July 15, 1947. H. E. WOOLERY 2,424,202

RAILWAY TIE TREATING APPARATUS

Filed April 28, 1944 3 Sheets-Sheet 1

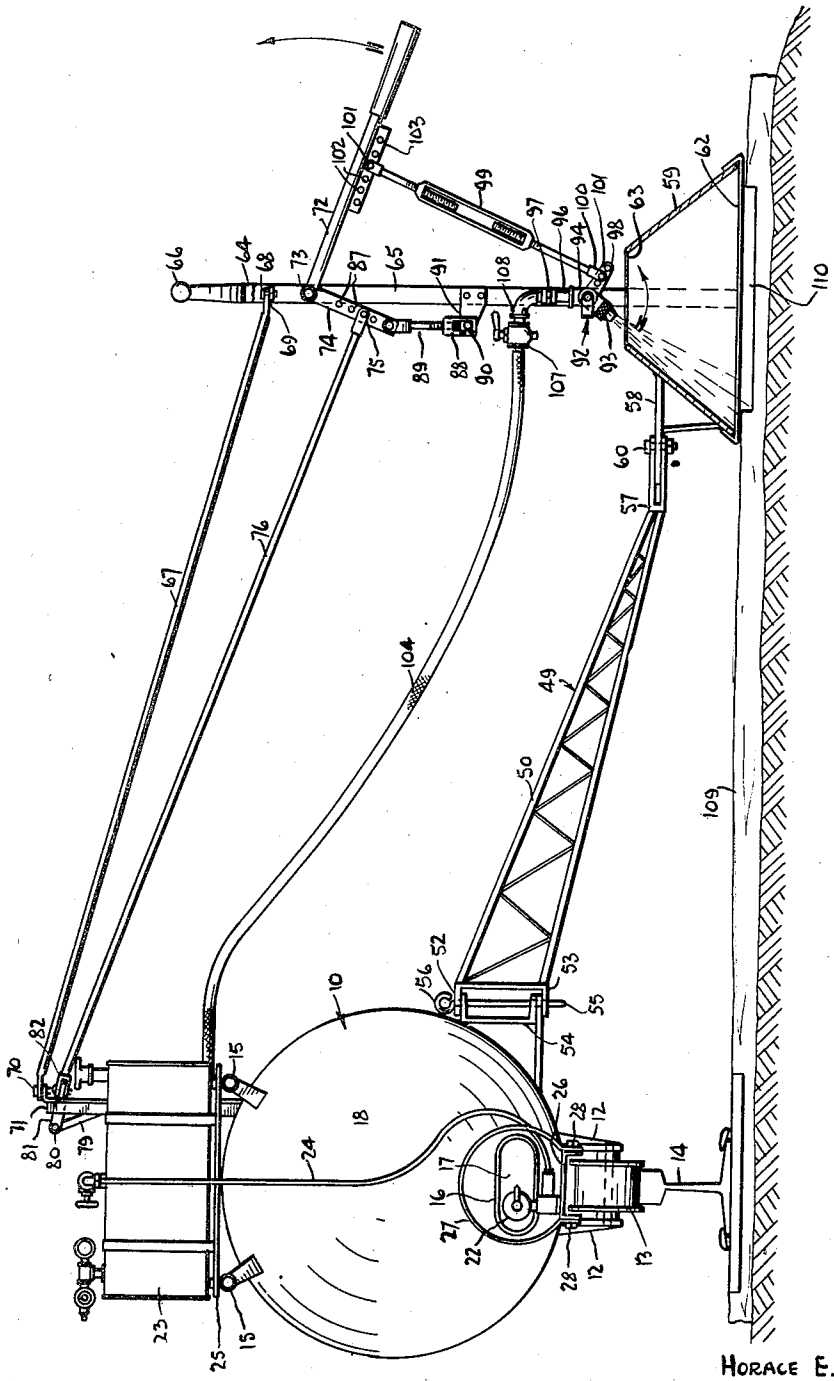


Fig. 1.

