(No Model.) 3 Sheets—Sheet 1.

J. H. NICHOL.

OIL DISTRIBUTING APPARATUS.

No. 604,479 Patented May 24, 1898.

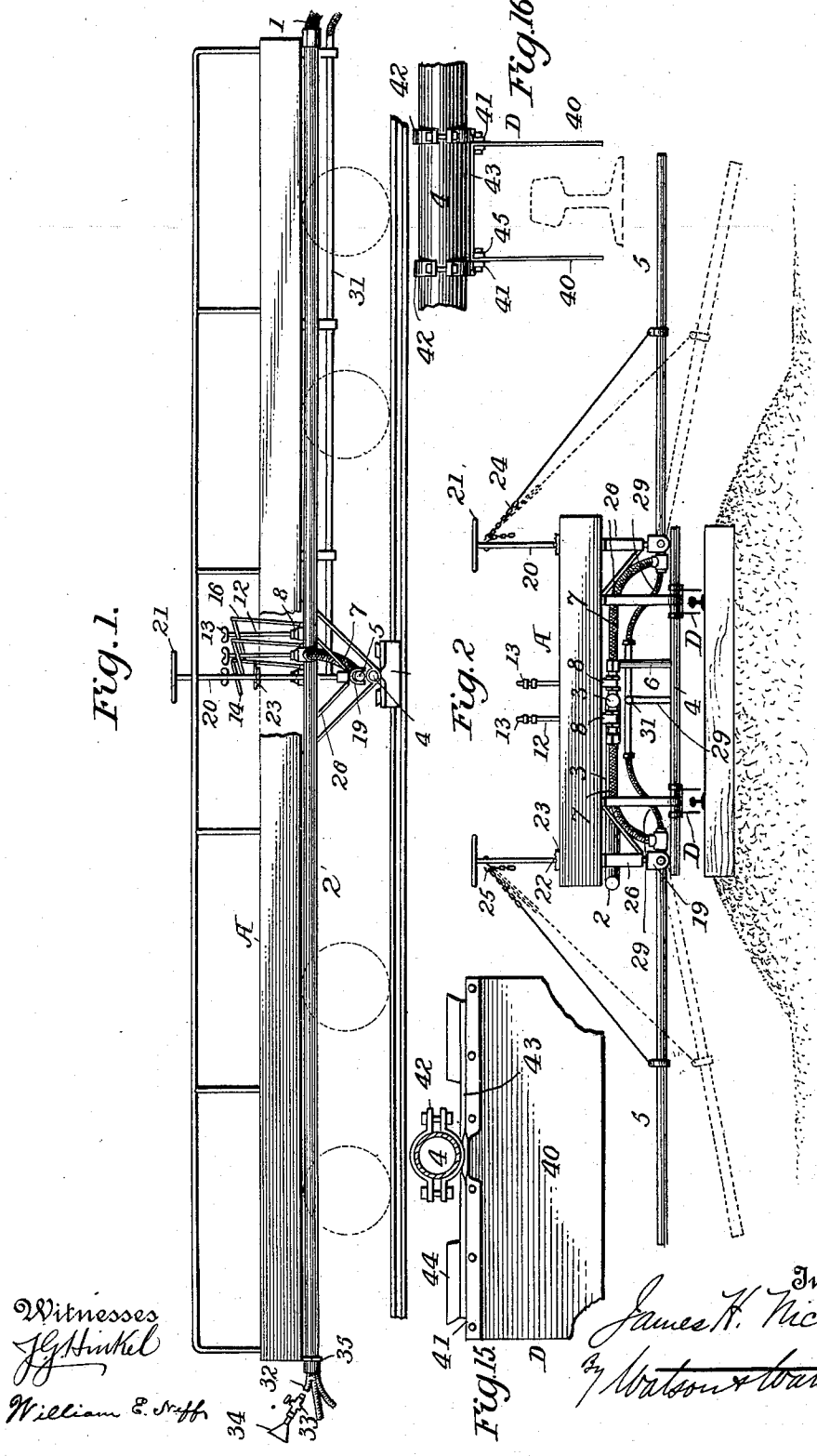


Fig. 1.

Fig. 2.

Fig. 15.

Fig. 16.

