUSINESS AS ETNYRE COMPANY.

ASPHALT AND LIKE DISTRIBUTOR.

Application filed July 10, 1925. Serial No. 42,856.

The invention pertains to a distributor for asphalt and similar products, and the general object of the invention is to produce a distributor of high efficiency which is simple in construction and otherwise of a practical character.

An important object of the invention is to combine the circulatory and discharge systems in a manner such as to avoid the use of the usual relief valves thus eliminating the danger of straining the pump and at the same time rendering it possible to utilize when desired the full capacity and pressure of the distributor pump.

Still another object of the invention is to provide an operating mechanism for a distributing system having two branches in combination with the circulatory system, such that when both distributors are closed the circulatory system is open, such that when but one distributor is open the full force of the pump is applied to said distributor, and such that when both distributors are open the full force of the pump is applied between said two distributors.

Still another object of the invention is to provide a dual valve control for the distributor system, and in particular one which is operable from a single point near the operator's station.

Still other and ancillary objects and advantages of the invention will be apparent from the ensuing description of the apparatus illustrated in the drawings, in which

Figure 1 is a rear end view of the liquid distributor truck showing the tank, the distributing pipes and controls.

Fig. 2 is a detail view showing the pump and the intake.

Fig. 3 is a side view of the rear end as shown in Fig. 1.

Fig. 4 is a view partly in perspective of the control mechanism for the individual distributors and showing diagrammatically the circulating and distributing systems.

Figs. 4^a and 4^b are fragmental sectional diagrammatic views showing the positions of the valve members when only one discharge line is open.

The device illustrated in the drawings is not to be construed as a limitation of the invention but is herein shown only for the purpose of illustrating and describing the nature of the invention. The invention con-

templates all other forms and modifications of construction or other embodiments of the principles herein set forth which fall within the scope of the appended claims as limited by the prior art.

In practice the distributor is mounted upon a suitable support such as a frame designated generally by the numeral 6 at the extreme rear end of which is a seat 7 for the operator and a step 8. 9 indicates the main reservoir or tank into and from which the fluid to be distributed is filled and discharged by operation of a pump 10. The pump is arranged to be operated from a suitable source of motive power such, for example, as an internal combustion engine 11. An engine control 11^a is provided adjacent the operator's seat 7. I prefer to employ motive power independent of the motor truck so that the speed of the pump may be controlled independently of the speed of the vehicle.

The tank 9 may be of any suitable or preferred construction being preferably provided internally with heating pipes 12 and 12^a, the latter communicating between end chambers 13 of the tank, suitable heaters (not shown) being provided for said pipes within a housing 15.

The pump 10 (Fig. 2) is preferably of the positive type and is located almost directly beneath the rear end of the tank 9 (Fig. 3) being separated therefrom only by the casing of a valve 16. Said valve is of the three-way type and its casing communicates at its upper end with the bottom of the tank through an aperture 17 and at its lower end with the inlet opening 18 of the pump 10. An intake pipe 19 communicates with one side of the valve casing. 20 designates the valve member which is arranged to control the flow of fluid in the operation of the pump either through the intake pipe into the pump or from the tank through the pump. The valve member is arranged to be operated by means of a hand lever 21 (Fig. 1) suitably arranged to operate a shaft 22 which turns the valve.

The pump 10 is arranged to be driven from the motor 11, being connected therewith under the control of a clutch within the housing 23 arranged to be operated by a lever 24. The motor or clutch is geared to the pump shaft by means of gearing in

the gear case 25. The discharge end 26 of the pump communicates with oppositely extending headers 27 and 27^a through the medium of a flanged connection 28 which extends downwardly and rearwardly a short distance from the under side of the pump casing as shown clearly in Fig. 3, the headers 27 and 27^a being made rigid with said connection, said headers extending in opposite directions therefrom. At the outer end of each of said headers there is secured a rearwardly and horizontally disposed pipe 29 which I preferably secure to the under side of the header by welding. The pipe 29 has interposed therein a valve 30. The valve 30 is of the three-way type so as to control the discharge of the fluid into an inwardly extending pipe 31. Said pipe has a valve 32 interposed therein and communicates with the lower end of a U-shaped circulating pipe 33. The valve 32 is a shut-off valve which is employed when it is desired to discharge into the circulatory system from one side only of the apparatus. The valve 30 is arranged so as to control the discharge of fluid from the header into a sprayer or distributor 34 or from the header to the circulating pipe 33 or both. The construction at the opposite side of the apparatus is the same. The valves at the right hand side in Fig. 1 are designated by the numerals 30^a, 32^a corresponding to the valves 30 and 32 at the left hand side, the nozzle being 34^a. Valve 32^a is likewise connected into the remaining end of the inverted U-pipe 33. A recess 35 is formed at the top of the bend in the U-pipe 33 so that the legs of the U-pipe are substantially independent pipes. The valves 30 and 30^a each communicate with the distributors 34 and 34^a respectively connected through similar pipes 36 and swivel connections 37. A pivoted link 38 between the pipes 36 holds them parallel. An operating lever 39 is provided near the operator's seat 7 to shift the distributors laterally with respect to the truck 6, said lever acting through a connector bar 40 between the lever 39 and the link 38.

