J. R. KINNEY.

ROAD OILER.

APPLICATION FILED JUNE 2, 1915.

1,234,910.

Patented July 31, 1917.

4 SHEETS—SHEET 1.

Fig. 1.

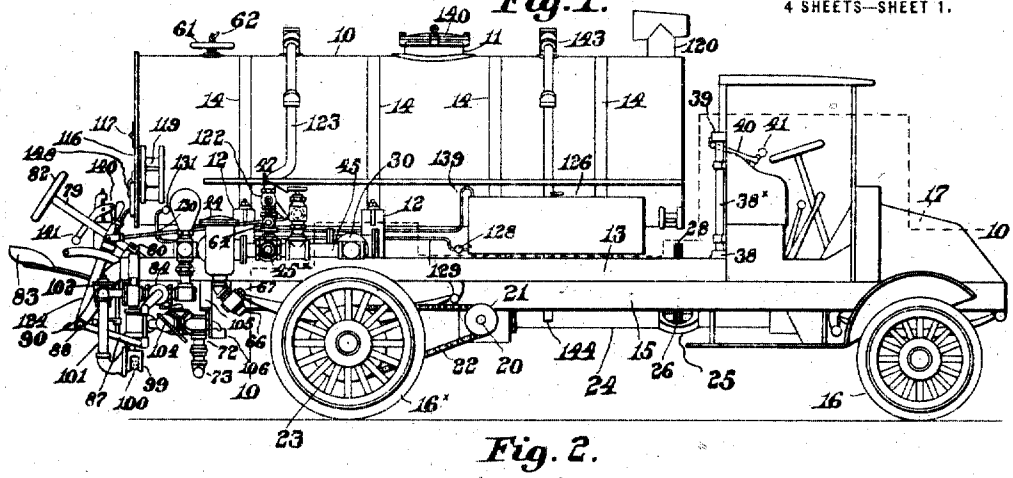
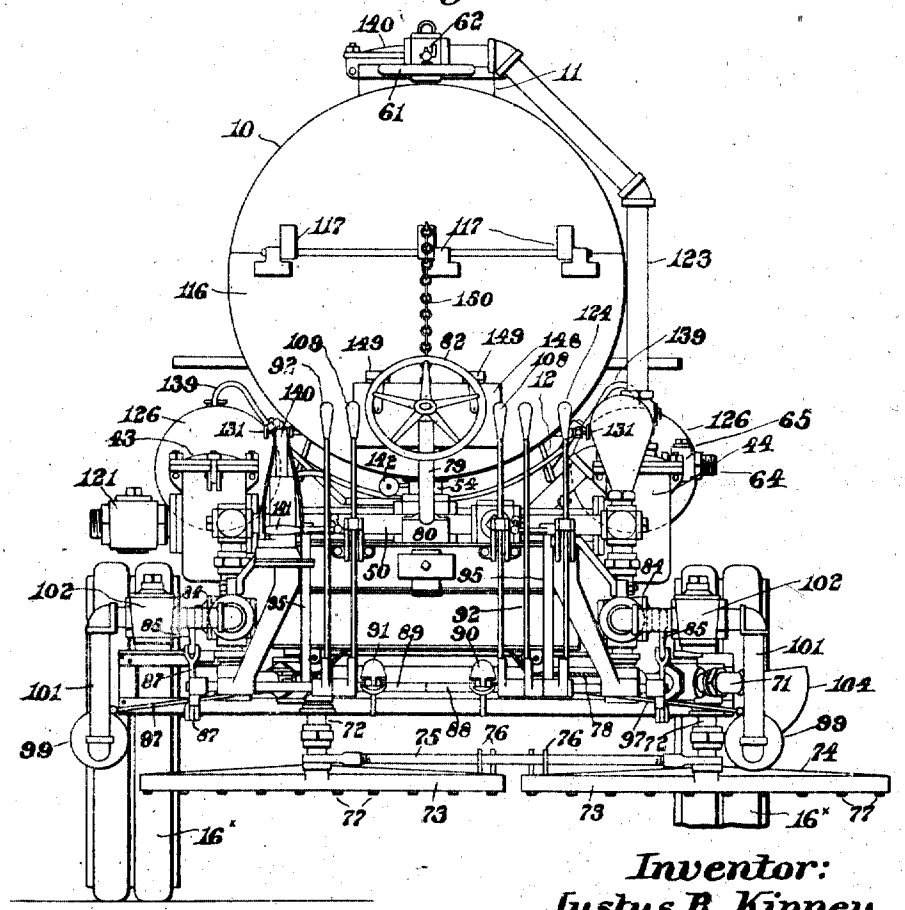


Fig. 2.



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4 SHEETS—SHEET 2.

Fig. 3.