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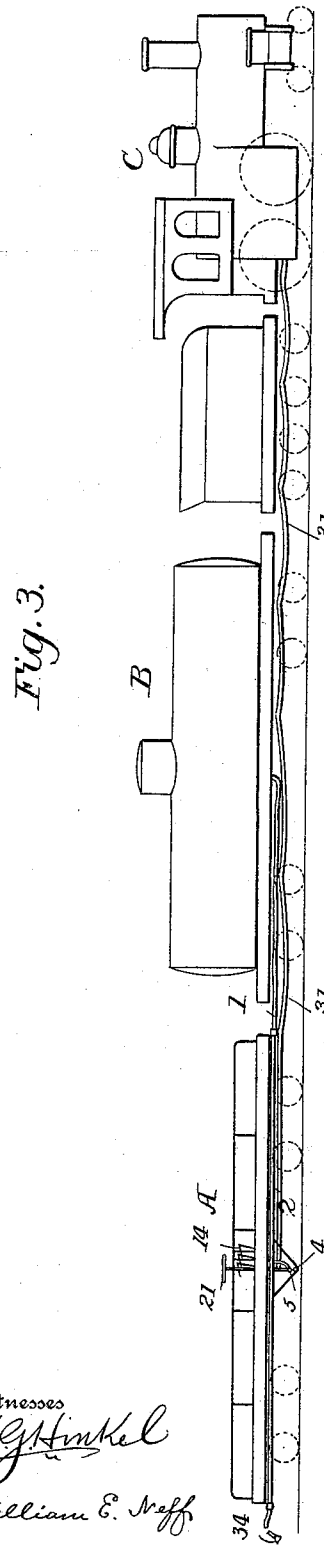


Fig. 3.

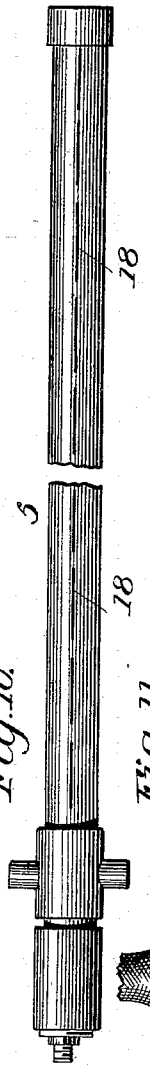


Fig. 10.

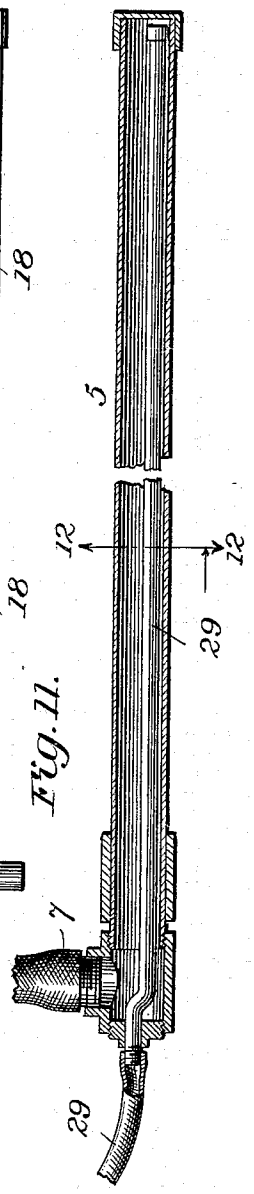


Fig. 11.

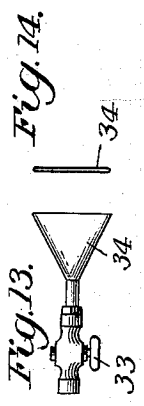


Fig. 14.

Fig. 13.

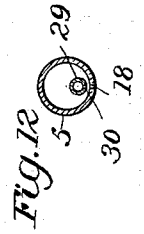


Fig. 12.

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Fig. 4.

