

Sept. 8, 1959

R. C. PATTON

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PORTABLE LIQUID-TRANSPORTING AND DISPENSING APPARATUS

Filed May 21, 1956

4 Sheets-Sheet 1

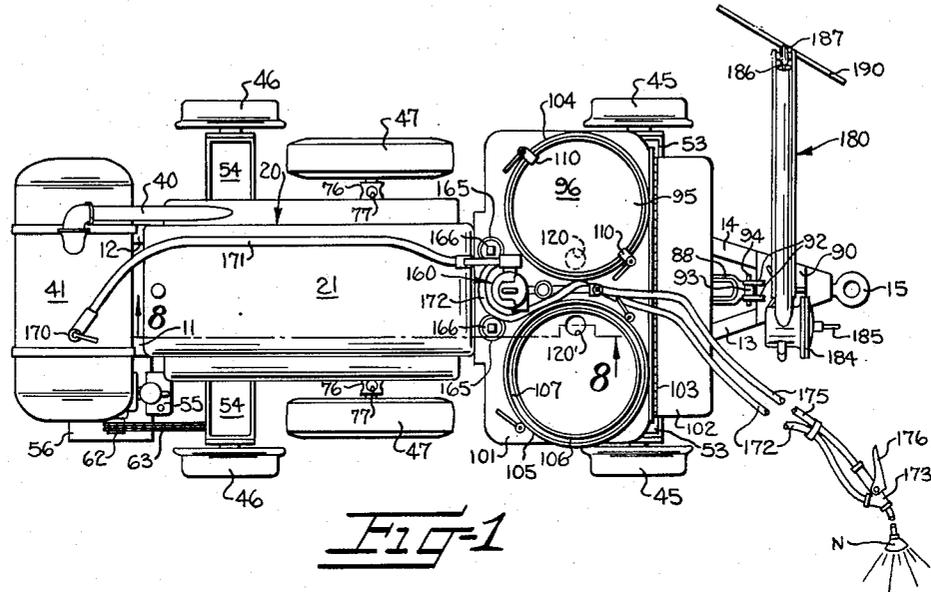


Fig-1

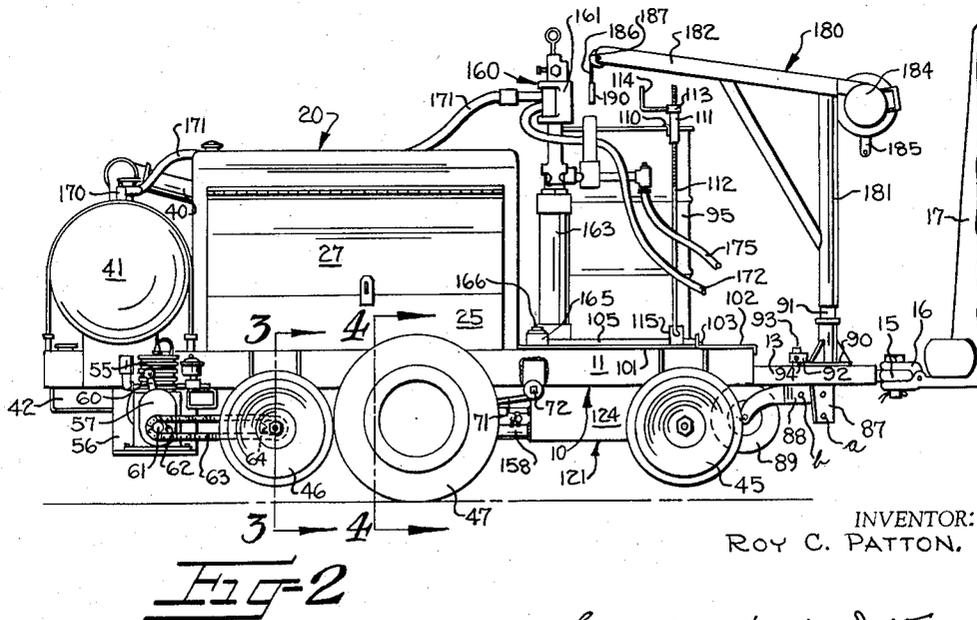


Fig-2

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4 Sheets-Sheet 2