Inventor

HORACE E. WOOLERY

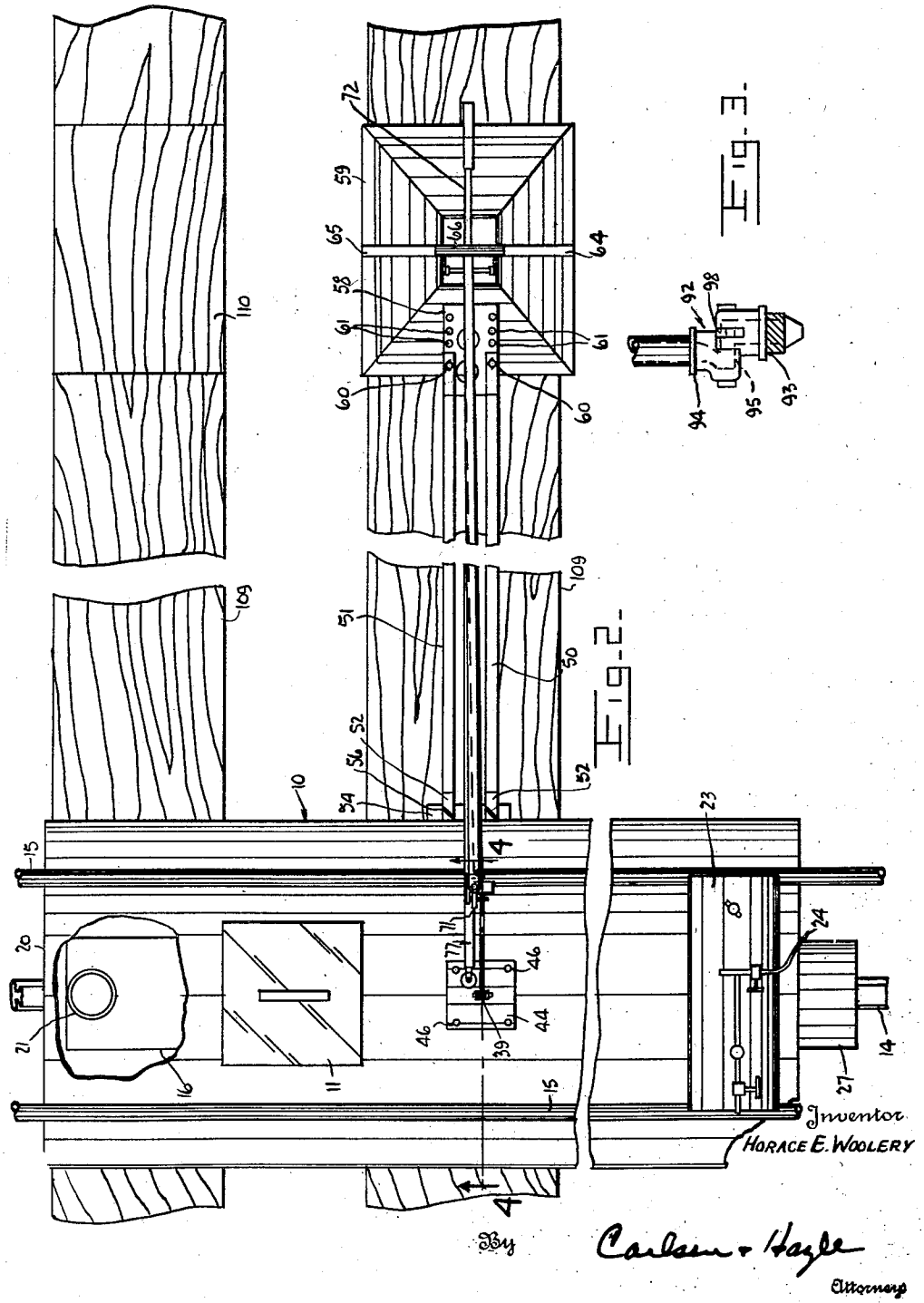
By Carlson & Hayes

Attorneys

July 15, 1947. H. E. WOOLERY 2,424,202

RAILWAY TIE TREATING APPARATUS

