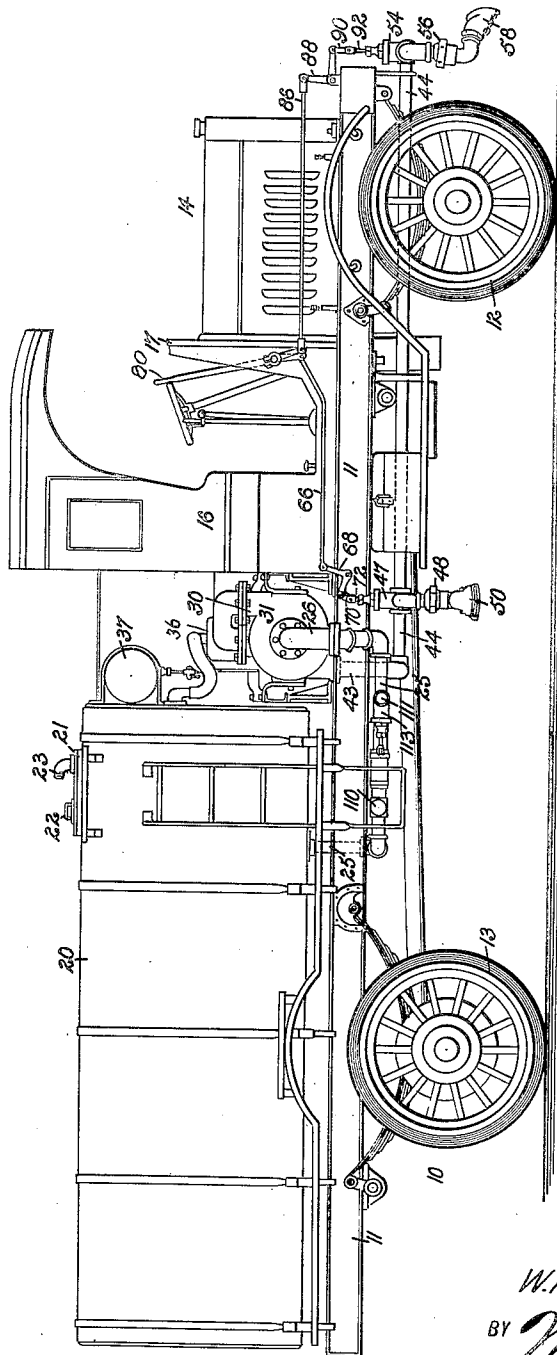


W. K. SHELLY, DEC'D.
M. S. FRICK, ADMINISTRATRIX.
PORTABLE LIQUID DISTRIBUTING APPARATUS.
APPLICATION FILED MAR. 27, 1917.

1,322,359.

Patented Nov. 18, 1919.
5 SHEETS—SHEET 1.

Fig. 1.



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Fig. 2.