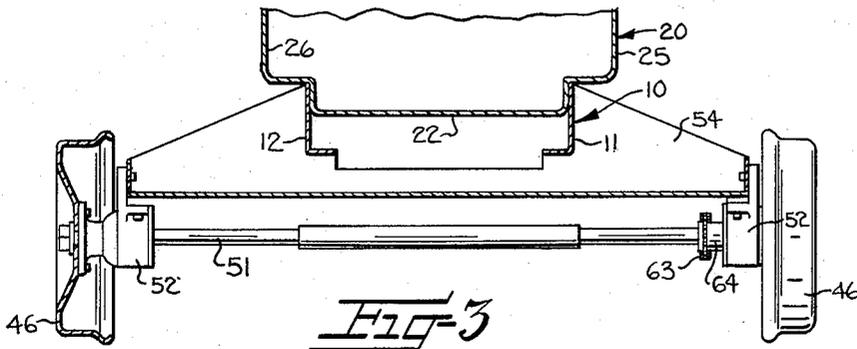


FIG-3

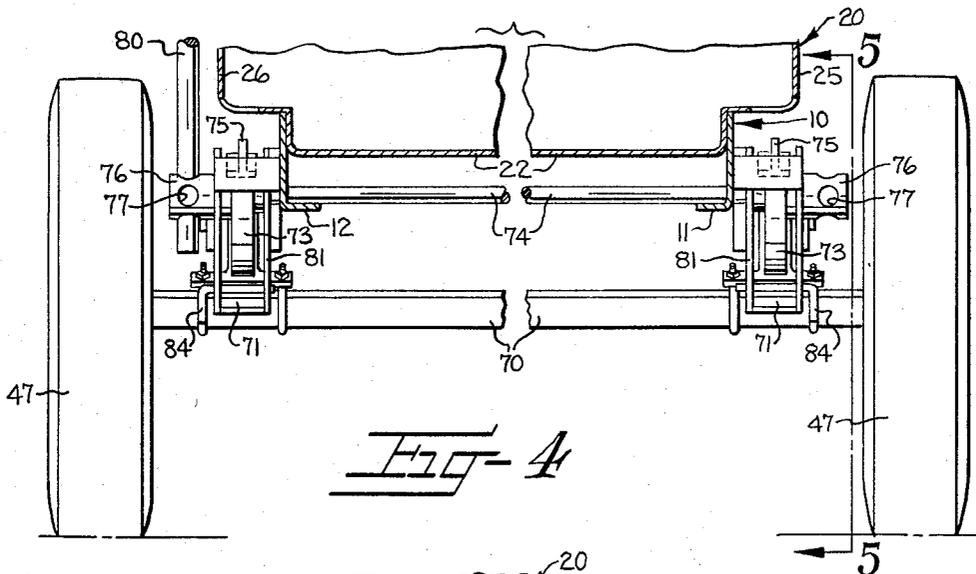


FIG-4

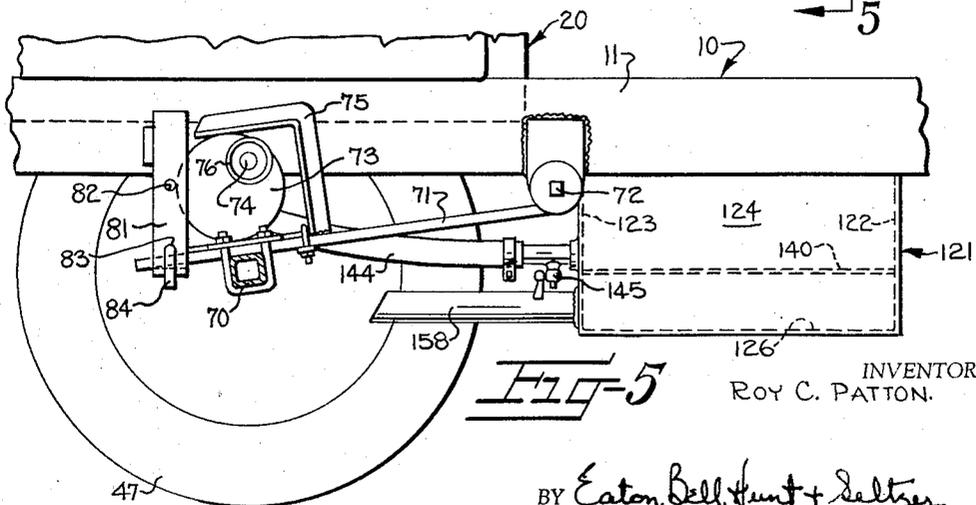


FIG-5

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4 Sheets-Sheet 3

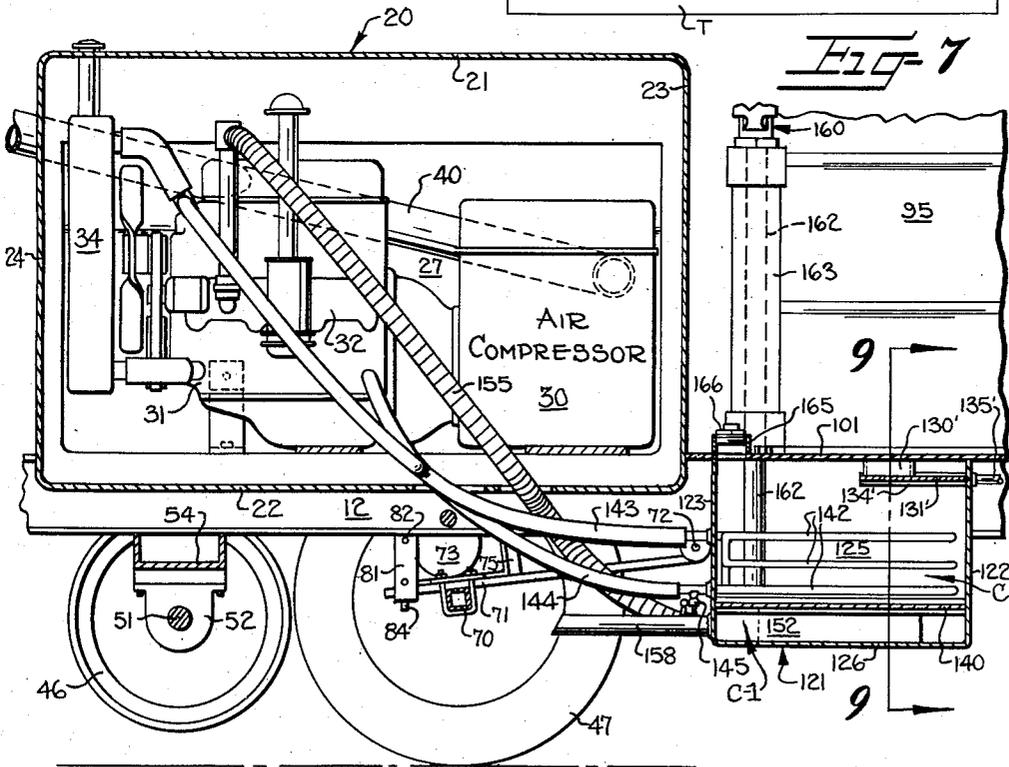
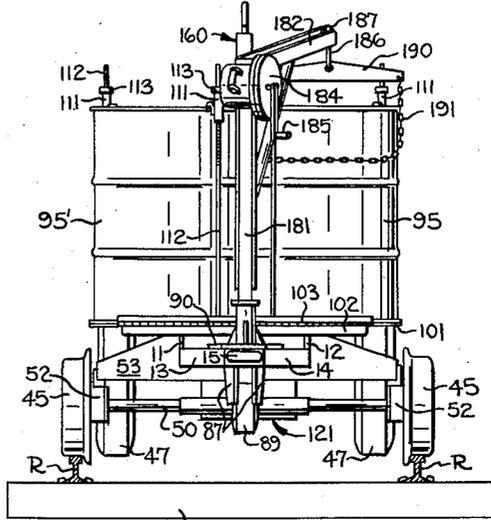
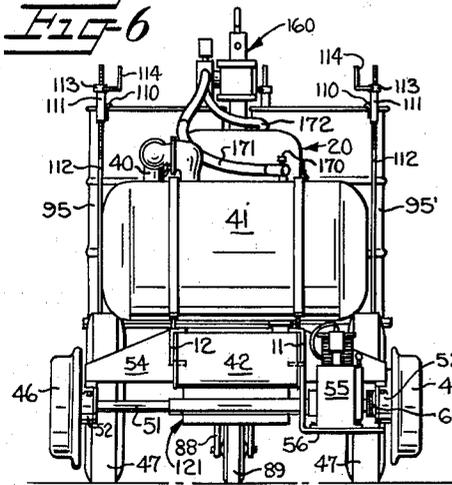