Filed April 28, 1944 3 Sheets-Sheet 2

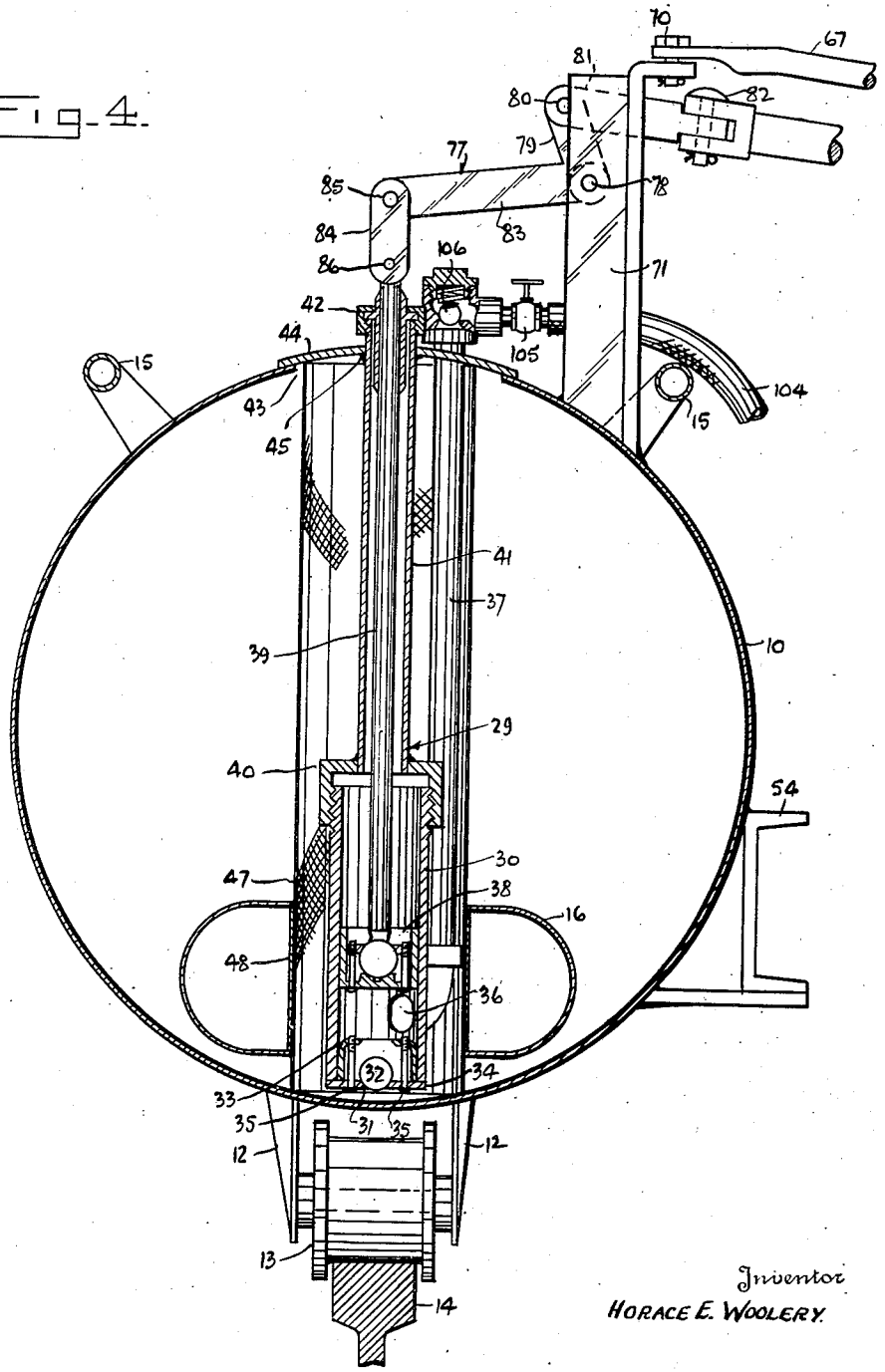


July 15, 1947. H. E. WOOLERY 2,424,202

RAILWAY TIE TREATING APPARATUS

Filed April 28, 1944 3 Sheets-Sheet 3

Fig. 4.