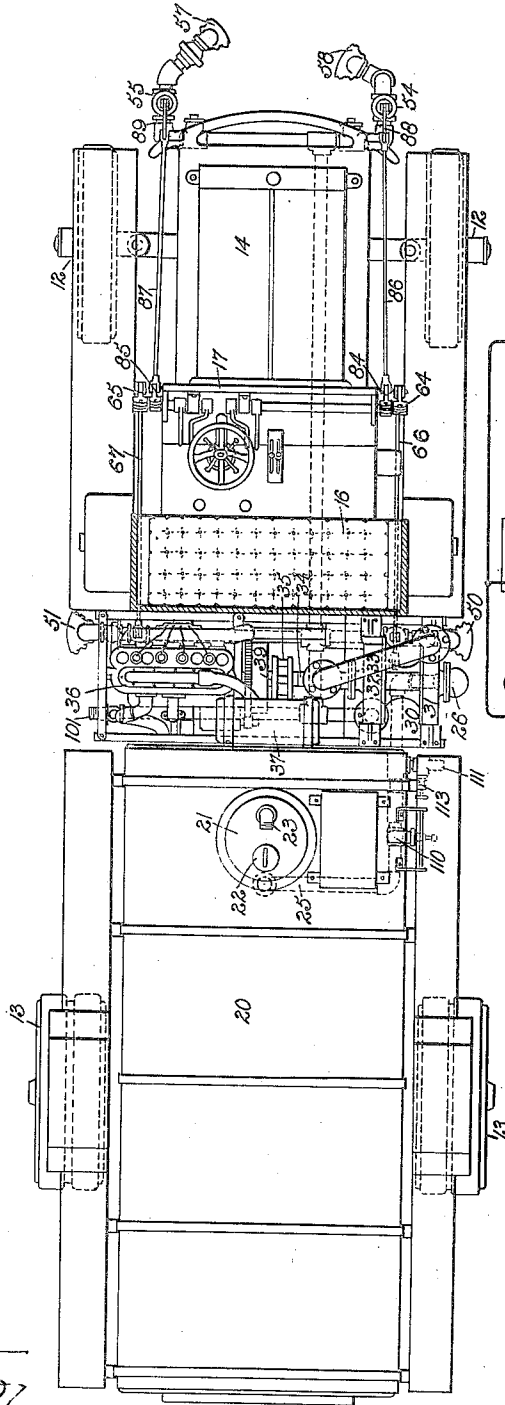
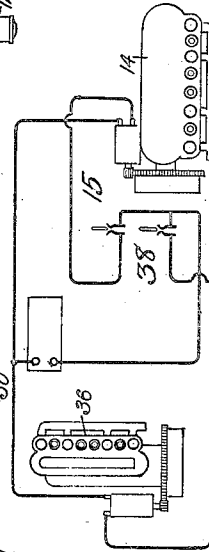


Fig. 3.



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5 SHEETS—SHEET 3.