FIG-8

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4 Sheets-Sheet 4

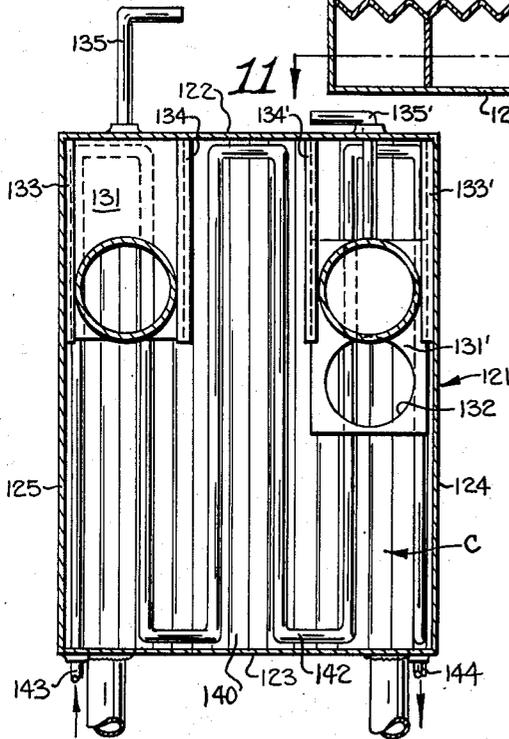
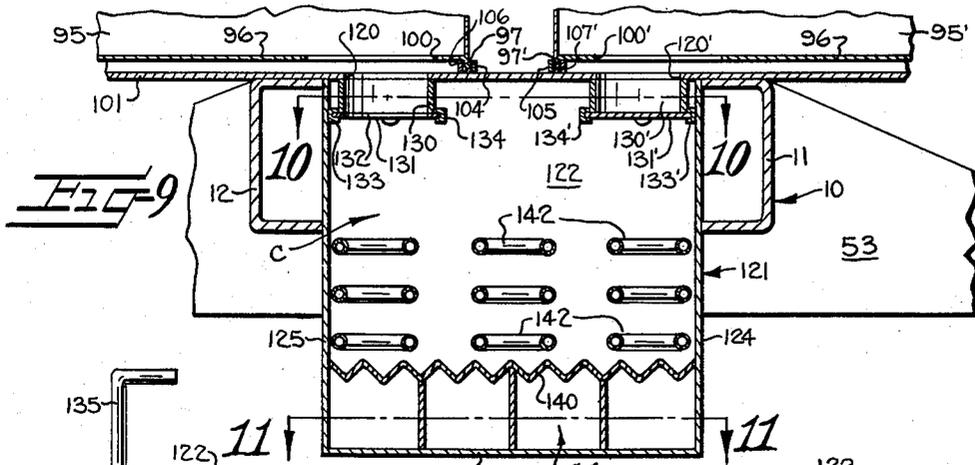


Fig-10

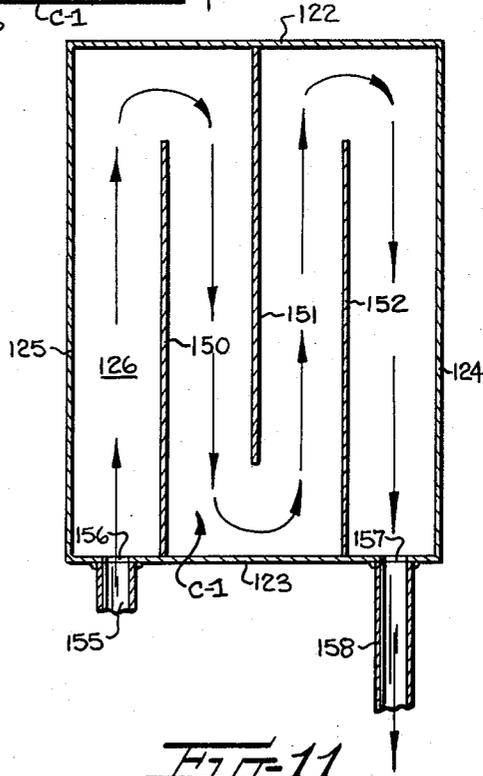


Fig-11

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2,903,189

PORTABLE LIQUID-TRANSPORTING AND DISPENSING APPARATUS

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Application May 21, 1956, Serial No. 586,227