Inventor
HORACE E. WOOLERY

By Carlson & Hayle

Attorneys

Patented July 15, 1947

2,424,202

UNITED STATES PATENT OFFICE

2,424,202

RAILWAY TIE TREATING APPARATUS

Horace E. Woolery, St. Paul, Minn.; Myra Lillian Woolery, executrix of said Horace E. Woolery, deceased, assignor to Woolery Machine Company, Minneapolis, Minn., a corporation of Minnesota

Application April 28, 1944, Serial No. 533,118

12 Claims. (Cl. 91—44)

1

This invention relates to improvements in railway tie treating or creosoting apparatus.

In the relaying of railway track rails it is customary to adze the upper surfaces of the ties to receive the tie plates upon which the rails are then laid. In this operation the rail at one side is removed, the ties adzed and plates laid, and the rail replaced, following which the rail at the other side is removed and replaced in the same manner. The freshly adzed ties must be treated with creosote, or other preservative, before the plates are laid and heretofore this has been a time consuming task as well as one which is wasteful of creosote and likely to cause damage to the worker's clothes or injury to his skin. This is for the reason that the creosote has been applied by a swab or broom from a pail so that the material is unevenly distributed over the ties and comes in contact with the worker's clothes and skin.

In accordance with my invention I provide an apparatus by which a predetermined quantity of creosote or similar material may be applied evenly over the newly adzed surfaces of the ties, without waste and without possibility of coming into injurious contact with the operator. Another object is to provide an apparatus for this purpose which is simple, compact and readily operated and wherein both the quantity of creosote and the area over which it is spread may be readily adjusted to meet various conditions. Still another object is to provide in such an apparatus a heating means to heat the creosote and facilitate its flow, particularly during cold weather, and a pump located so that it will properly handle the material and take it from the tank at the point whereat fullest advantage is received from the heat applied to the material.

These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being had to the accompanying drawings, in which—

Fig. 1 is an end view of my improved apparatus illustrating the same in use and in position for creosoting a freshly adzed tie.

Fig. 2 is an enlarged plan view, partially broken away of the apparatus as seen in Fig. 1.

Fig. 3 is an enlarged side elevation of the swinging spray nozzle alone.

Fig. 4 is an enlarged vertical cross sectional view taken along the line 4—4 in Fig. 2.

Referring now more particularly and by reference characters to the drawing, 10 indicates a cylindrical tank which constitutes the main body of the apparatus and serves to contain and carry

2

the creosote or other treating and preserving material, with which the tank is filled through an opening covered by the cap 11.

Adjacent its end the tank 10 is provided with pairs of transversely spaced, depending brackets 12 between which are journaled small flanged wheels 13 adapted to travel one of the rails 14 of the track. Longitudinally extending hand rails or bars 15 are provided along the upper side of the tank 10 and by grasping these, at either end, a workman may push the tank along the rail 14 as required.

Arranged lengthwise in the lower part of the tank is a heating duct or pipe 16 which opens at one end 17 through one end 18 of the tank. The other end 19 of the duct 16 is closed and terminates short of the opposite end 20 of the tank. To provide a draft through the duct this closed end 19 thereof is provided with an upright stack or pipe 21 which communicates with the interior of the duct and opens upwardly through the top of the tank. A heater or burner 22 is positioned within the open end of the duct 16 and is here shown as a generator type of burner to which fuel is supplied from a tank 23 through a fuel line 24. The tank 23 is mounted near one end of the tank 10 upon a plate 25 secured to the hand rails 15. The burner 22 is supported upon a base bracket 26 secured between the adjacent wheel brackets 12, and circular shield or cover 27 is removably secured by screws 28 over the base bracket to protect the exposed end of the burner.