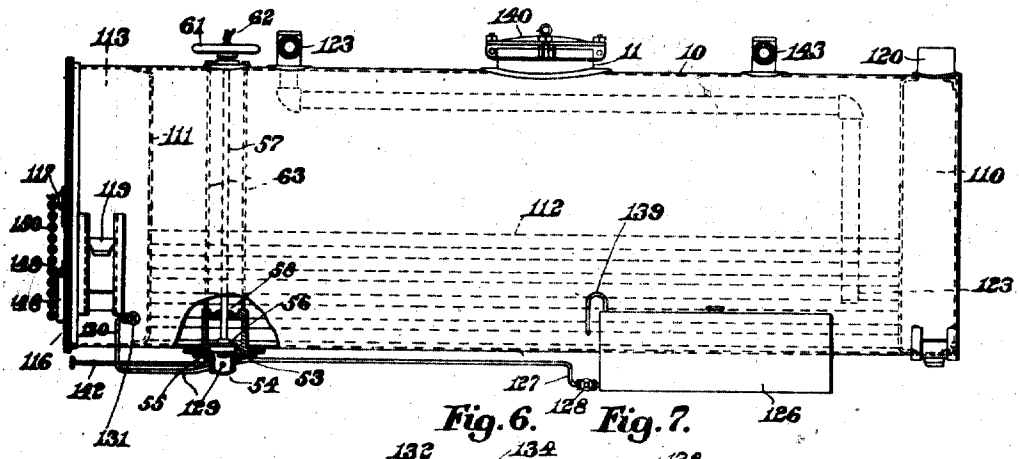


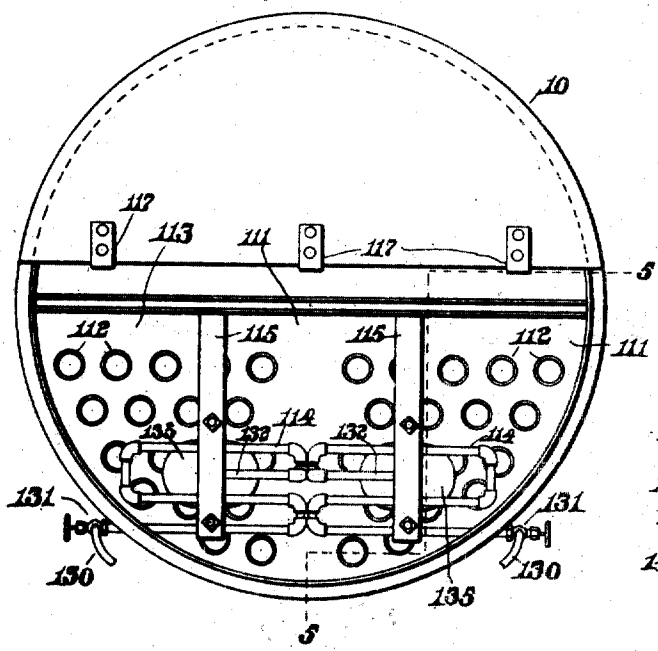
Fig. 6.

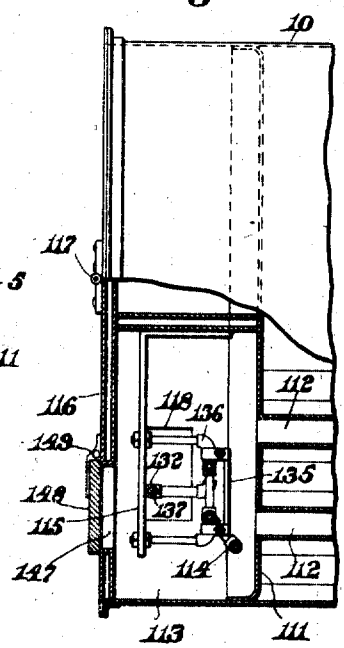
Fig. 7.



Fig. 4.

Fig. 5.





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4 SHEETS—SHEET 3.

Fig. 8.