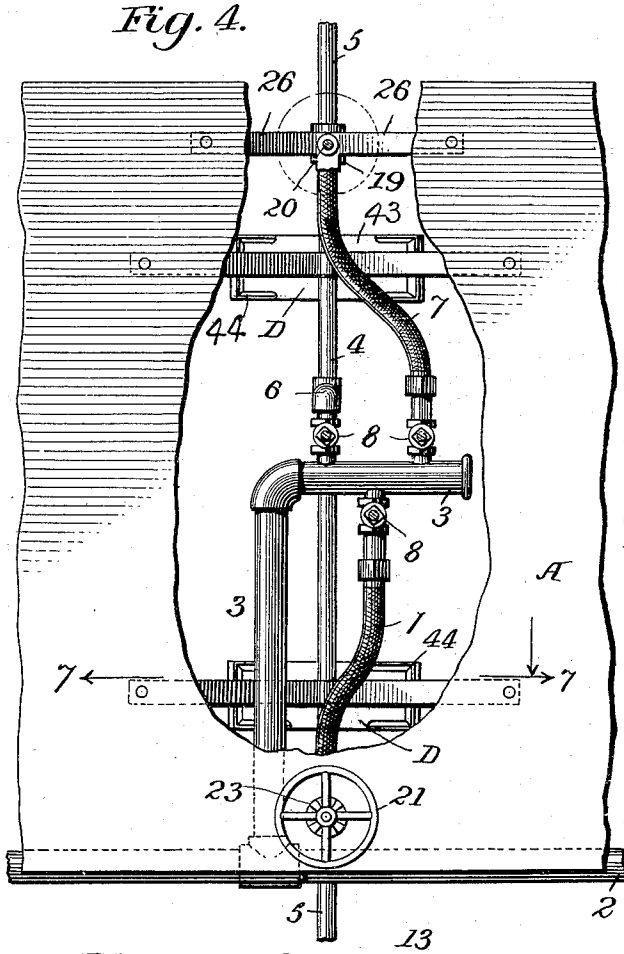


Fig. 7.

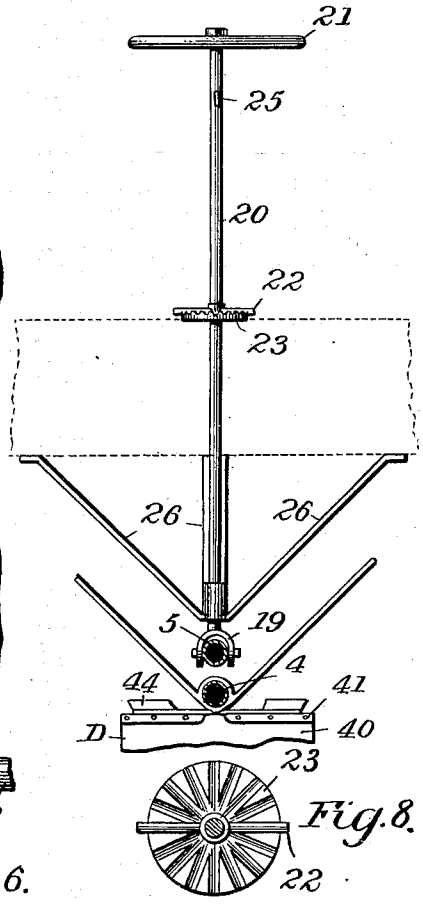


Fig. 8.

Fig. 5

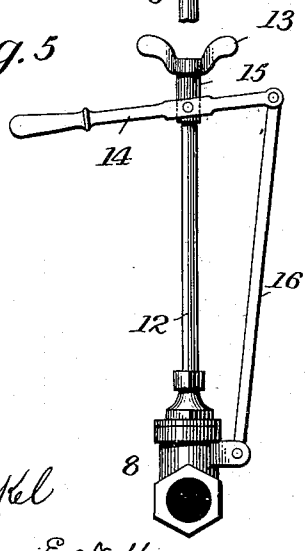


Fig. 6.

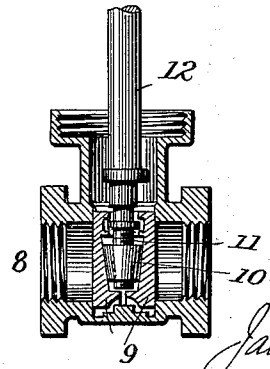
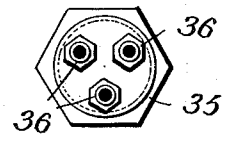


Fig. 9.



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UNITED STATES PATENT OFFICE.

JAMES H. NICHOL, OF HADDONFIELD, NEW JERSEY, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE DUSTLESS ROADBED COMPANY, OF CAMDEN, NEW JERSEY.

OIL-DISTRIBUTING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 604,479, dated May 24, 1898.

Application filed June 30, 1897. Serial No. 643,019. (No model.)

To all whom it may concern:

Be it known that I, JAMES H. NICHOL, a citizen of the United States, residing at Haddonfield, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Oil-Distributing Apparatus, of which the following is a specification.