A pump, designated generally at 29, is positioned centrally and vertically in the tank 10 and comprises a cylinder 30 having an inlet 31 in its lower end with which cooperates a check valve ball 32. A cage 33 limits upward movement of the ball 33 upwardly from the inlet 31, said cage being secured to the end 30 of the cylinder by screws 35. Above this inlet valve structure the cylinder 30 has a discharge opening 36 in one side and communicating therewith is a pipe 37 which leads upwardly from the cylinder and emerges at its upper end above the tank 10. The pump further includes a piston 38 to which is attached a plunger or rod 39 extending upwardly from and through the top of the tank.

The upper end of the pump cylinder 30 has a cap 40 to which is secured an upright tubular guide 41 loosely receiving the plunger 39 and at its upper end this guide 41 is provided with a gland member 42 through which the plunger passes. A large opening 43 in the top of the tank 10 clears the pump and pipe 37 and a cover

44 is removably mounted on this opening. The pump being secured to this cover 44, as designated by the welded connection 45 between the guide 41 and cover, may be removed as a unit when the fasteners 46 (Fig. 2) for the cover are removed.

A tubular screen 47 encloses the pump 29 and hangs from the cover plate 44 down to the bottom of the tank. The screen and pump both depend clear through the duct 16 which is apertured on upper and lower sides for this purpose and provided with a sleeve 48 welded in place, to pass the screen and keep the creosote from entering the duct.

A frame or boom structure 49 extends laterally from one side of the tank 10 and comprises two similar trussed side members 50 and 51 provided adjacent the tank with clips having upper and lower apertured ears 52 and 53 overlying the outwardly turned and complementarily apertured flanges of a section of a structural beam 54 welded, or otherwise suitably secured to the tank side. Pins 55, having eyes 56 at their upper ends, are passed through the apertured ears and flanges to releasably anchor the side members 50 and 51 to the tank while permitting horizontal swinging movements of the members relative to the tank.

The outer ends of the side members 50 and 51 are bifurcated at 57 to engage a horizontal mounting plate 58 secured to and extending from a spray hood 59. These bifurcated ends 57 are pivoted to the plate 58 by removable bolts 60 and, as will be clearly evident in Fig. 2, the parallel motion of the side members 50 and 51 will permit the hood 59 to be swung in a horizontal plane substantially paralleling the tank and without twisting or turning the hood from its position with respect to the tank. The plate 58 has a series of openings 61 (Fig. 2) to receive the bolts 60 and to permit the hood to be adjusted toward and away from the tank, or to adjust the distance from the rail 14, traveled by the tank, to the hood.

The hood is generally rectangular in shape having a large open bottom 62 and upwardly converging sides and ends terminating in a smaller top opening 63. Extending upwardly from opposite sides of the upper opening or mouth 63 are uprights or standards 64 and 65 which are joined at upper ends by a handle 66, these standards being spaced apart in the direction of travel of the apparatus. A brace rod 67 is pivoted at 68 at its outer end to a cross bar 69 between upper end portions of the standards 64 and 65 and extends inwardly or toward the tank, the inner end being pivoted at 70 to an upper end of a post or upright angle 71 welded atop the tank 10 near its center. Thus the standards are held against vertical tilting movements while the horizontal swinging movement of the hood is in no way interfered with.

The pump 29 is operated by means of a hand lever 72 which is pivoted at 73 between the standards 64 and 65 and swings up and down outwardly thereof. A crank finger 74 forms a part of the hand lever 72 and pivoted thereto by a bolt 75 is the outer end of a link rod 76 which extends toward and over the tank 10. A bell crank 77 is fulcrumed at 78 upon one side of the post 71 and has an upwardly extending arm 79 to the upper end of which is pivoted at 80 one end of a short link 81. The other end of this link 81 is then pivotally attached at 82 to the link rod 76 and the two pivots 80 and 82 are disposed with their axes at right angles to permit complete freedom of movement of the link rod 76 both as a result of operation of the hand lever 72, and during the swinging movements or adjustments of the hood 59. The remaining arm 83 of the bell crank 77 extends over the exposed end of the pump plunger 39 and a link 84 is pivotally connected at 85 and 86 to these parts. The crank finger 74 has a series of openings 87 to receive the bolt 75 to adjust the pump stroke in a readily apparent manner.