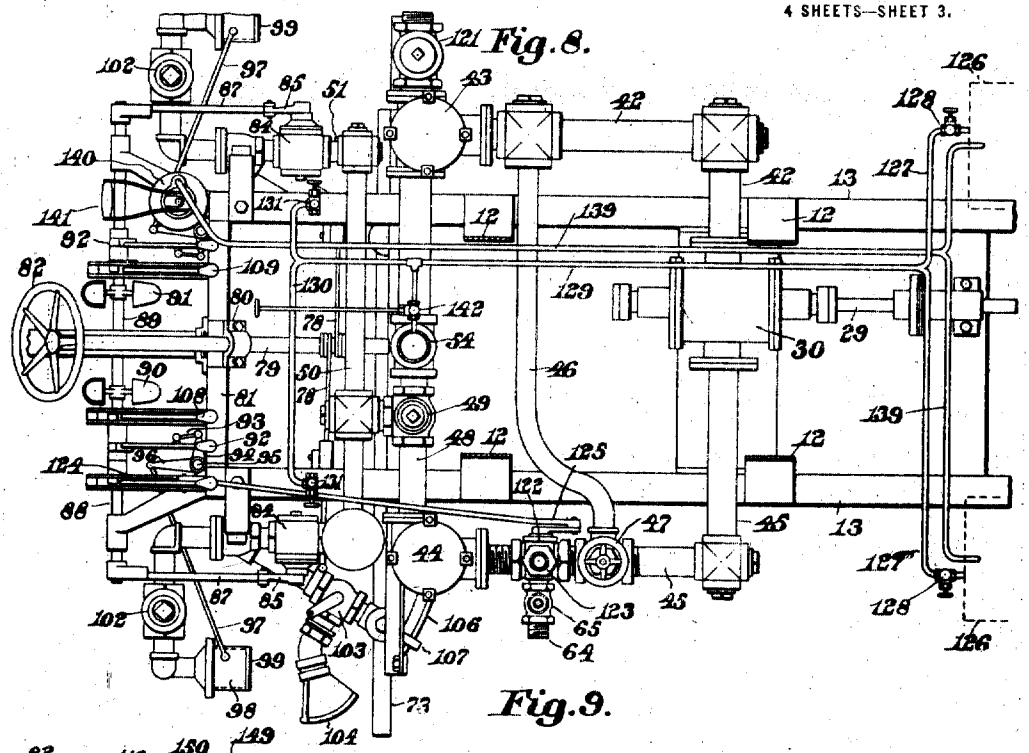
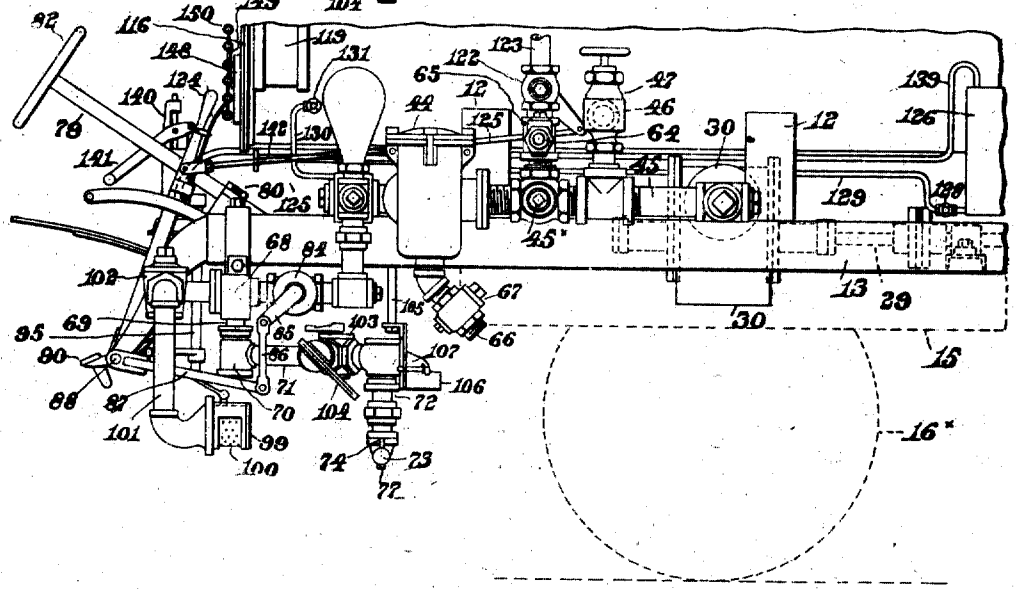


Fig. 9.



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4 SHEETS—SHEET 4.

Fig. 10.

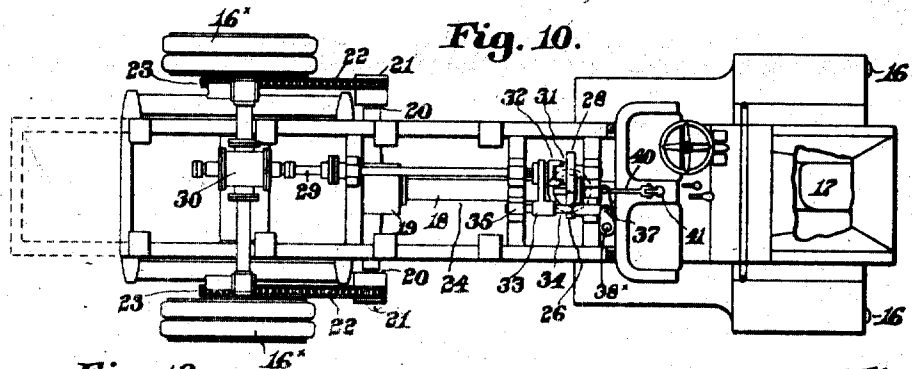


Fig. 12.

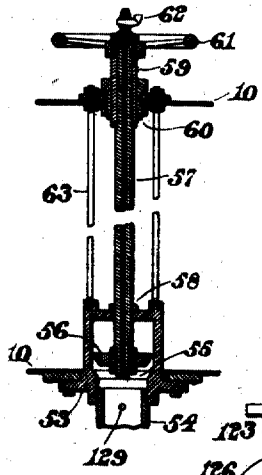
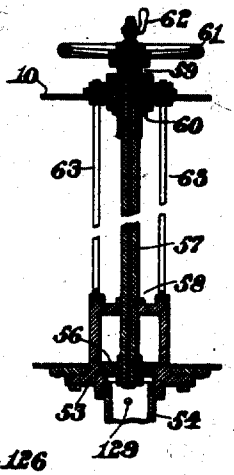


Fig. 11.