This invention relates to sprinkling apparatus suitable for spreading oil on the surfaces of railway road-beds. In a patent granted to me June 8, 1897, No. 584,083, I have described an improved railway road-bed having its surface treated with oil, the primary object of the improvement being to prevent dust and dirt being raised by passing trains.

The present invention relates to apparatus particularly designed for sprinkling oil on railway road-beds, although it could be used for sprinkling water or other fluids. In treating road-beds with oil it is desirable to have the quantity distributed under control and to distribute it most effectively, care being taken that the road-bed shall be uniformly treated and that none of the oil shall fall upon the rails. The oils best suited for this purpose are the heavy oils, such as the residual oils obtained in the distillation of petroleum, and it sometimes requires more force than the mere action of gravity to distribute them. In such cases I use air or steam heat and pressure, which may be obtained from the locomotive used to draw the apparatus. I find it most convenient and economical to draw the supply of oil directly from the commercial tank-cars instead of providing the distributer with a tank. The complete outfit for distributing oil therefore consists of a car provided with distributing apparatus, an oil-tank car to the tank of which the apparatus is coupled, and a locomotive for drawing the apparatus and supplying air or steam when required to liquefy and eject the oil.

In the accompanying drawings, Figure 1 is a side view of a distributing-car. Fig. 2 is an end view of the same. Fig. 3 shows the distributing-car coupled to the tank-car and the locomotive. Fig. 4 is a plan view of a portion of the distributing-car, parts being broken away. Figs. 5 and 6 are details of the valves. Fig. 7 is a section on the line 7 7, Fig. 4. Fig. 8 is a detail of the swing-pipe holder. Fig. 9 is an end view of a coupling. Figs. 10 and 11 are plan and sectional views of one of the swing-pipes. Fig. 12 is a section on the line 12 12, Fig. 11. Figs. 13 and 14 are details of the hand-distributer, Fig. 13 being a side view and Fig. 14 being an end view; and Figs. 15 and 16 are side and end views of the shield.

Referring to the drawings, A indicates a flat car which is fitted up with my improved apparatus for distributing oil.

In Fig. 3 the car A is shown operatively connected with an ordinary oil-tank car B and a locomotive C. From the oil-tank a hose or pipe 1 delivers the oil to a pipe 2, extending along the side of the distributing-car, preferably from end to end. A branch 3, which, as shown, is located about the middle of the car, carries the oil to the center of the car, from which point it is distributed to the sprinkling-pipes. There are three sprinkling-pipes, the pipe 4 being arranged transversely under the car and the side pipes 5 being pivoted so as to swing both horizontally and vertically. The pipe 4 is supplied by a connecting-pipe 6, and the pipes 5 are supplied by means of flexible hose 7, all connected to the branch 3. Pipes 6 and 7 are provided with valves 8 for controlling the flow of oil. The valves are preferably of the form illustrated in Figs. 5 and 6. They are slide-valves, each having two parts 9, which can be forced apart against the valve-seats by a wedge 10, operated by a screw 11 on the lower end of the valve-stem 12. The stem is provided with a suitable handle 13 at its upper end, by which it may be turned to lock and unlock the valve. The valve is opened and closed by means of a lever 14, pivotally connected to a sleeve 15 on the valve-stem, the valve-stem being free to turn in said sleeve, but prevented by shoulders from longitudinal movement therein. The lever 14 is connected by a link 16 with the casing of valve 8, the upper end of the link forming the fulcrum of the lever. It will be evident that the valve can be quickly opened or closed by the lever and can be locked in any desired position by turning the

stem 12. The levers 14 are arranged so that they can be conveniently operated by a man standing on the car.

The stationary pipe 4 is supported and braced in any convenient manner. As shown, it is carried by braces 17. The lower side of the pipe is provided with suitable openings, such as perforations or slits, through which the oil is discharged. Preferably a series of slits 18 are used, such as shown in Fig. 10.

The swing-pipes 5 are connected at the sides of the car by universal joints, being pivoted in yokes 19, carried at the lower ends of vertical shafts 20, one shaft being arranged at each side of the car. The shafts may be rotated by a hand-wheel 21. They are yieldingly fastened in any desired position by a cross-bar 22, which rests in radial notches in a plate 23, which is fastened to the floor of a car, as shown in Figs. 7 and 8. The object of this fastening is to hold a swing-pipe in position at any desired angle to the car, but in such a manner as to permit it to yield without damage should the pipe be struck by any object along the track. The swing-pipes may be adjusted horizontally or to any desired angle above or below the horizontal. As shown, the adjustment is accomplished by means of a chain 24, any link of which may be connected to a hook 25 upon the swing-pipe shaft 20. The outer ends of the swing-pipes are closed, and their lower sides are provided with slits or openings similar to those on the rigid pipe 4. The lower end of shaft 20 is held rigidly in place by braces 26, Figs. 4 and 7.