Having thus described generally the relationship of the principal parts of the distributing system, I will now set forth the means by which the flow is controlled through the distributors using either one or both as desired. Reference should be had to Fig. 4 wherein the valves controlling the flow are shown with the operating mechanism therefor. From each of the valves 30 and 30^a there are upwardly extending operating spindles 41 and 41^a respectively which serve as operating shafts for said valves. Likewise shorter operating shafts 42 and 42^a extend from the valves 32 and 32^a. The operating mechanism is arranged so that any one valve of one set and the non-similar valve of the other set are simultaneously

operated, and is further arranged so that each operation is performed from substantially the same point thus permitting the operator sitting in seat 7 or standing on step 8 to have complete control over the discharge without changing his position.

In the vicinity of the lever 39 are two similar hand levers 43 and 43^a mounted on the spindle 41. Lever 43 is rigid with the spindle 41, while lever 43^a is loose thereon. On the spindle 41^a is a short rigid crank arm 44 linked by a bar 45 to the lower loose hand lever 43^a. Thus the levers 43 and 43^a operate the valves 30 and 30^a respectively independent of each other. Each of the shafts 41, 41^a, 42 and 42^a have rigid therewith crank arms 46, 47, 48 and 49 respectively. Arms 46 and 49 are in substantially a single plane and arms 47 and 48 are likewise in substantially a single plane. Links 50 and 51 connect the respective pairs of crank arms 46—49 and 47—48.

Other and ancillary features may be added to the above described outfit as is desired for any particular purpose but, of course, these form no part of the present invention.

The operation of the fluid flow system is as follows: On filling the tank 9 the distributors are closed by operation of the hand levers 43 and 43^a. In the closed position of valves 30 and 30^a to the distributors, the respective circulatory valves 32 and 32^a will be open so that there is communication from the pump to the tank by way of the inverted U-tube 33. The valve 16 between the tank 9 and the pump 10 is turned so that operation of the pump draws liquid through the intake pipe 19, and such that the opening 17 between the valve and the tank is closed Fig. 4. Operation of the pump drives the fluid taken in through pipe 19 into the headers 27 and 27^a, through the two sets of valves 30—32 and 30^a—32^a into the tank through the U-tube 33. In case the liquid being used is a heavy asphalt the heating system is put in operation so that upon filling the tank, the asphalt is heated from the pipes 12 and 12^a. When the tank is full the valve 16 is turned to cut off the intake pipe 19 thus to establish communication with the tank 9 through the aperture 17. The operation of the pump may be continued, but it will now circulate the liquid from the bottom of the tank through the circulatory system to the top thus serving to heat the fluid uniformly if this is necessary.

When the liquid is to be distributed upon the road, if both distributor nozzles 34 and 34^a are to be employed, the hand levers 43 and 43^a of Fig. 4 are moved to the right thus opening the valves 30 and 30^a leading to the distributors and cutting off communication to the circulatory system. Upon shutting off supply to the distributors the valves 32

and 32^a will be open and the valves 30 and 30^a will establish communication from the pipes 29 to the circulatory system, thus permitting liquid to flow unimpeded by the action of shutting off supply to the nozzles and thus saving the pump from undue strain.

If it is desired to use but one of the distributing nozzles say, nozzle 34, the hand lever 43 only is moved to the right to establish communication to said nozzle. The mechanism described is so arranged that upon opening the valve 30 to communicate with the nozzle 34, it cuts off communication to the circulatory system through the valve 30 Fig. 4^a. By virtue of the connecting bar 50 the valve 32^a on the other side in the circulatory system is also shut off Fig. 4^b thus permitting full force of the pump 10 to be applied directly to the distributing nozzle 34. In the absence of the connecting bar 50 in this instance the valve 32^a would be open and valve 30^a would be in such a position that the liquid from header 27^a could flow through the two valves 30^a and 32^a back into the tank thus putting only a part of the pump pressure upon the open distributor nozzle 34. Of course, it will be understood that the operation of the distributing nozzle 34^a singly is effected in the same manner by the manipulation of the hand lever 43^a. Besides these advantages, the arrangement described permits the operator to maintain a single location on the wagon and to operate the various parts of the distributing system without change of his position.

I claim as my invention:

1. A liquid distributing and control system comprising, in combination, a liquid supply tank, a discharging line, a force pump in said line, two branches from said line, a distributing means on each branch, a return line from each branch to the tank, a three-way valve in each branch adapted to discharge liquid into the distributing means in one position of the valve and to discharge it into said return line back to the tank in another position of the valve, a shut-off valve in each return line, and means to close the shut-off valve of the return line of one branch operable only when the valve of the other branch permits delivery to its distributing means.