Fig. 13.



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UNITED STATES PATENT OFFICE.

JUSTUS R. KINNEY, OF DORCHESTER, MASSACHUSETTS, ASSIGNOR TO THE KINNEY MANUFACTURING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

ROAD-OILER.

1,234,910. Specification of Letters Patent. Patented July 31, 1917.

Application filed June 2, 1915. Serial No. 32,009.

To all whom it may concern:

Be it known that I, JUSTUS R. KINNEY, a citizen of the United States of America, and a resident of Dorchester, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Road-Oilers, of which the following is a specification.

This invention relates to apparatus for applying liquids to roads, and has for its object the production of a device of this class by which the material may be heated by hot gases and then applied to the road either in the form of a spray or in larger quantities, as may be desired, and which may be utilized also in flushing the roads, flushing heads being attached in lieu of the oil sprayers.

Another object of the invention is to provide an oil heating device which will be under the instant control of the operator at all times whereby the material may be heated to any desired degree of temperature as required even while on the way to the place of operation, thus avoiding vexatious delays.

A further object of the invention is the provision of means for agitating the material in the tank to insure a uniform temperature throughout the entire load.

The invention consists in a self-propelled vehicle, the engine of which is adapted to drive a rotary pump either while said vehicle is moving or at a standstill, said pump being adapted for use in filling the tank or emptying it either through a discharge pipe or through spray nozzles.

The invention further consists in certain novel features of construction and arrangement of parts which will be fully understood by reference to the description of the drawings and to the claims hereinafter given.

Of the drawings:

Figure 1 represents an elevation of an apparatus embodying the features of the present invention.

Fig. 2 represents a rear elevation of the same, drawn to an enlarged scale.

Fig. 3 represents an elevation of the tank drawn to an enlarged scale.

Fig. 4 represents a rear elevation of the same with the door removed, and drawn to a still larger scale.

Fig. 5 represents a side elevation of the rear end of said tank with a portion thereof broken in section.

Fig. 6 represents a section of the discharge pipe of the heater.

Fig. 7 represents an end view of the closing plug thereof.

Fig. 8 represents a plan view of the rear end of the chassis with the various devices thereon for controlling the flow of the material.

Fig. 9 represents a side elevation of the same.

Fig. 10 represents a horizontal section, the cutting plane being on line 10—10 on Fig. 1.

Fig. 11 represents a vertical section through the chassis, looking at the front end of the tank.

Fig. 12 represents a vertical section of discharge pipe from the tank with the valve operating mechanism therefor, the valve being shown open, and

Fig. 13 represents a similar section with the valve closed and the vent to the discharge pipe open.

Similar characters designate like parts throughout the several figures of the drawings.

In the drawings, 10 is a tank provided at the top with the filling dome 11 through which the tank may be filled from any suitable source of supply located above said tank. The tank 10 is supported on cradles 12 made of flat metal bars bent to form a seat for the tank with inwardly extending feet which are secured to a demountable frame 13.

Straps 14 pass around the tank 10 and have ears at their ends which are connected to said cradles by the bolts $14^{\times}$ having locking nuts on their threaded ends. The demountable frame 13 is supported on the chassis or frame 15 of a truck having the supporting wheels 16—$16^{\times}$ and an engine 17 mounted thereon by which the rear wheels $16^{\times}$ may be driven in any well-known manner through the medium of the driving shaft 18, the transmission mechanism 19,

and the transversely disposed revoluble shafts 20.

The ends of these shafts 20 have secured thereto sprocket wheels 21 engaging with endless chains 22 passing around sprocket wheels 23 secured to and revoluble with the rear driving wheels 16×.

The mechanism for propelling the vehicle forms no part of the present invention, any form of driving mechanism being adapted to be used. One form of driving mechanism is shown in Fig. 10 which it is believed is sufficient for an understanding of the means employed for driving the truck.

The engine driving shaft 18 is mounted in a tubular member 24 in which it is freely revoluble and said tubular member 24 is provided with the open coupling 25.

Within the coupling 25 the shaft 18 has keyed or otherwise secured thereto a sprocket wheel 26 from which rotary movement is imparted by means of an endless chain 27 to a sprocket wheel 28 loosely mounted on the revoluble shaft 29 of a rotary pump 30.

The sprocket wheel 28 is prevented from moving endwise of the shaft 29 and has keyed or otherwise secured to its rear end one part 31 of a clutch, the other coacting part 32 thereof being keyed to and slidable lengthwise of the shaft 29 as indicated in Fig. 10 of the drawings.

The member 32 has an annular peripheral groove therein into which projects the studs of a forked member 33 secured to a sliding rod 34 mounted in bearings 35 and connected at one end by a pivot 37 to an arm 38 secured to a vertical oscillating shaft 38, the upper end of which has secured thereto an arm 39 the outer end of which is connected to one end of a link 40, the opposite end of which is articulated to the operating lever 41 located conveniently to the chauffeur so that he may throw the clutch members 31—32 into and from engagement at will.