The range of upward and downward swinging movements of the hand lever 72 is limited by means of a yoke 88 (Fig. 1) which is connected by a bifurcated link 89 to the lower end of the crank finger 74. The yoke 88 loosely encircles a cross pin 90 supported by brackets 91 between the standards 64 and 65 and limits the swinging movements of the crank finger 74.

A swinging spray nozzle 92 is provided and comprises a nozzle section 93 (Figs. 1 and 3) which pivots on a coupling section 94 with a passageway 95 connecting the interiors of these parts in a conventional manner. The nozzle is supported immediately over the upper opening 63 of the spray hood 59 by connection of the coupling section 94 to a nipple 96 secured to and through a cross bar 97 extending between the standards 64 and 65. The nozzle section 93 is thus supported for swinging movements in a vertical plane, parallel with that through which hand lever 72 swings, and said nozzle section is provided with an ear 98 to which the lower end of a turnbuckle connecting or operating link 99 is pivotally connected at 100. The other end of the link 99 is pivoted at 101 to the hand lever 72. At both ends the link 99 is adjustable by series of openings 101 and 102 in the ear 98 and a bar 103 in the lever 72 and such adjustments, plus the length adjustment of the link 99 provided by its turnbuckle formation permits a wide range of adjustment of the arc through which the nozzle is swung by operation of the hand lever as will be readily apparent.

Liquid from the tank 10 is supplied to the spray nozzle 92 by a flexible hose 104 which at one end is connected through a hand valve 105 to a check valve 106 connected to the upper end of the pump discharge pipe 37. The check valve 106 permits flow of the liquid into the hose but prevents back flow into the pump. At its other end the hose is connected through a drain cock 107 and an elbow 108 to the nipple 96 supporting the nozzle.

Operation

In operation the apparatus is moved along one rail 14 of the track so that the hood 59 travels in succession across the ties 109 and at a distance from the rail 14 corresponding to the position at which the other rail (not here shown) is located. Thus the hood may be positioned over the freshly adzed surfaces 110 of the ties 109 and the hood is of such shape and size as to nicely cover and enclose these surfaces 110. One man ordinarily pushes the tank 10 along the rail at a steady pace, and another man grasps the handle 66 to position the hood, the parallel motion of the frame 49 permitting the hood to be brought to rest for a moment over each tie and permitting minor adjustment of the hood exactly on each tie without swinging the hood out of parallel therewith. The hand lever 72 is urged downwardly as the hood settles on the tie and this motion, rocking the bell crank 77, urges the

pump piston 38 downwardly to deliver a charge of creosote from the pump through the pipe 37 and hose 104 to the spray nozzle 92. The nozzle sprays the creosote, or other liquid heavily down through the hood 59 and the swinging movement of the nozzle, by downward movement of the hand lever, delivers the spray evenly across the full area of the adzed surface 110 of the tie. The hand lever 72 is then raised, in the normal action of lifting the hood 59 for travel to the next tie and this operation, by swinging bell crank 77, pulls the pump piston 38 upwardly and draws another charge of the liquid into the pump cylinder 30. As the hood then reaches the next tie, this charge of liquid is delivered thereto by the down movement of the hand lever as just described. It will be evident, therefore, that the ties may be treated rapidly and effectively, and that the material is evenly distributed without waste or possibility of contact with the workmen.

The treating material is, furthermore, delivered in an exactly metered charge each time, and the volume of each charge may be readily varied to suit conditions by changing the connection 75 to the crank finger 74 which has the effect of varying the length of stroke of the pump piston 38. Likewise the length of the arc traveled by the spray nozzle may be varied as heretofore described, to control the area over which the material is applied.