8 Claims. (Cl. 239-129)

This invention relates to apparatus for dispensing and transporting liquids and, although not limited thereto, this invention is particularly concerned with the dispensing or spraying of highly viscous liquids, which are thick or even solid at low temperatures, such as are commonly used in spraying the ties of railway tracks and railroad bridge structures.

It is an object of this invention to provide a liquid-transporting and dispensing apparatus comprising a self-propelled vehicle having an air compressor unit thereon and a platform for supporting one or more relatively large containers, such as 55 gallon drums, of liquid to be dispensed with and enclosed liquid receiving chamber therebeneath into which the liquid flows by gravity. A compressed air driven pump is connected with the compressor unit and communicates with the liquid receiving chamber and has one or more conduits connected thereto for directing the liquid pumped from the chamber to one or more spray nozzles.

It is well known that liquids which are highly viscous under relatively low temperature conditions, such as tar oils, asphaltic oils or mastic materials are used as a preservative in the coating of railroad bridges, railway ties, timbers, etc. to protect them from varying weather conditions and, in order that the material will flow easily through hoses and nozzles from the dispensing apparatus to the point of use, it has been necessary heretofore to insert a heating device into barrels, drums or other containers of the highly viscous material to soften the material therein and thereby facilitate its withdrawal or flow to such hoses and nozzles. As each barrel, drum or other container was emptied, it was necessary to remove the heating device from the emptied container and to position the same in a filled container. This has been an arduous and excessively time-consuming task and, also quite messy since considerable amounts of the liquid being handled would get onto the clothes of the workers involved in transferring the heating device.

It is another object of this invention to provide apparatus for transporting and dispensing highly viscous liquids of the character described wherein the compressor unit is driven by a water cooled internal combustion engine and wherein the aforesaid chamber is divided or separated into upper and lower compartments, the upper compartment having a closed coil therein through which hot water from the engine is circulated and the lower compartment receiving the hot exhaust gases from the engine to heat the viscous liquid as it flows into the upper compartment and to also transmit heat into the corresponding tank or container so that the mastic material will flow into the upper compartment.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which—

Figure 1 is a top plan view of the improved liquid-transporting and dispensing apparatus, showing the boom

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for hoisting containers extending outwardly to one side of the longitudinal axis of the vehicle and showing only one liquid container mounted thereon with provision being made for two such liquid containers;

5 Figure 2 is a right-hand side elevation of the apparatus looking up at the lower side of Figure 1, but showing the boom of the hoisting mechanism extending longitudinally of the truck or vehicle;

10 Figure 3 is an enlarged fragmentary vertical sectional view taken substantially along line 3-3 in Figure 2;

Figure 4 is an enlarged fragmentary vertical sectional view taken substantially along line 4-4 in Figure 2, showing means for extending and retracting the ground wheels of the apparatus;

15 Figure 5 is a fragmentary longitudinal vertical sectional view taken substantially along line 5-5 in Figure 4;

Figure 6 is a rear end elevation of the apparatus looking at the left-hand side of Figure 2;

20 Figure 7 is a front end elevation of the apparatus looking at the right-hand side of Figure 2, but showing two liquid containing barrels or drums on the platform thereof;

Figure 8 is an enlarged vertical sectional view taken substantially along line 8-8 in Figure 1 showing the internal combustion engine and compressor in elevation;

25 Figure 9 is an enlarged fragmentary vertical sectional view taken substantially along line 9-9 in Figure 8, illustrating the liquid-receiving reservoir or chamber;

30 Figure 10 is a sectional plan view taken substantially along line 10-10 in Figure 9;

Figure 11 is a sectional plan view taken substantially along line 11-11 in Figure 9.

Referring more specifically to the drawings, the numeral 10 broadly designates the frame of a portable carriage shown in the form of a wheeled vehicle or truck. The frame 10 comprises a pair of longitudinally extending, transversely spaced chassis frame members 11, 12, which are shown in the form of channel members or channel bars in Figures 3, 4, 6 and 9. The front ends of the longitudinal chassis frame members 11, 12 have the rear ends of respective forwardly converging tongue frame members 13, 14, connected thereto or formed integral therewith and whose front ends have a fitting 15 connected thereto, which fitting is shown in the form of a loop adapted to be connected to a conventional trailer hitch 16 of a tractor or other suitable prime mover 17 (only the rear portion is shown in the drawings) for pulling the apparatus overland when it is not resting upon railway tracks.

35 The rear portion of the longitudinal frame members 11, 12 support a housing of a conventional air compressor unit broadly designated at 20, which housing includes top and bottom walls 21, 22, front and rear walls 23, 24 and opposed side walls 25, 26. Each of the side walls 25, 26 is preferably provided with an access opening which is normally closed by a hinged panel 27 as shown in Figure 2. The compressor unit comprises an air compressor of any desired construction which is indicated at 30 and which is driven by an internal combustion engine 31. The internal combustion engine 31 includes an exhaust manifold 32 and is provided with the usual water circulating and cooling systems, including a radiator 34.