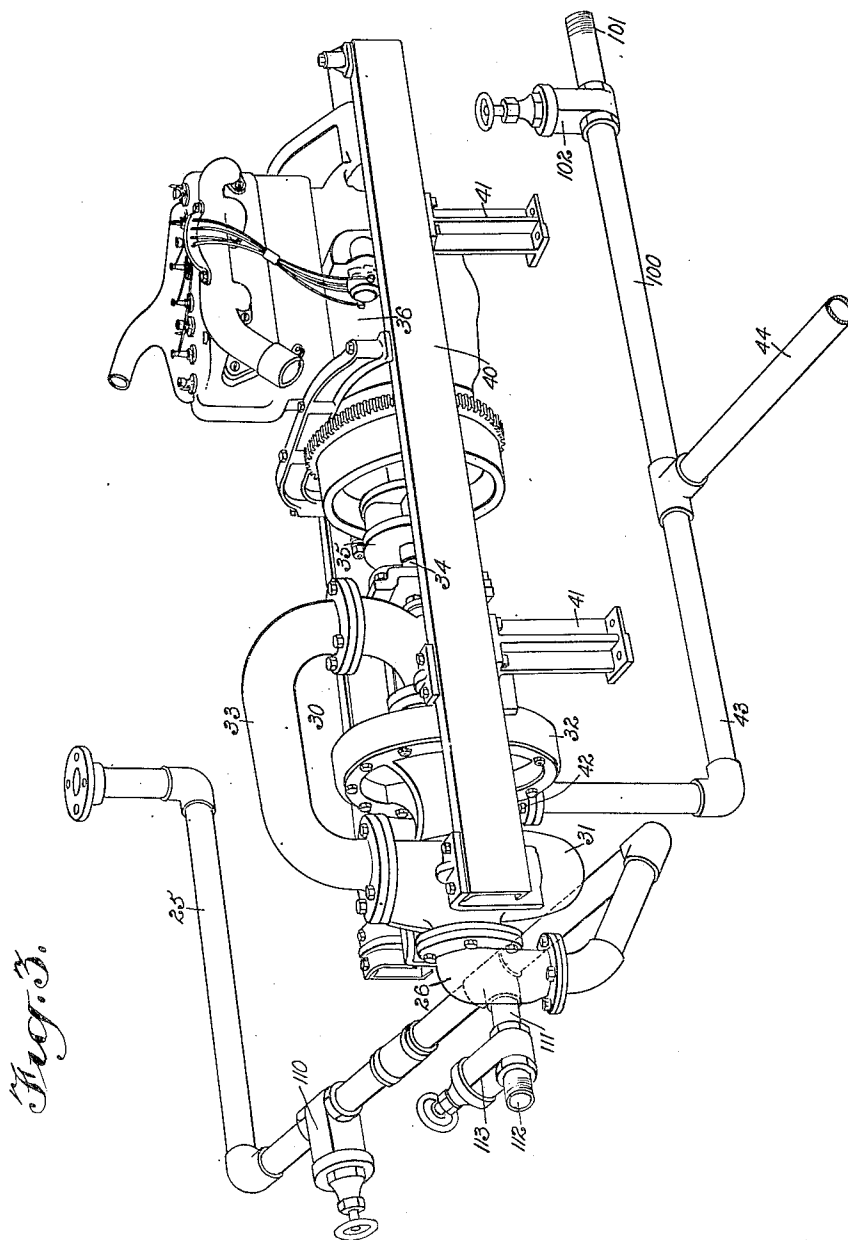


Fig. 3.

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5 SHEETS—SHEET 4.