The heating of the material by the burner 22 facilitates its proper flow and in this connection it will be noted that the pump inlet 31 is located immediately adjacent the heat circulating duct 16 so that the pump takes the material from a location where the material has thoroughly heated. In cold weather the hose 104 may be drained by opening the drain cock 107 and by loosening the check valve 106 to permit air to enter the hose at that point. Then to prevent the hose from being accidentally pumped full again the valve 105 may be closed until the apparatus is used again.

The pump 29 being submerged in the liquid in the tank not only receives the liquid at its warmest but is always primed and is itself warmed so that it operates freely in the coldest weather.

It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the spirit and scope of the appended claims.

Having now therefore fully illustrated and described my invention, what I claim to be new and desire to protect by Letters Patent is:

1. Apparatus of the character described for treating railroad track ties with a liquid, comprising a tank for the liquid, wheels supporting the tank for travel movements along one rail of the track, heating means associated with the tank for heating the liquid, spray means supported in laterally spaced relation to the tank for movement over and across the ties as the tank travels along the rail, and means for supplying said spray means with liquid from the tank, said supplying means including a pump located within the tank, a hand lever for actuating the pump, and a connection between said hand lever and the spray means operative to move the spray means and direct the spray therefrom over a limited area of each tie.

2. An apparatus for applying creosote to railway track ties, comprising a tank for the creosote, means supporting the tank for travel along one rail of the track, a spray hood, means supporting the hood in laterally spaced relation to the tank for movement over the ties as the tank travels along the rail, a swinging spray nozzle adapted to spray the creosote over the ties one at a time over an area defined and confined by said hood, a hand lever connected to the nozzle and adapted when raised and lowered to swing the nozzle and direct the spray therefrom across the full width of the hood, a pump in the tank for supplying creosote to the nozzle, and connecting means between the said hand lever and pump for drawing in a metered charge of creosote into the pump as the hand lever is raised and delivering the charge as the hand lever is swung downwardly.

3. An apparatus for applying creosote to railway track ties, comprising a tank for the creosote, means supporting the tank for travel along one rail of the track, a spray hood, means supporting the hood in laterally spaced relation to the tank for movement over the ties as the tank travels along the rail, a swinging spray nozzle adapted to spray the creosote over the ties one at a time over an area defined and confined by said hood, a hand lever connected to the nozzle and adapted when raised and lowered to swing the nozzle and direct the spray therefrom across the full width of the hood, a pump in the tank for supplying creosote to the nozzle, connecting means between the said hand lever and pump for drawing in a metered charge of creosote into the pump as the hand lever is raised and delivering the charge as the hand lever is swung downwardly, and means for varying the arc through which the nozzle is swung by upward and downward movements of said hand lever.

4. Apparatus for spraying newly adzed railway track ties with creosote, comprising in combination, a tank for the creosote, means supporting the tank for travel along one rail, a frame extending laterally from the tank, a spray hood supported by the frame, the said hood having an open bottom and for travel above the ties and adapted to be lowered over the newly adzed portions thereof, spray means for spraying the creosote over said portions of the ties through the open bottom of the hood, a pump for supplying creosote from the tank to said spray means, means for operating the pump, and the said frame comprising parallel members pivotally connected to the tank and hood and supporting the latter for horizontal swinging movements with respect to the tank and in a plane substantially parallel thereto.

5. An apparatus of the character described for applying a treating liquid to railway track ties, comprising in combination, a tank for carrying the creosote, wheels supporting the tank for travel movement on the track, spray means for delivering the creosote to the ties, a pump connected to the spray means for supplying creosote thereto, a heating duct disposed within the tank above the bottom thereof and opening at one end through one end of the tank, a heater positioned in said duct, and a stack extending from the other end of the duct and opening through an upper part of the tank.