By means of this construction the pump 30 may be operated by the engine 17 when the vehicle is moving over the road or it may be thrown out of commission as desired. It is obvious, moreover, that when the vehicle is at rest and the engine 17 is in operation, while the transmission mechanism is thrown out of commission in the usual manner, the pump 30 may be placed in commission at will and be driven by said engine.

The inlet side of the pump 30 is connected by means of a pipe 42 to a suction strainer 43 of any well-known construction, and a discharge strainer 44 of any desired type is connected to the discharge outlet of said pump by means of the pipe 45, having a 3-way valve 45× therein.

The pipes 42—45 are connected by a by-pass pipe 46 having a relief valve 47 therein. The strainer 44 is connected by a pipe 48 with a three-way cock 49, one branch of which is connected to a transverse pipe 50, the opposite ends of which are connected with the rearwardly extending pipes 51, each of which has a valve 84 to control the discharge of material therethrough.

The pipe 48 is connected to the member 53 secured to the bottom of the tank 10 by a discharge pipe 54, said member 53 having a valve seat 55 with which coacts a closing valve 56 shown in Figs. 3, 12, and 13 of the drawings.

The valve 56 is mounted upon the lower end of a tubular valve stem 57 extending upwardly through the tank 10. The lower end of the stem 57 has a bearing at 58 and revolubly mounted on its upper end is a revoluble sleeve 59 prevented from endwise movement thereon.

The sleeve is threaded to a fixed nut 60 in the upper side of the tank 10 and may be rotated therein by the handle 61 to move the valve 56 to and from its seat 55 to regulate the discharge of material from said tank.

The tubular stem 57 extends through the hub of the handle 61 and has at its upper end a pet cock 62 adapted to close the passage through said stem 57 when the valve 56 is open. When the valve 56 is closed the pet cock is moved into the position shown in Fig. 13, thereby permitting the air to pass through the stem 57 into the discharge pipe 54.

On either side of and parallel to the stem 57 are distance rods 63 extending across the tank 10 and serving to strengthen the same.

The pipe 46 also has leading therefrom a discharge pipe 64 having a cutoff valve 65 therein. The end of the pipe 64 is threaded to receive a hose through which the contents of the tank may be discharged when it is desired to empty the tank without sending the material through the sprinkler systems. From the bottom of the strainer 44 is another discharge nozzle 66 through which the material may be drained from the strainer. The discharge nozzle is normally closed by the valve 67. The pipes 51 are provided with T-unions 68, the downwardly extending branch of each of which is provided with a pipe 69. The lower end of each pipe 69 has mounted thereon an oscillating member 70 from which extends the horizontal pipe 71 which is adapted to be oscillated through an arc of a circle.

To the front end of each pipe 71 is secured a depending pipe 72 to the lower end of which is secured the oil spray pipe 73 having an upwardly extending rib 74. The pipes 72 are connected by the distance rod 75 by which the pipes 71 will be pre-

vented from oscillating independently of each other. Pins 76 extending upwardly from each pipe 73 on opposite sides of the rod 75 retain the pipes 73 in alinement during the oscillating movement of the pipes 71.

The oil spray pipes 73 are provided with the usual spray nozzles 77. Each pipe 71 has secured thereto one end of a cord 78 the opposite end of which is coiled about an inclined shaft 79 having a bearing at 80 on the rear transom 81 of the frame 13 and provided with an operating handle 82 at its outer end. The operator on his seat 83 may turn the shaft 79 to move the oil spray pipes 73 transversely of the tank 10.

In each pipe 51 is a valve 84 which is adapted to control the passage of material through said pipe. Each valve 84 is provided with an operating arm 85 connected by a link 86 to an arm 87 secured to the oscillating shaft 88 or 89 to which oscillatory movement is imparted by means of the foot lever 90 or 91. Each of the shafts 88 or 89 has loosely mounted thereon a lever 92 connected by a link 93 to an arm 94 on a vertical oscillating shaft 95, the lower end of which has secured thereto an arm 96 connected by a link 97 to an annular member 98 surrounding the periphery of a sprinkler head 99. The sprinkler head 99 is provided with peripheral perforations 100 in its under side which are adapted to be closed by the movement of the member 98 about the axis of said head. The head 99 is located on the end of a pipe 101, the opposite end of which communicates with one branch of the T-union 68 adjacent to which is a valve 102 by which the flow of material to the head 99 may be shut off when the oil spray pipes 73 are in use. Between the oil spray pipes 73 and the member 70 the pipe 71 is provided with a three-way valve 103 operable by hand to cut off the discharge through said pipe entirely or confining it to discharge through the oil spray pipes 73 or through the flushing heads 104 which are mounted on the side branch of said valve 103 and may be adjusted with the delivery slot at any desired angle.

Supported from the frame 13 by the rods 105 are the curved tracks 106 on which rests the projecting lug 107, said tracks being concentric with the axis of the pipe 69 about which axis the pipe 71 may be moved, carrying with it the oil spray pipe 73 and the flushing head 104. The shafts 88 and 90 may be oscillated by the foot levers 90 and 91 or they may be oscillated by the hand levers 108 and 109 respectively.