40 The compressor 30 has one end of a conduit or pipe leading therefrom to a compression tank 41 suitably supported on the rear end of the longitudinal frame members 11, 12. A suitable fuel tank 42 is disposed beneath the compression tank 41 between the rear portions of the longitudinal frame members 11, 12.

45 Now, since the improved apparatus is particularly devised for servicing or coating bridge structures and railway ties, the frame 10 is provided with pairs of front and rear flanged wheels 45, 46, and the flanged wheels in

each pair are spaced sufficiently apart to ride upon conventional track rails R as shown in Figure 7.

On the other hand, when the improved apparatus is to be transferred from one set of railway tracks to another or is to be derailed for any reason, a pair of ground wheels 47 is provided, which ground wheels are preferably of the pneumatic tire type and which are spaced closer together than are the flanged wheels 45, 46. The ground wheels 47 are retractible and extensible relative to the frame 10 and the flanged wheels 45, 46 as will be later described, so the ground wheels 47 may be raised as shown in Figure 7 when the flanged wheels 45, 46 are in engagement with railway tracks or rails R, and lowered relative to the frame 10 to thereby elevate the frame 10 and wheels 45, 46 as the ground wheels 47 engage the railroad ties such as T in Figure 7 at points between the rails R so that the truck may be transported from one place to another by means of the tractor 17, for example.

The front and rear flanged wheels 45, 46 are fixed on opposite ends of respective axles or shafts 50, 51 journaled in bearing blocks 52 carried by respective transverse frame members 53, 54. It will be observed in Figures 3, 6, 7 and 8 that the transverse frame members are suitably secured to the lower portions of the longitudinal frame members 11, 12. In order to propel the vehicle or truck when the flanged wheels 45, 46 are riding upon tracks or rails R, an internal combustion engine 55 is provided which is mounted on a suitable bracket 56 carried by the rear portion of the longitudinal frame member 11 (Figures 2 and 6). The internal combustion engine 55 has a clutch mechanism 57 thereon which is controlled by hand lever 60 for driving a shaft 61 on which a sprocket wheel 62 is secured. The sprocket wheel 62 is engaged by a sprocket chain 63 which also engages a sprocket wheel 64 fixed on the shaft 51.

The retractible ground wheels 47 are journaled on opposite ends of a shaft 70 (Figures 4, 5 and 8) which is fixed to a pair of levers or pivoted arms 71 which extend forwardly and are pivotally connected, as at 72, to the corresponding frame members 11, 12. The upper surfaces of the levers or pivoted arms 71, adjacent the shaft 70, engage respective eccentrics or cam wheels 73 fixed on a transverse shaft 74 journaled in the frame members 11, 12.

Each of the levers 71 also has an inverted L-shaped member 75 fixed thereon or integral therewith which extends upwardly and then rearwardly therefrom and whose substantially horizontal leg engages the upper surface of the corresponding cam wheel 73 as best shown in Figure 5 to raise and lower the ground wheels 47, in accordance with the position of the cam wheels 73. Opposite ends of the shaft 74 each has a hub 76 (Figure 4) fixed thereon and each of the hubs 76 has one or more transverse bores 77 therethrough for receiving a suitable handle or rod 80 to facilitate manually imparting rotation to the cam shaft 74.

It is apparent that, when the high point or lobe of the cams 73 occupy the position shown in Figure 5, the frame 10 along with the flanged wheels 45, 46 are raised and occupy the elevated position. So in order to assist in maintaining the ground wheels 47 in lowered or extended position relative to the frame 10, the free end of each lever 71, rearwardly of the shaft 70, extends through a substantially U-shaped keeper bracket 81 whose vertical portions are provided with coinciding upper and lower holes or bores 82, 83. When the levers 71 are in the lowered position as shown in Figure 5, a keeper rod or pin 84 is positioned in the corresponding bores 83 in the keeper bracket 81 and each of the keeper rods or pins 84 overlie the rear end of the corresponding lever 71 to lock the same in lowered position.

On the other hand, when the cam shaft 74 is rotated so the upper surfaces of the levers 71 engage the lower surfaces of the cam 73, the free rear end of each lever 71

is then disposed above the level of the corresponding bores 82 in the vertical portions of the corresponding bracket 81 and the rod or pin 84 is then inserted in the bores 82 to lock the retractible wheels 47 in elevated position relative to the flanged wheels 45, 46.

It should be noted that the ground wheels 47 not only facilitate towing the apparatus from one place to another overland, but they also facilitate turning around the apparatus or removing the same from railway tracks as when an oncoming train is due. For example, assuming that the flanged wheels 45, 46 are engaging the rails R as shown in Figure 7, the ground wheels 47 would then occupy a retracted position. It is then merely necessary to extend the wheels 47 to elevate the flanged wheels 45, 46 relative to the rails R whereupon the ground wheels 47 then rest upon the ground upon ties T between the rails R. The entire apparatus may then be turned about a substantial vertical axis upon the wheels 47 and removed from the path of an oncoming train.

In order to maintain the longitudinal frame members 11, 12 of the frame 10 in substantially horizontal position when the frame is elevated by the ground wheels 47 and when the connector or loop 15 is not connected to a trailer hitch such as 16 in Figure 2, the medial portion of each of the forwardly converging tongue members 13, 14 has a caster supporting frame member 87 fixed thereto and depending therefrom and the upper end of a caster bracket or yoke 88 is pivotally mounted between the upper proximal portions of the frame members 87. The caster yoke or bracket 88 has a caster wheel 89 journaled in the lower portion thereof (Figures 2, 6 and 7).