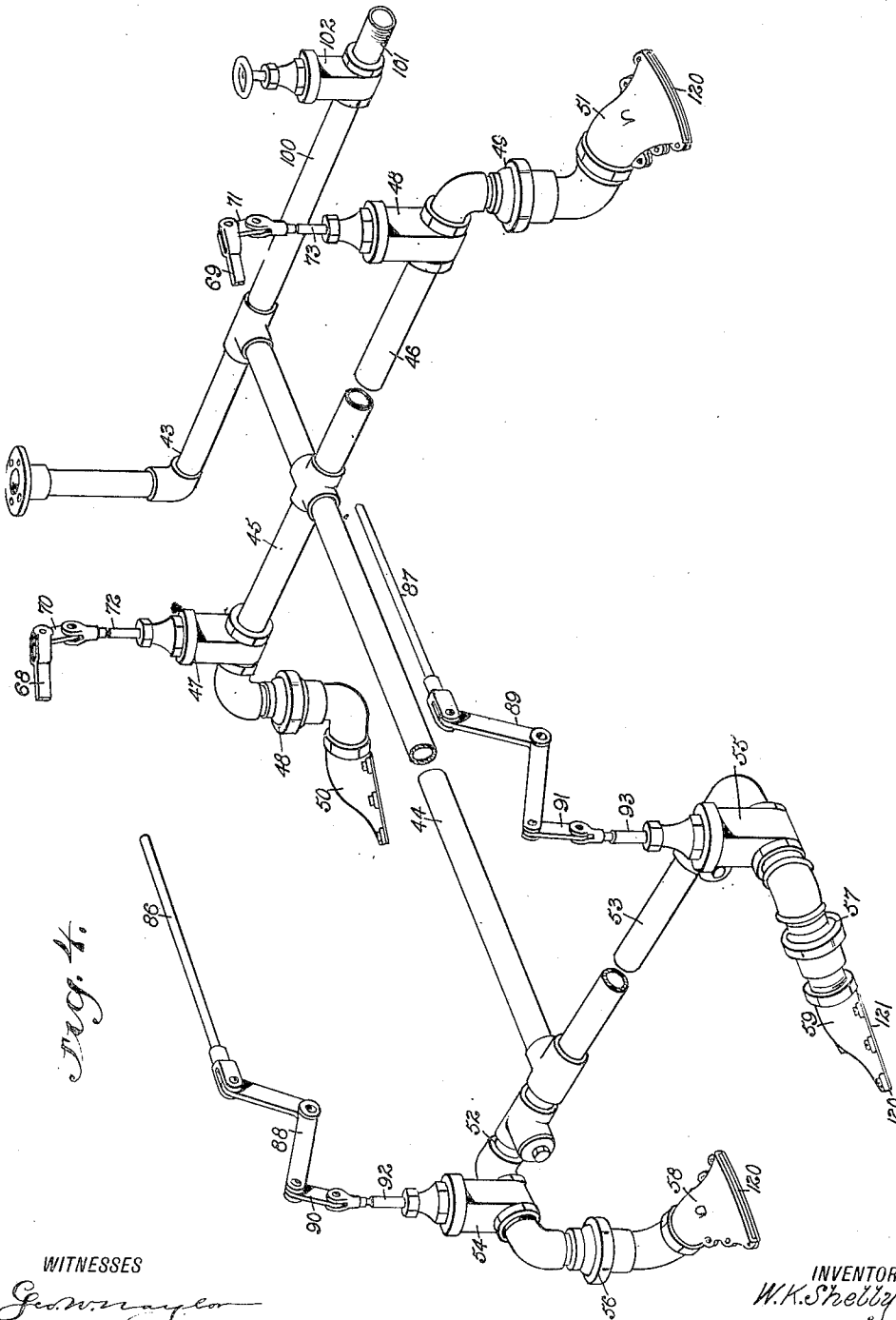


Fig. 4.

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5 SHEETS—SHEET 5.

Fig. 5.

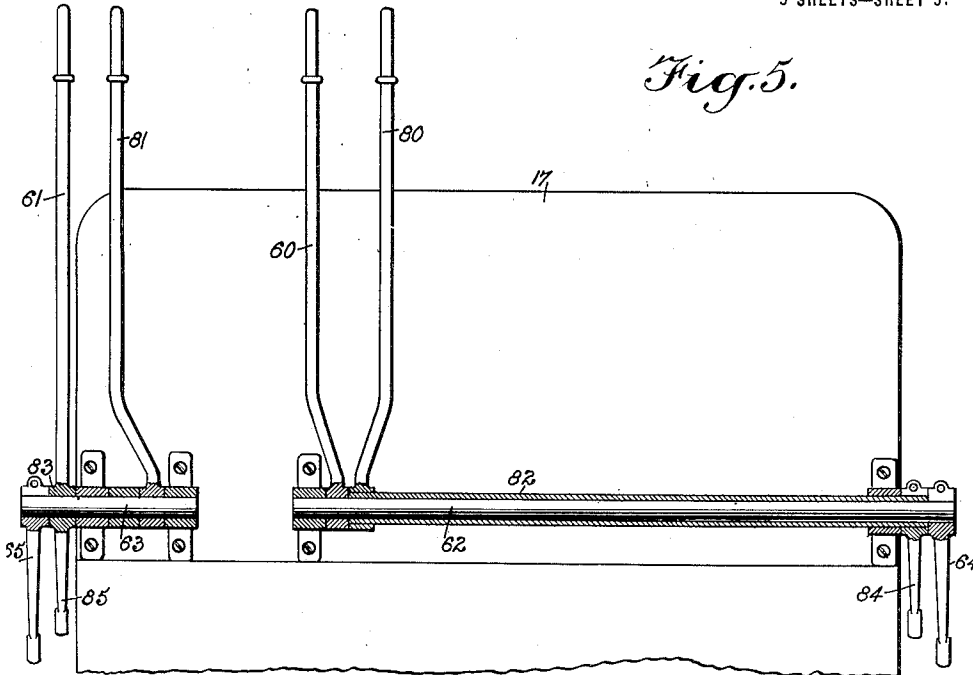


Fig. 6.