The tank 10 is provided at its front end with a chamber 110 from which extend to and through a head 111 near the rear thereof a plurality of heating pipes 112 through which hot air is adapted to pass from the heater chamber 113 situated at the rear end of the tank 10. In the heater chamber 113 an oil heater 114 is supported on the brackets 115. The chamber 113 is closed by a door 116 hinged at 117 to the rear end of the tank 10 which has a plurality of openings 118 in the side wall thereof adapted to be closed or opened by the slides 119 as shown in Figs. 3 and 5.

From the top of the chamber 110 extends an outlet pipe 120 to carry off the heat therein.

The casing 43 has secured to its outer wall a valve 121 through which the tank 10 is adapted to be filled with liquid, the valves 56 and 65 at this time being closed and the liquid passing through the strainer 43 and pipe 42 to the pump 30, from which it is forced through the pipe 45 to a valve 122 which is open, and then through the pipe 123 into the top of the tank 10, the valve 45× having been turned to communicate with said pipe 123.

The tank having been filled, the inlet valve 121 is closed and the valve 56 opened and the valve 45× is then turned so that the liquid may flow from said tank through the strainer 43 into the pipe 42 to the pump from which it is forced through the pipe 45 to and through the valve 49 into the pipes 50—51 to the valves 84 which if open will permit the discharge of the liquid through the oil spray pipes 73. These pipes 73 may be moved laterally of the frame 13 by the handle 82, said movement being about the axes of the depending pipes 69 and said pipes 73 having a movement also about the axes of the pipes 72 so that the pipes 73 are always perpendicular to the axis of the frame 13 into whatever position they may be moved.

When the oil spray system is in use the valve 65 is closed but if it is desired to empty the tank this valve 65 is opened and the valves 84 and 122 closed, the valve 45× being turned to communicate with the pipe 64. The liquid will then be discharged through the pipe 64. The end of this pipe is threaded and a hose may be attached thereto so that if the tank is filled with water a stream may be forced therethrough for the purpose of putting out fires. While the pump 30 is in operation, if any of the cutoff valves are closed temporarily the liquid discharge from the pump 30 will pass through the bypass pipe 46 to the inlet side of the pump, the relief valve 47 permitting this operation when a predetermined pressure has been reached.

When heavy oils are used that require heat to put them in suitable condition for use, the heater 114 is lighted and as the heat therefrom passes through the pipes 112 into the chamber 110, the oil is circulated through the tank. This is accomplished by turning

the valve 45× so that discharge therefrom to the pipes 50 and 54 is cut off and opening the valve 122, and causing the pump 30 to force the oil through the pipe 45 and the pipe 123 into the top of the tank, the oil from the pipe 123 being discharged in the bottom thereof near the front end thereof. The oil thus discharged into the tank will travel the entire length of the hot air pipes 112 and pass through the pipes 54, 48, and 42 to the inlet side of the pump. A constant circulation of the oil is thus created, which is continued until the oil is of the proper consistency, and has a predetermined and uniform temperature throughout. This circulation may be created either while the vehicle is moving or at rest. This is of considerable importance for it is essential that means should be provided whereby oils of different kinds may be differently treated and that they be of uniform temperature and consistency. The valve 122 is operated by means of the lever 124 connected to the valve stem by a link 125 as shown in Fig. 8.

On each side of the tank 10 is a reservoir 126 adapted to contain kerosene or some similar oil. From each reservoir 126 extends a pipe 127 having a valve 128 therein and the two pipes 127 both connect with the pipe 129 extending to the rear end of the tank where it connects with a transverse pipe 130 the ends of which connect with the heaters 114—114.

The flow of the oil to the heaters 114—114 is regulated by the valves 131. The discharge end 132 of each heater is provided with a head 133 having a discharge orifice 134 immediately in the rear of a baffle plate 135 secured to the supports 136 extending forwardly from the brackets 115.

A closing plug 137 is threaded to the end of the head 133, said plug having a radial slot 138 in its inner end through which any accumulated deposit may be driven out by the flame when the plug 137 has been unscrewed sufficiently to uncover the outer end of said slot 138. This is of considerable importance and should be done once each day and then the plug 137 should be again screwed into the position shown in Fig. 6 of the drawings.

Each of the reservoirs 126 is connected by pipes 139 to an air pump 140 operated by a handle 141. By means of this pump 140 the oil in the reservoirs 126 is maintained at a pressure of 40 lbs.

The amount of oil passing to the heaters 114 may be regulated by the needle valves 131 which are always closed before commencing to spray. These valves 131 should be kept closed until the fire tubes 112 are wholly covered with material in the tank 10 and may then be opened and the burners 134 of the heaters lighted.

The tank 10 may either be filled by pump suction as hereinbefore described, or it may be filled by any suitable gravity supply by removing the manhole cover 140 and filling through the opening by any suitable conducting hose or pipe.

When using heated material in the tank 10 it is important that the tank should not be quite full as some space must be allowed for expansion.

When the tank 10 has been filled by means of the pump 30 the latter is stopped and the valve 121 is closed.