A base plate 90 of a boom standard 91 is connected to the tongue members 13, 14 above the frame members 87 and has a pair of ears 92 (Figure 1) projecting rearwardly therefrom between which a bar 93, carried by the yoke 88, extends when the caster wheel 89 occupies retracted or raised position as shown in Figure 2. A movable locking pin 94 loosely penetrates the ears 92 and the bar 93 for locking the caster yoke 88 and caster wheel 89 in elevated position. When the locking pin or rod 94 is removed from the ears 92 and bar 93, the caster wheel 89 is then lowered to the position shown in Figure 6. The lower portions of the caster supporting frame members 87 have alined bores *a* therethrough with which a bore *b* in the medial portion of the yoke 88 is alined when the caster wheel 89 occupies a lowered position. The pin 94 is then inserted through the bores *a*, *b* to lock the caster wheel 89 in its lowered position.

The liquid or mastic material to be sprayed is usually stored in cylindrical tanks which will hereinafter be termed as "drums," there being two such drums shown in Figure 7 indicated at 95, 95'. Such drums usually have a fifty-five gallon capacity. Each drum 95, 95' is provided with a closure plate 96 at each end thereof which is sunken relative to the corresponding end of the drum 95 to form an annular lift, bead or rib 97 thereon and at least one of the end closure members 96 of each drum has an opening 100 (Figure 9) therein which is closed by a conventional plug, not shown, when the corresponding drum is stored to protect the contents thereof.

Now, in order to support the drums 95, 95' and to facilitate dispensing liquid therefrom, the forward portions of the longitudinal frame members 12, 13 of the frame 10 support a platform 101 which is preferably substantially greater in width than the width of the frame 10, and whose rear edge is disposed in close proximity to the front wall 23 of the compressor unit 20 and whose forward edge terminates rearwardly of the forward ends of the longitudinal chassis frame members 11, 12. The forward portions of the chassis frame members 11, 12 support a tread plate or step 102, preferably made from sheet metal, whose rear edge is hingedly connected, as at 103, to the forward edge of the platform 101. The platform 101 has a pair of laterally closely spaced annular

5 nests 104, 105 (Figure 9) thereon each of which may be channel-shaped in cross-section and formed from two rigid and closely spaced annular members to form an annular groove 106 for the reception of the annular rib 97 on one end of the corresponding drum 95, 95'.

The bottom of each of the annular grooves 106 is preferably provided with a resilient annular member 107 therein to serve as a seal when engaged by the rib 97 of the corresponding drum 95, 95'. In order to clamp the drums 95, 95' on the platform 101 or the nests 104, 105, one or more clamping members 110 are provided for each of the drums 95, 95'. In this instance, two such clamping members are shown in association with each drum 95, 95'. Each clamping member 110 is substantially hook-shaped and is adapted to hook over the uppermost of the ribs 97 of the corresponding drum and is formed integral with or attached to a sleeve 111 loosely mounted on an upright anchor rod 112 whose upper portion is threaded for reception of a nut 113 having a handle 114 connected thereto. The lower end of each rod 112 is pivotally connected to a pivot block 115 projecting upwardly from and suitably secured to or formed integral with the platform 101. Each of the anchor rods 112 is pivotally connected to its corresponding pivot block 115 in such a manner as to be swung outwardly away from the vertical plane of the corresponding nest 104, 105 for mounting a drum upon or removing a drum from the corresponding nest. It is apparent, by referring to Figure 2, that, when the drum is positioned upon either of the nests 104, 105 the clamping member 110 of the anchor rod 112 is swung inwardly so the clamping member 110 engages the upper end of the drum and the nut 113 is then manually tightened by the handle 114 against the upper end of the sleeve 111 to which the corresponding clamping member 110 is connected to tighten the clamping member against the drum.

It might be stated that the nests 104, 105 preferably extend on a slight angle relative to the horizontal axis of the apparatus such as to tend to cause the contents of the drums 95, 95' to flow inwardly toward the proximal portions of the drums 95, 95' since the openings 100 in the drums 95, 95' are disposed adjacent the proximal portions of the latter drums when they are positioned on the nests 104, 105.

The platform 101 is provided with a pair of openings 120, 120' (Figure 9) which are encircled by the respective nests 104, 105 and are disposed adjacent the proximal portions of the nests 104, 105. The openings 120, 120' substantially coincide with the openings 100 in the respective drums 95, 95' as best shown in Figure 9 so the contents of the drums 95, 95' may flow through the openings 100 and the respective openings 120, 120' and into a reservoir or liquid receiving chamber broadly designated at 121. In the event of the contents of the drums 95, 95' being a highly viscous liquid at low temperatures, the reservoir or chamber 121 serves as a heating chamber and may be alternatively termed as such.

The central portion of the platform 101 serves as the top wall of the chamber 121. The chamber 121 also includes suitably interconnected front and rear walls 122, 123, opposed side walls 124, 125 and a bottom wall 126. The upper portions of the side walls 124, 125 are suitably secured, as by welding, to the proximal portions of the longitudinally extending chassis frame members 11, 12 of the frame 10.

The flow of liquid from the drums 95, 95' into the chamber 121 may be controlled. To this end, the upper ends of relatively short tubular members 130, 130' (Figure 9) are fixed to the lower surface of the platform 101 for communication with the respective openings 120, 120'. The lower ends of the tubular members 130, 130' are engaged by respective valve or closure members 131, 131' which are shown in the form of substantially horizontally disposed plates and each of which has an opening 132 therethrough of substantially the same

shape and size as the lower ends of the tubular members 130, 130'.