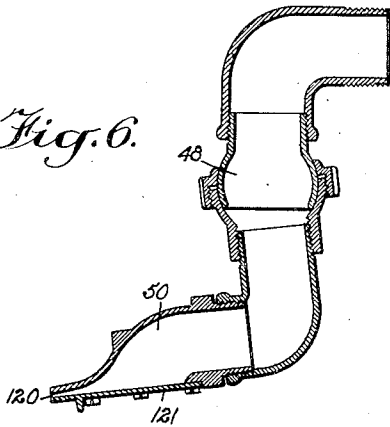
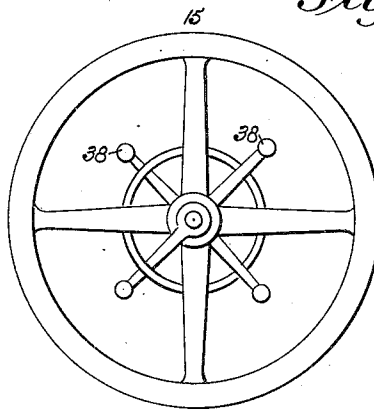


Fig. 7.



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UNITED STATES PATENT OFFICE.

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PORTABLE LIQUID-DISTRIBUTING APPARATUS.

1,322,359.

Specification of Letters Patent.

Patented Nov. 18, 1919.

Application filed March 27, 1917. Serial No. 157,701.

To all whom it may concern:

Be it known that I, WILLIAM K. SHELLY, a citizen of the United States, and a resident of Tiffin, in the county of Seneca and State of Ohio, have invented a new and Improved Portable Liquid-Distributing Apparatus, of which the following is a full, clear, and exact description.

The invention relates to distributing apparatus designed for flushing and sprinkling streets but capable of use as a fire fighting machine, for flushing sewers, for sprinkling lawns, for spraying trees with water or liquid disinfectants, and for other purposes.

The object of the invention is to provide a new and improved portable liquid distributing apparatus arranged to maintain a constant pressure on the liquid, or to increase or decrease such pressure as desired and wholly independent of the speed of the apparatus and regardless of the apparatus traveling along level roads, up or down hills, over bad pavements or railroad crossings or other roadways having obstacles in the path of the apparatus. Another object of the invention is to provide a power-driven vehicle having a tank adapted to be filled from street hydrants and the like or by drawing the water from cisterns, creeks and other sources of water supply located below the level of the tank. Another object is to enable the attendant in charge of the apparatus to drive the same in any desired direction and to readily control the outflow of the water from any one of the water-distributing nozzles or any combination thereof. A further object is to permit of readily converting the apparatus into an ordinary auto-truck capable of use for other purposes.

In order to accomplish the desired result, use is made of an auto-truck having the usual propelling motor, a tank mounted on the said truck, a conduit leading from the said tank and provided with nozzles, a pump in the said conduit, a second motor supported on the said truck and connected with the said pump to actuate the latter, an independent controlling means for each of the said motors and under the control of the attendant to control the said motors independently one of the other. Use is also made of controlling valves in the conduit,

one for each nozzle, and a series of manually controlled devices connected with the said valves to permit the attendant to open and close the valves independently one of the other and without leaving the driver's seat.

One of the various practical embodiments of the invention is represented in the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the portable liquid distributing apparatus with the hood of the pump and its motor shown in section;

Fig. 2 is a plan view of the same with the driver's shelter shown in section and the hood for the centrifugal pump and its motor removed;

Fig. 3 is a perspective view of the two-stage centrifugal pump and its actuating motor mounted on an auxiliary frame arranged for removable attachment to the frame of the truck.

Fig. 4 is a perspective view of the conduit, its branch pipes, the valves connected therewith for controlling the flow of the water from the branch pipes to the nozzles;

Fig. 5 is an enlarged cross section of the controlling mechanisms for controlling the nozzle valves;

Fig. 6 is an enlarged sectional side elevation of one of the nozzles and its universal joint mounting;

Fig. 7 is an enlarged plan view of the controlling mechanism for the motor employed for driving the centrifugal pump and propelling the truck; and

Fig. 8 is a diagrammatic view of the electrical connections for the truck driving motor and the centrifugal pump motor.

In the general construction of the power portable liquid distributing apparatus, use is made of an auto-truck including a framework 11, front or steering wheels 12 and rear wheels 13, and a gasoline or other motor 14 to propel the said truck over a roadway, the motor 14 being mounted on the front end of the framework 11 and being connected in the usual manner with the rear wheels 13 to propel the truck. Various devices, such as electric starting and control-

ling devices for the motor 14, steering mechanism for the front wheels and the actuating devices for the brake mechanism, are located on the framework 11 immediately in the rear of the truck motor and in front of the driver's seat 16. Other accessories (not shown), such as are usually found on auto-trucks of this type, are mounted on the dash-board 17.