6. Apparatus for spraying creosote on railway track ties, comprising in combination, a tank for the creosote, means supporting the tank for movement along the track, a hollow heating duct disposed lengthwise near the bottom of the tank and extending at one end therefrom, a stack opening from the duct through an upper part of the tank, a burner arranged in the duct for heating the

creosote surrounding the duct, a pump having a lower portion disposed in the duct and having an inlet adjacent the duct to receive the heated creosote, and spray means for receiving creosote from the pump and delivering it to the ties.

7. An apparatus for spraying railroad track ties with a treating liquid, comprising in combination, a tank for the liquid, wheels supporting the tank for travel along the track, spray means supported in laterally extending relation from the tank to travel over the ties as the tank moves along the track, a pump in the tank operative to supply liquid therefrom to the spray means, a hood positioned below the spray means and adapted to define an area of each tie to be sprayed, said spray means including a nozzle swingably supported with respect to the hood to direct a spray over the area defined by the hood, and a handle opratively connected to the nozzle for swinging the same.

8. An apparatus for treating railway ties with a treating liquid, comprising a wheel supported tank for containing the liquid and said tank being adapted to travel along the railway, spray means for spraying the ties, a pump in the tank operative to supply liquid to the spray means, a hood arranged below the spray means and adapted to confine the spray therefrom to a certain area of the tie, and supporting means for the spray means comprising parallel members pivotally connected between the tank and spray means and operative to permit swinging movements of the spray means in the direction of travel of the apparatus while maintaining the hood in proper angular relationship to the ties.

9. An apparatus for spraying railway ties with a treating liquid, comprising a wheel borne tank for the liquid and adapted to travel along the railway, a spray means supported alongside the tank and adapted to be moved over the ties, a pumping means for supplying liquid from the tank to the spray means, means for heating the liquid in the tank, the said spray means including a movably supported spray nozzle, a hand lever operatively arranged both to move the nozzle and actuate the pump to supply liquid to the nozzle, and a hood supported below the nozzle for receiving the spray therefrom and adapted to be lowered onto the tie to confine the spray to a predetermined area thereof and to act as a support while moving the hand lever to move the spray and actuate the pump.

10. An apparatus for applying creosote to railway track ties, comprising a tank for the creosote, means supporting the tank for travel along

one rail of the track, a spray hood, means supporting the hood in laterally spaced relation to the tank for movement over the ties as the tank travels along the rail, a swinging spray nozzle adapted to spray the creosote over the ties one at a time over an area defined and confined by said hood, a hand lever connected to the nozzle and adapted to swing the nozzle and direct the spray over the tie area covered by the hood, a pump for supplying creosote to the spray nozzle, means connecting the pump and hand lever for operating the pump by said hand lever, and heating means in the tank for heating the cresote supplied to the pump.

11. An apparatus of the character described, comprising a wheel borne tank for containing a treating liquid, a spray means, a heating duct positioned in the tank, means for heating the interior of the duct and for thereby heating the liquid about the duct, and a pump for supplying liquid from the tank to the spray means, the said pump being located in the tank and extending in and through the heating duct.

12. An apparatus of the character described, comprising a wheel borne tank for containing a treating liquid, a spray means, a heating duct positioned in the tank, means for heating the interior of the duct and for thereby heating the liquid about the duct, and a pump for supplying liquid from the tank to the spray means, the said pump being located in the tank and extending in and through the heating duct, and the pump having an inlet located immediately adjacent the duct.

HORACE E. WOOLERY.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
866,201	Holley	Sept. 17, 1907
2,026,678	Hefner	Jan. 7, 1936
1,059,647	Tarrant	Apr. 22, 1913
2,315,162	Rasmussen	Mar. 30, 1943
2,076,172	Bowden	Apr. 6, 1937
1,720,273	Henry	July 9, 1929
2,317,288	McCubbin	Apr. 20, 1943
481,718	Salisbury	Aug. 30, 1892
1,001,014	French	Aug. 22, 1911
1,957,144	Littleford	May 1, 1934
1,636,161	Woolery	July 19, 1927
2,351,719	Stahl	June 20, 1944
2,367,594	Madison	June 16, 1945