The plates 131, 131' are guided by longitudinal movement in respective pairs of substantially channel-shaped guide members 133, 134 and 133' and 134'. The guide members 133, 133' are secured to the proximal surfaces of the side walls 125, 124 and the inner guide members 134, 134' are suitably secured to the front wall 122 of the chamber 121. The front ends of the closure plates 131, 131' have respective control arms or levers or bars 135, 135' attached thereto which extend forwardly and loosely penetrate the front wall 122 so as to be manipulated manually for opening or closing the lower ends of the respective tubular members 130, 130'. In Figures 9 and 10, the closure member or valve 131 is shown in open position and the closure member or valve 131' is shown in closed position.

To heat the contents of the chamber 121, both the hot water and the exhaust gases from the internal combustion engine 31 may be utilized. To this end, the lower portions of the chamber 121 is provided with a false bottom or substantially horizontal partition 140 which extends between the end walls and side walls 122—125 and is preferably corrugated as shown in Figure 9 to provide a greater heat transferring surface area thereto. Of course, this also increases the strength of the horizontal partition or false bottom 140. Thus, the partition 140 divides the chamber 121 into upper and lower compartments C and C-1, respectively.

The upper compartment C has a plurality of runs of a closed coil 142 therein, opposite ends of which are fixed to and penetrate the rear wall 123 of the chamber 121 and have respective conduits 143, 144 connected thereto whose other ends are connected to the coolant or water circulatory system of the internal combustion engine 31. In this instance, the conduit 143 is connected to the head of the engine 31 for communication with the radiator 34 and the conduit 144 is connected to the lower portion of the block of the engine 31. The lowermost portion of the closed coil 142 to which the conduit 144 is connected preferably has a suitable valve 145 interposed therein externally of or rearwardly of the rear wall 123 of the chamber 121 in order to facilitate draining the hot water or other coolant from the internal combustion engine 31 and the closed coil 142, when desired. Also, the valve 145 serves to prevent the circulation of hot water to the coils 142, when desired, as when spraying non-viscous or free flowing liquids.

It is thus seen that when spraying highly viscous liquids the water of the coolant heated by the internal combustion engine 31 is continuously circulated through the closed coil 142 in the upper compartment C of the chamber 121. While the heating coil 142 may maintain the liquid at a sufficiently high temperature so it will flow freely at low temperatures, considerable time may be required for the liquid to be heated sufficiently when it is initially introduced into the compartment C of the chamber 141. Thus, the heater of the compartment C is augmented by the exhaust gases from the internal combustion engine 31.

It will be observed in Figure 11 that the lower chamber C-1 is provided with a plurality of spaced baffles 150 therein, there being three such baffles indicated at 150, 151 and 152 shown in Figure 11. The outer baffles 150, 152 are connected to the rear wall 123 of the chamber 121 and terminate short of the front wall 122 while the baffle 151, which is spaced between the baffles 152, 150, is connected to the front wall 122 and terminates short of the rear wall 123. Of course, the baffles 150, 151, 152 may be arranged other than shown in Figure 11 to produce the desired results. As a matter of fact, the chamber C-1 may be in the form of a jacket surrounding the exposed lower portions of the front, rear and side walls 122—125 as well as the partition 140, if desired, without departing from the spirit of the invention.

One end of a conduit 155 is connected to the exhaust manifold 32 of the internal combustion engine 31 with its other end connected to an opening 156 in the rear wall 123 of the chamber 121 to communicate with the compartment C-1. The wall 123 is also provided with an opening 157 remote from the point at which the conduit 155 communicates with the lower chamber C-1 to discharge the exhaust gases to the atmosphere through an exhaust pipe 158.

A compressed air-operated pump broadly designated at 160 is provided for pumping the liquid from the upper compartment C of the chamber or reservoir 121. In this instance, the pump 160 (Figure 2) is shown in the form of a so-called drum pump and comprises an air motor 161 to which an elongated pump tube 162 (Figure 8) is communicatively connected. The air motor 161 is fixed on the upper end of a facing pipe 163 through which the tube 162 extends and said tube also loosely penetrates the platform 101 and its open lower end terminates adjacent the upper surface of the false bottom 140. Pumps of this type are well known in the art and, accordingly, a detailed illustration and description thereof is deemed unnecessary. The pump 160 may be of the type such as is manufactured by the Alemite Division of Stewart-Warner Corporation, 1826 Diversey Causeway, Chicago 14, Illinois, under their model #317940.

The particular pump shown in the drawings is relatively large and, in the event that it is desired to dispense the liquid through more than one pump, provision is made to accommodate two smaller pumps as embodied in a pair of pipe nipples 165 fixed to and projecting upwardly from the platform 101 and communicating with the interior of the upper compartment C in the chamber 121. When not in use, the nipples 165 are closed by suitable pipe caps 166.

The compressed air tank 41 has a manually operable valve 170 (Figure 1) connected thereto to which one end of a conduit 171 is connected. The other end of the conduit 171 is connected to the air motor 161 of the fluid pump 160 to drive the same any time that the valve 170 is open. An air line conduit 172 is also connected to the air motor 161 and receives compressed air from the conduit 171. The air line conduit 172 is preferably flexible and is connected to one side of a conventional spray gun 173 which is of the type which mixes the air from the conduit 172 with the free flowing liquid as it is pumped through a conduit 175 leading from the pump 160 to a nozzle N of the gun to thereby atomize the liquid as it is discharged from the nozzle of the spray gun. The usual control handle 176 is provided on the spray gun 173 for operating conventional valve means (not shown) in the spray gun 173 to control the discharge of liquid from the nozzle N of the spray gun 173 as desired.