On the rear half portion of the framework 11 is detachably mounted a tank 20 adapted to be filled with liquid, provided at the top with a cover 21 having a manhole 22 and a nipple 23 for connection with a hose adapted to be connected with a hydrant or other supply of water under pressure to fill the tank with water. From the bottom of the tank 20 near the forward end thereof extends a conduit 25 connected with an inlet 26 of a centrifugal pump 30, preferably having two cylinders 31, 32, of which the first cylinder 31 having the inlet 26, is connected by a pipe 33 with the inlet of the other cylinder 32, as plainly indicated in Fig. 3. The shaft 34 of the double pump is connected by a flexible coupling 35 with the shaft 39 of a motor 36, preferably of the same type as the truck motor 14. A tank 37 for supplying the motor 36 with gasoline is mounted on the front end of the tank 20, as plainly shown in Figs. 1 and 2. Electric starting and controlling devices 38 for the motor 36 are mounted within convenient reach of the attendant on the driver's seat 16, and as these controlling devices 38 are entirely distinct and separate from the starting, steering and brake actuating devices before referred to, it is evident that the centrifugal pump 30 can be run wholly independent of the propelling motor of the truck. By the use of the two-stage centrifugal pump 30 the liquid is discharged therefrom at the desired pressure and wholly irrespective of the head of liquid in the tank 20 and hence the force of the discharged liquid is the same whether the tank 20 is completely filled or nearly empty. It will also be noticed that by this arrangement the attendant can maintain a constant pressure on the water line, or can increase or decrease such pressure wholly independently of the speed of the apparatus and regardless of the apparatus traveling along level roads, up or down hills, over bad pavements, or over railroad crossings, or passing over other obstacles in the roadway.

The centrifugal pump 30 and its motor 36 are mounted on an auxiliary frame 40 provided with legs 41 removably fastened by bolts or similar fastening devices to the usual two side beams of the framework 11 intermediate the forward end of the tank 12 and the back of the seat 16. In order to take up as little space as possible the common axis of the centrifugal pump 30 and the motor 36 extends in a transverse direction, as plainly indicated in Figs. 1 and 2. The outlet 42 of the cylinder 32 of the centrifugal pump 30 connects with a conduit 43 which practically is a continuation of the conduit 25 with the centrifugal pump 30 interposed in the conduit. The conduit 43 has a member 44 extending forwardly under the framework 11 in the direction of the length thereof, and the said conduit member 44 is provided with branch pipes 45, 46 having valves 47, 48 connected by universal joints 48, 49 with nozzles 50, 51 extending at the sides of the portable liquid distributing apparatus. The forward end of the conduit member 44 reaches beyond the front of the framework 11 and is provided at its terminal with the branch pipes 52, 53 having valves 54, 55 connected by universal joints 56, 57 with nozzles 58, 59 arranged on the front of the portable liquid distributing apparatus.