When circulating the material in the tank 10 the valve 56 should be wide open and the pump 30 started at a moderate speed. The pump is kept running until the material is thoroughly agitated to a proper temperature as shown by a thermometer provided for this purpose. The location of the delivery end of the pipe 123 at the bottom of the forward end of the tank is of great importance as by this means the oil passing through the pipe 122 along the upper side of the tank is gradually heated and when discharged into the bottom of the tank it will flow toward the rear end of the tank in contact with the hot air tubes and then rise above the tubes and flow toward the front end of the tank. A constant circulation of the material is thus maintained until the temperature of all the material is uniform.

The burners are then extinguished and the valves 45× opened, permitting the material to be forced by the pump 30 through the oil spray pipes 73.

Whenever it is necessary to stop the distribution of the oil for any length of time before the tank is entirely emptied, the valve 56 is closed and the vent cock 62 is opened. The valves 84 are then opened and the pump 30 is run until the piping system is entirely free from material.

The circulating valve 122 is then closed and the kerosene oil valve 142 is opened, allowing a jet of kerosene oil to enter the pump and piping system, and the pump 30 is kept running until the kerosene oil forced through the piping system has thoroughly cleared the same.

The drain cocks 67 are then opened to permit the draining of the strainer casings 43 and 44. A pipe 143 leads from the top of the tank 10 with its discharge end at 144 beneath the tank. This provides a means whereby any excessive amount of material in the tank will be discharged upon the road over which the truck is traveling, and will prevent any of this material being scattered over the outside of the tank or on the operating parts.

When it is desired to spray by means of a hose, the hose may be attached to the un-

loading cock 64 and the valve 65 opened, the pressure being regulated by the valve 122 controlled by the lever 124.

When it is desired to draw off material in buckets, the valve 65 is opened and the buckets filled through the discharge pipe 64.

The relief valve 47 when set for the proper pressure should not be changed.

The door 116 is provided with a draft opening 147 therein which is adapted to be closed when desired by means of the plate 148, hinged at its upper edge as indicated at 149 and adapted to be supported in open position by means of the chain 150.

When the material in the tank 10 is heavy oil and it is being heated, the plate 148 is held open by the chain 150.

During the operation of heating heavy oil the valve 45× is turned so as to direct the material into the pipe 123 and cut it off entirely from the pipe system, thus preventing the pipes from becoming clogged with said material, which obviously will harden as soon as it becomes cold.

This is of considerable importance as it is necessary to keep the pipes clear and only permit the heavy oils to pass through when they have the proper consistency and temperature and under pressure created by the pump 30.

When the pump 30 is not in operation, the valve 45× may be turned also into position to cut off the material from both the pipes 48 and 123.

When the valve 45× is turned to direct the material into the pipe 123 and the valve 122 is closed, the valve 65 may be opened and the material discharged through the pipe 64.

The valve 122 may be used to regulate the pressure of the material passing through the pipe system, it being obvious that if said valve is partly open a portion of the material will pass through the valve 122 and pipe 123 into the tank, and if closed the material passing through the pipe system will be under the pressure created by said pump according to the setting of the relief valve 47.

One of the reservoirs 126 must be filled with kerosene oil or some equivalent which may be used in the heaters 114, but in some cases where certain kinds of material are being used in the tank 10, kerosene oil is not a suitable flux, and in this case the other reservoir 126 may be filled with some other flux which may be used when the pipe system is to be cleared.

Among other advantages of the present invention it will be noted that the material is heated by means of a dry heat passing through the hot air pipes 112 and that during the heating process means is provided for keeping up a constant circulation of the material in the tank, the various portions thereof coming successively into contact with the pipes 112 until the entire contents of the tank 10 have a uniform temperature.

In view of this constant circulation of the material there is no danger of burning the material.

The heaters are under the constant control of the operator and as kerosene oil is used there is no such delay in heating the material as would be the case if steam heat were used and it is obvious that heat of any required temperature is available at once regardless of weather conditions.

With this device there are no delays as the material may be heated while the truck is on the way to the place where the spraying is to be done.

Any volume or temperature of material may be evenly and uniformly distributed by the apparatus and said apparatus is adapted for use in distributing either cold or hot material.

Means are provided whereby the entire pipe system may be thoroughly cleared of oil and the tank may be filled with water and the apparatus then used for watering the streets.

It is also possible by disconnecting the chain 27 and disconnecting the securing bolts 146 to remove the demountable frame 13 with its tank and piping system from the chassis 15 and then use the truck for any other desired purpose.

When it is desired to flush the streets instead of spraying them, provision is made for cutting off the spraying devices and permitting the oil to be discharged through flushing heads adapted to be swung in a horizontal plane with the delivery ends at any desired angle.

There is at no time any internal pressure within the tank, thereby making it possible to use a thinner shell than would be the case in tanks in which steam or other pressure was used. All the pressure required is obtained by means of the rotary pump 30 which may also be used for loading.

It is believed that the operation and many advantages of this invention will be fully understood from the foregoing description.