In order to facilitate removal of empty drums from the nests 104, 105 and replacing them with filled drums, a hoist mechanism is provided which is broadly designated at 180. The fixed standard 91 is a part of the hoist mechanism and has a tubular column 181 loosely mounted for rotation thereon about a substantially vertical axis. The column 181 has a boom 182 fixed thereto and is of tubular construction with its end adjacent the column 181 having a suitable winch or reel mechanism 184 fixed thereon which is operated by a manual crank 185. A cable 186 has one end connected to the reel 184 with its other end extending through the tubular boom 182 and over a pulley 187 which is suitably journaled in the free end of the boom 182 as best shown in Figure 1.

The cable 186 extends downwardly from the pulley 187 and has a medial portion of a bar 190 (Figure 7) pivotally connected thereto to opposite ends of which a pliable element 191 shown in the form of a chain is connected. This chain 191 may be wrapped about a drum 95 and the crank 185 then manipulated to operate the winch 184 for lifting the drum 95 whereupon the boom

182 may be swung to one side for depositing the drum upon the ground or as desired.

It is apparent that the end of a drum filled with liquid having an opening 100 therein (Figure 9) would face upwardly upon the opening 100 being opened. However, since the present apparatus is especially provided for the transporting and dispensing of highly viscous liquids, although not limited thereto, the viscosity of such liquids would be such at low temperatures that it would not flow through the opening 100 while the corresponding drum is being inverted to position the corresponding opening 100 above one or the other of the openings 120, 120' in the platform 101.

The coil 142 in the compartment C of the reservoir 121 heated by the hot water from the engine 31 combined with the heat transmitted into the chamber C from the compartment C-1 by the exhaust gases from the engine will heat the liquid in at least the lower portions of the corresponding drum or drums relatively rapidly so that it will flow through the corresponding openings 120, 120' and into the compartment C. It is apparent that the heating compartment C then contains the liquid in a fluid state so that it is easily pumped from the compartment C by the pump 160 and is readily discharged through the nozzle N of the spray gun 173.

In instances in which the viscosity of the liquid may be so low that the liquid would flow out of the opening 100 during the transfer of a drum into position on the nests 104, 105, that end 96 of the drum 95, 95' having the opening 100 thereon may remain at the top so that it faces upwardly and a sharp instrument may be extended downwardly through the opening 100 and forced through the metal bottom of the container to form an opening through which the fluid may flow into the compartment C of the reservoir 121. This would avoid any spilling of the liquid from the drums.

It is thus seen that I have provided a novel apparatus for transporting and dispensing liquids, even if they be of high viscosity and wherein the apparatus can be transported from one location to another on the ground wheels 47 and the ground wheels 47 may then be retracted to lower the flanged wheel 45, 46 into engagement with rails of a railway track and wherein means are provided to lift and deposit filled drums of fluid on the platform of the apparatus with means to heat the liquid in at least the lower portions of the drums and to contain some of the liquid and maintain it sufficiently heated so that it will flow freely as it is pumped by the pump 160 so as to be readily discharged from the nozzle N of one or more spray guns 173.

It is particularly important to note that unlike apparatuses heretofore, it is unnecessary to remove the heating coils 142 from the liquid being heated at any time and, of course, it is unnecessary to handle the heating coils in order to heat the contents of a drum or both of the drums 95, 95' either before or after they have been placed in operative position on the nests 104, 105 on the platform 101.

In the drawings and specification there has been set forth a preferred embodiment of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. In a liquid spraying apparatus, a wheeled truck, a container of liquid carried by the truck, a relatively small reservoir positioned immediately beneath said container, said reservoir having an upper compartment and a lower compartment, the upper compartment of said reservoir having a restricted opening therein communicating with the container, heating coils positioned within said upper compartment, an internal combustion engine mounted on said truck and having a cooling system communicatively connected with said heating coils for heating the in-

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terior of said upper compartment, said engine having an exhaust pipe, said lower compartment being communicatively connected with said exhaust pipe, whereby fluid flowing through the coils in the upper compartment and the exhaust gases flowing through the lower compartment will heat the liquid received from the container to a highly fluent state, a pump for said liquid mounted on the truck and having a portion extending into said upper compartment and at least one spray gun connected to said pump to discharge the liquid forced by the pump from the upper compartment.

2. In a spraying apparatus according to claim 1 wherein said wheeled truck is provided with pairs of flanged wheels for engaging railroad tracks, and a pair of ground wheels positioned between the pairs of flanged wheels.

3. In a spraying apparatus according to claim 2 including power means connected to one pair of said flanged wheels for propelling the truck.

4. In a spraying apparatus according to claim 2 wherein means are provided for elevating and lowering the ground wheels out of and into engagement with the surface of the earth between the railroad tracks whereby the truck may readily be removed from the tracks and be transported.

5. In a spraying apparatus according to claim 1 wherein a relatively thin sheet material is provided for separating said reservoir into upper and lower compartments and

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said sheet material is corrugated to provide a larger heat transferring surface.

6. In a spraying apparatus according to claim 1 wherein valve means are provided for said restricted opening in the upper compartment of said reservoir.

7. In a spraying apparatus according to claim 1 wherein said container of liquid is a replaceable drum and a platform is provided for supporting said drum.

8. In a spraying apparatus according to claim 7 wherein means are provided on said platform for matingly receiving said drum and clamping means are provided for tightly securing the drum in an immovable position.

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