The valves 47 and 48 for the side nozzles 50 and 51 are controlled by levers 60 and 61 having their pivots 62 and 63 in the form of shafts journaled on the dashboard 17 so that the levers 60 and 61 are within convenient reach of the attendant on the seat 16. The outer ends of the pivots 62, 63 are provided with arms 64, 65 connected by links 66 and 67 with bell crank levers 68 and 69 fulcrumed on the sides of the framework 11 (see Fig. 1) and connected by links 70 and 71 with the stems 72, 73 of the valves 47 and 48, as plainly indicated in Fig. 4. The valves 54, 55 for the front nozzles 58 and 59 are controlled by levers 80 and 81 arranged adjacent the levers 60 and 61 and having their hubs 82 and 83 mounted to turn loosely on the pivots 62, 63. The hubs 82 and 83 are provided with arms 84, 85 connected by links 86, 87 with bell crank levers 88, 89 fulcrumed on the front end of the framework 11. The bell crank levers 88 and 89 are connected by links 90 and 91 with the stems 92 and 93 of the valves 54 and 55 (see Fig. 4). It will be noted that the attendant seated on the seat 16, by taking hold of any one of the levers 60, 61, 80 and 81, can readily open or close the corresponding valve 47, 48, 54, 55, to control the flow of the liquid to the corresponding nozzle 50, 51, 58 or 59. It will also be noticed that by operating the levers 80 and 81 simultaneously the valves 54, 55 are opened to supply the front nozzles 58 and 59 simultaneously with liquid, or in a similar manner the nozzles 50 and 51 can be simultaneously supplied with liquid by the attendant manipulating the levers 60 and 61 correspondingly to open the valves 47 and 48. It will also be noticed that when the apparatus is propelled along the roadway the attendant can readily stop and start the pump motor 36, but normally said motor is kept running

even if all the valves 47, 48, 54 and 55 are closed for the time being. When, however, the valves, or any one of them, are opened by the operator actuating the corresponding lever 60, 61, 80, 81 then liquid is drawn by the centrifugal pump 30 from the tank 20 and sent under pressure to and through the corresponding nozzles 50, 51, 58 and 59. The flushing or sprinkling of the roadway is thus accomplished by the pressure exerted by the pump and irrespective of the pressure of the head of liquid in the tank 20 and by the attendant having full control of the motor 36 the pump pressure can be varied to suit existing conditions.

When it is desired to use the apparatus for fire extinguishing purposes, for sprinkling lawns and the like with the tank 20 as the supply of liquid, the following arrangement is made: The conduit 43 (see Fig. 3) is provided with a transversely extending pipe 100 terminating at the left-hand side or elsewhere of the machine in a threaded portion 101 (see Fig. 2) for receiving the coupling of a hose terminating in a fireman's nozzle, sprinkling nozzle or other nozzle according to the use to be made of the apparatus at the time. The pipe 100 is provided with a manually controlled valve 102 which is kept closed while using the apparatus for street flushing and sprinkling purposes but is opened when it is desired to send liquid through the hose coupled to the terminal of the pipe 100 at the time the valve 102 is opened. It will be noticed that when the nozzle valves 47, 48, 54, 55 are closed and the valve 102 is opened then liquid is drawn by the pump 30 from the tank 20 and forced through the hose coupled to the pipe 100 to be discharged by the nozzle of the hose to a desired place. The liquid discharged may be directed onto a fire, sprinkled on the lawn or sprayed on trees, shrubbery and the like.

The apparatus may be used for similar purposes without employing the tank 20 as the source of liquid supply and for this purpose the following arrangement is made: The conduit 25 intermediate the tank 20 and the pump inlet 26 is provided with a manually controlled valve 110 normally open when the tank is used as a source of liquid supply but closed when it is desired to use the water contained in a cistern or that of a creek or other stream as a source of supply. The conduit 25 is provided at a point between the valve 110 and the pump inlet 26 with a pipe 111 having a threaded terminal 112 extending on the right-hand side of the apparatus for receiving the coupling of a suction hose adapted to be passed into a cistern or creek or similar source of water supply, so that when the pump 30 is running water is drawn from the source of supply by way of the hose and pipe 111 into

the pump 30 to be forced out of the same into the conduit 43 and by way of the pipe 100 and the hose connected therewith to the desired place of discharge, the same as above described. In a like manner the tank 20 may be filled from a cistern, a creek or similar water supply by connecting the hose attached to the pipe 100 to the nipple 23 on the top of the tank 20 for filling the latter. The pipe 111 is provided with a manually controlled valve 113, which is open when using the apparatus for drawing water from a cistern, creek or other source of supply, but is closed when using the tank 20 as a supply of water.