Having thus described my invention, I claim:

1. In a device of the class described, the combination of a tank; an outlet pipe therefrom; a pump therefor; a pipe communicating with said outlet pipe and adapted to swing in a horizontal plane; an oil spray device communicating with said swinging pipe; a street flushing device also connected to and extending laterally from said swinging pipe at a point intermediate said oil spray device and the inlet end of said swinging pipe; and a single mechanism in said swinging pipe adapted to be operated to place either device in commission.

2. In a device of the class described, the combination of a tank; an outlet pipe therefrom; a pump therefor; two pipes communicating with said outlet pipe and adapted to swing in a horizontal plane; an oil spray device communicating with each swinging pipe; a street flushing device also connected to and extending laterally from each swinging pipe between the inlet end thereof and said oil spray device, said flushing devices including flushing heads oppositely disposed upon the two horizontally swinging pipes; means for changing the angles of said flushing heads about a horizontal axis; and means in each swinging pipe for placing either device in commission and simultaneously cutting off the supply of material to the other device.

3. In a device of the class described, the combination of a horizontal tank; a pump beneath said tank and connected therewith; an oil spray system positioned beneath the rear of said tank; a rectangular frame on which said tank, pump and oil spray system are mounted; a truck provided with a chassis having longitudinal side members on which the side members of said frame rest and to which said frame is removably secured; driving mechanism on said truck including a revoluble shaft extending longitudinally thereof; a revoluble operating shaft for said pump on said frame; a sprocket wheel on each of said shafts; an endless chain connecting said sprocket wheels; and a motor on said truck for actuating said driving mechanism.

4. In a device of the class described, the combination of a horizontal tank; a pump connected therewith; an oil spray system positioned beneath the rear of said tank; a rectangular frame on which said tank, pump, and oil spray system are mounted; a truck provided with a chassis having side members on which the side members of said frame rest and to which said frame is removably secured; driving mechanism on said truck; a motor on said truck for actuating said driving mechanism; a revoluble operating shaft for said pump on said frame; clutch mechanism therefor; means on said truck for operating said clutch mechanism and adapted to be disconnected therefrom upon the removal of said tank from said truck; and means for rotating said shaft from said driving mechanism.

5. In a device of the class described, the combination of a tank; an outlet pipe therefrom; a valve for controlling discharge from said tank to said outlet pipe; a pump therefor; an oil spray system communicating with said outlet pipe; a reservoir secured to said tank and adapted to contain oil; means for discharging said reservoir oil into said tank outlet at a point adjacent to said tank; a valve for controlling the passage of oil from said reservoir into said tank outlet; and means for creating a pressure in said oil reservoir.

6. In a device of the class described, the combination of a tank; an outlet pipe therefrom, a valve for controlling discharge from said tank to said outlet pipe; a pump therefor; an oil spray system communicating with said outlet pipe; two reservoirs adjacent thereto adapted to contain different oils; means for creating a pressure in said reservoirs; a pipe from each reservoir; a valve in each pipe; a delivery pipe with which said reservoir pipes connect and through which the oil from either reservoir may be delivered into said tank outlet at a point adjacent to said tank; and a regulating valve in said delivery pipe.

7. In a device of the class described, the combination of a tank; an outlet therefrom; a sprinkler system connected to said outlet; a pump therein; an oil heater in one end of said tank; an oil reservoir; a supply pipe leading from said reservoir to said heater; means for controlling the supply to said heater; and a branch valved pipe from said supply pipe to said tank outlet.

8. In a device of the class described, the combination of a tank; an outlet therefrom; a pipe communicating therewith; parallel rearwardly extending pipes at opposite ends thereof; a pipe communicating with each of said parallel pipes and adapted to be swung about a vertical axis; an oil spray device and a flushing device both communicating with said swinging pipes and movable therewith; and a valve for cutting off the flow of material to either or both of said devices.

9. In a device of the class described, the combination of a tank; an outlet pipe therefrom; a pump with the inlet end of which said tank outlet pipe communicates; a pipe leading from the discharge end of said pump; a transverse pipe communicating therewith; a valve to control the flow of material to said transverse pipe; parallel pipes extending rearwardly from the ends of said transverse pipe; a controlling valve in each parallel pipe; a sprinkler head at the rear end of each parallel pipe; a valve to control the flow of material to said head; a swinging pipe communicating with each parallel pipe; an oil spray pipe at the end of each swinging pipe; a flushing head communicating with each swinging pipe; and a valve in each swinging pipe for controlling the flow of material to said head and oil spray pipe.

10. In a device of the class described, the combination of a tank; an outlet therefrom; a pipe communicating therewith; parallel

rearwardly extending pipes at opposite ends thereof; a pipe communicating with each of said parallel pipes and adapted to be swung about a vertical axis; an oil spray device communicating with the outer end of said swinging pipe; a flushing device extending laterally from said swinging pipe and communicating therewith; and a valve in said swinging pipe for cutting off the flow of material to either or both of said devices.

Signed by me at Boston, Mass., this 25th day of May, 1915.

JUSTUS R. KINNEY.

Witnesses:
ERNEST B. NEAL,
HENRY K. POTTER.