2. A liquid distributing and control system comprising, in combination, a liquid supply tank, a discharging line, a force pump in said line, two branches from said line, a distributing means on each branch, a return line from each branch to the tank, a three-way valve in each branch adapted to discharge liquid into the distributing means in one position of the valve and to discharge it into said return line back to the tank in another position of the valve, a shut-off valve in each return line, and means arranged to operate the three-way valve of

each branch simultaneously with the shut-off valve of the return line of the remaining branch whereby to prevent return flow to the tank when a distributing means is opened.

3. In combination, a continuous circulatory system for fluid having two similar branches, a cut-off valve in each branch, a discharging line from each branch on the inlet side of said valve, separate valves arranged to divert flow from circulation in each branch into each discharge line, and means connecting the cut-off valve of one branch to the discharge controlling valve of the other branch whereby flow in any discharge line cuts off flow in the circulatory system.

4. In combination, a fluid supply, two liquid flow lines, means to force liquid into said lines from said supply, a return line from each of said flow lines to the fluid supply, a cut-off valve in each return line, a control valve in each flow line adapted to cut off flow therethrough and to divert it into the return line, and independent means for simultaneously operating the valve in each flow line with the cut-off valve associated with the other flow line so that the one is closed when the other is open.

5. In a fluid distributor truck, in combination, a tank, two discharge lines, means to supply the lines with liquid from said tank, independent means to cut off flow in each of said discharge lines, a circulatory system arranged to return the flow of each line to the tank when cut off by said means, said means being operable to cut off flow to said circulatory system when only one discharge line is open.

6. In combination, two liquid discharge lines, a pump means supplying said lines, a pressure relieving system connected into each line, a valve in each line operable to shut off flow in said line and to connect the liquid supply into said system to relieve the pressure of the pumping means, and cut-off means in said relieving system arranged to be operated to cut off the pressure relieving system when any one discharge line is open.

7. A liquid distributor truck having, in combination, a truck, a supply tank thereon, two discharge lines, one at each side of the truck, a pump for forcing liquid under pressure from said tank to said discharge lines, a return line from each discharge line back to the tank, a discharge valve in each discharge line to cut off flow therethrough and to return it to the tank through one of said return lines, a cut off valve in each return line, independent manual members at one side of the truck for operating all of said valves, one member simultaneously controlling the left cut-off valve and the right discharge valve so that one is closed when the other is open, and the other member simul-

taneously controlling the right cut-off valve and the left discharge valve so that one is closed and the other open.

8. A liquid distributor truck having, in combination, a truck, a source of liquid supply thereon, two discharge nozzles arranged to discharge independently from said supply, means to force liquid under pressure to said nozzles from said supply, cut-off means for each nozzle, a circulatory system to return to the source the fluid supplied by the liquid forcing means, and a control system arranged to return said fluid when both nozzles are cut off and functioning automatically to close said circulatory system when any one nozzle is discharging, said control system including independent control means for each nozzle.

9. In combination, a continuous supply of fluid under pressure, two branch lines from said supply adapted for intermittent flow, a pressure relieving system, independently operable valves in each branch line operable to cut off flow in each branch and to direct flow into the pressure relieving system, cut off means in said relieving system, and means operating said cut off means to close said system when any one of said branch lines is open.

10. In a liquid distributor truck having a station for an operator and a series of discharge and relief piping having duplicate pairs of unlike valves at the right and left hand sides of the truck for directing the flow of liquid, an operating shaft from one valve to a point near the operator's station, a hand lever rigid with said shaft, and a connection from said shaft to the non-corresponding valve on the opposite side whereby said sec-

ond and first valves are operable simultaneously to direct the flow relative to the discharge piping on one side and to the relief piping on the opposite side of the tank, a second hand lever loose on said shaft, and means connecting the loose lever with the two remaining valves for simultaneous operation of said two remaining valves independent of and in the same manner as said first mentioned two valves.

11. In a liquid distributor truck having a station for an operator, a fluid supply on said truck, two liquid flow lines, means to force liquid into said lines from said supply, a return line from each of said flow lines to the fluid supply, a cut-off valve in each return line, a control valve in each flow line adapted to cut off flow therethrough and to divert it into the return line, and means for simultaneously operating the cut-off valve in one return line and the control valve in the other flow line, said means including a hand lever positioned adjacent the operator's station.

12. In a fluid distributor truck, the combination of a tank, two discharge lines, means to supply the lines with liquid from said tank, independent means to cut off flow in each of said discharge lines, a circulatory system arranged to return the liquid supplied to said lines to the tank when cut off by said cut-off means, said means being operable automatically to cut off flow to said circulatory system when a single discharge line is open.

In testimony whereof, I have hereunto affixed my signature.

GEORGE M. ETNYRE.