The nozzles 50, 51, 58 and 59 are preferably alike in construction and each is provided with a flat mouth 120 of a width exceeding the diameter of the conduit to insure the formation of a spreading sheet of water. By the use of the universal joints the nozzles can be adjusted to set each nozzle mouth in any desired angle relative to the roadway. The front nozzles 58 and 59 are preferably set to throw crossing sheets of water onto the roadway, while the side nozzles 50 and 51 direct sheets of water outward and in a sidewise and forward direction onto the roadway. Each of the nozzles 50, 51, 58 and 59 is provided with a removable bottom plate 121 to permit of conveniently cleaning a nozzle in case it becomes obstructed or clogged up by sediment or other extraneous matter.

By arranging the propelling motor 14 in front of the seat 16, and the motor 36 and the two-stage pump 30 immediately in the rear of the said seat 16, it is evident that the attendant in charge of the apparatus and seated on the said seat can see and hear in case anything is wrong with the said motors and pump, and promptly act accordingly.

The apparatus shown and described is very simple and its various parts and devices are not liable to get out of order easily. It will be noticed that the single attendant in charge of the apparatus can slow down at any time without affecting the pump motor and the pump to allow of discharging more liquid onto any given portion of the road bed to effectively wash off substances which are partly caked on the roadway.

The entire flushing system is maintained as a unit wholly separate from the propelling means, and the flushing system can be easily removed from the truck to allow of using the latter as a motor truck for other purposes.

It is one of the main advantages of the arrangement described that the attendant has absolute control of the distributing system regardless of road conditions.

By locating the propelling motor 14 at

the front of the framework the tank 20 on the rear half of the framework and the pump 30 and its motor 36 approximately at the middle of the framework, the load is advantageously distributed over the truck to properly balance the latter and thus insure smooth running of the apparatus over the roadway without danger of swaying or skidding. It will also be noticed that by the aforesaid location of the several main parts, the apparatus is rendered exceedingly compact and easy to handle by a single attendant.

It is understood that the machine is capable of pumping its own charge from cisterns or creeks or to pump water from any other source of supply and discharge it on fires or elsewhere regardless of the tank, or in other words, the machine can act precisely as a fire engine and add pressure to the stream when connected with a hydrant.

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

1. In a portable liquid distributing apparatus, the combination with a truck having a driver's seat, a motor for operating the truck, and a tank on the truck in rear of the seat and spaced therefrom, of a frame mounted on the truck to extend transversely of the truck frame between the seat and tank, an auxiliary motor on the frame, a pump on said frame in alignment with the motor and operated by the said motor, the axes of the motor and pump extending transversely of the truck, a connection between the pump and tank, a longitudinal pipe connected with the pump and extending to the front end of the truck, lateral pipes extending from the forward end of the longitudinal pipe and from said pipe adjacent its rear end, and nozzles on

the lateral pipes, valves in the said lateral pipes, and means for operating the valves.

2. In a portable liquid distributing apparatus, the combination with a truck having a driver's seat, a motor for operating the truck, and a tank on the truck in rear of the seat and spaced therefrom, of a frame mounted on the truck to extend transversely of the truck frame between the seat and tank, a motor on the frame, a pump on said frame and operated by the motor, a valved pipe connecting the tank and pump and having a valved branch pipe with the end of which a hose is adapted to be connected, a valved pipe leading from the pump and adapted to have a hose attached to its end, a longitudinally extending pipe connected with the last named pipe and extending to the front of the truck, pairs of lateral pipes leading from the longitudinal pipe, one pair being on the front end of the pipe, nozzles on the lateral pipes, a valve in each lateral pipe, and a lever mechanism for operating the valves at each side of the truck from the driver's seat.

3. A portable liquid distributing apparatus comprising a truck, a motor for operating the truck, a seat for the attendant, a tank on the truck in rear of and spaced from the seat, an auxiliary motor in the space between the seat and tank, a pump in said space and operated by the auxiliary motor, the pump and auxiliary motor being in alignment, with their axes extending transversely of the truck, a conduit connecting the pump with the tank, a conduit connected with the pump and provided with lateral pipes, nozzles on the lateral pipes, valves in said pipes, independent means for operating the valves, and controlling means for each motor.

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