Directly beneath the sprinkling-pipe 4 and in line with the car-wheels are shields D to prevent the oil from falling or splashing on the rails. The shields may be of any suitable construction. The preferred form illustrated in the drawings is quite effective. This shield consists of curtains 40, of rubber cloth or other flexible fabric, which are suspended from frames 41. The frames 41 are connected at their middle points with clamps 42 upon the pipe 4. There are curtains on both sides of the rail and extending down below the head. As shown, the curtains are held at their upper edges by clamping-strips 45, which are bolted to the frames 41. Between the frames 41 extends a metal plate 43, which has side flanges, also clamped between the parts 41 and 45, forming a roof or cover for the shield. The plate is furnished at its ends and sides with upturned flanges 44, which form a pan to catch any oil that may fall upon the shield, and the flanges are cut away at the middle of the shield to permit the oil to run off at the sides over the outer surfaces of the curtains 40. The flexible curtains effectually protect the rails and at the same time they yield in passing over crossings and turnouts. Each pair of curtains is preferably formed in a single piece, the middle portion extending across beneath the pan.

When very heavy and sluggish oil is used, it is sometimes necessary to force or blow it from the spray-pipe with pressure, and this pressure I sometimes apply directly to the material in the spray-pipes. In Figs. 2, 11, and 12 I have shown an air or steam pipe 29, which I will call a "pressure-pipe," entering the inner end of a swing-pipe 5 and provided with perforations 30 opposite the slits 18, Figs. 11 and 12. In cold weather when the oil is thick steam is preferably used, and in warm weather either steam or compressed air from the locomotive may be used, if necessary. As shown, the pipe 29 is connected with a hose or pipe 31, running to the locomotive.

The apparatus above described is used when it is necessary to treat the entire surface of the road-bed or a considerable portion thereof with oil. It sometimes becomes desirable to treat small parts of the road-bed where repairs have been made or where the previously-deposited oil is not sufficiently thick with additional oil, and in such cases it can be conveniently directed by hand by the apparatus shown in Figs. 1, 9, 13, and 14. At one end of the car there are one or more couplings, to which hose-pipes 32 are connected, the pipes being provided with valves 33 and spray-nozzles or spreaders 34. The device shown in Figs. 13 and 14 is a sheet-metal nozzle having a long and narrow opening 35. Any other suitable sprinkler may be substituted for this form. As shown, the main oil-pipe 2 is provided with a cap 35, in which there are three hose-couplings 36, Figs. 1 and 9.

The manner of using the oil-distributing apparatus is as follows: The oil-distributing car A is coupled to a tank-car B, containing the oil, and is moved along the track at a uniform speed by a motor, such as a locomotive C. On railways having different motive power the cars may of course be drawn by electric or other motors. The main oil-pipe 2 is connected by a suitable hose with the usual outlet of the oil-tank, and the supply of oil to each of the sprinkling-pipes is governed by the valves 8. A uniform amount may be discharged from each of the pipes or the valves may be set so that any one of the pipes will discharge more or less than the others. It may in some cases be desirable to discharge more from the swing-pipes than from the central pipe 4. The swing-pipes 5 may be set at any angle, either horizontally or vertically. In narrow cuts it may be necessary to swing the pipes around to an angle of forty-five degrees, more or less, with the car, in order to pass the banks and still keep the pipes near the ground. In crossing embankments the pipes may be lowered, as shown in dotted lines in Fig. 2. When not in use, the swing-pipes can be turned around to bring them underneath the car and parallel with the car and suitably fastened in such position. By using

a distributing-car which can be connected to ordinary tank-cars the oil from said tank-cars can be distributed directly and most economically. When it is necessary to use heat to liquefy the oil, or pressure to discharge it, the heat and pressure can be obtained from the boiler of the locomotive or pressure can be obtained from the air-tank of the locomotive. As previously stated, the automatic sprinkling devices may be cut off and the hand-sprinklers at the end of the car may be used by one or more men either walking on the ground or riding upon the car.

It will be evident that many changes may be made in the details of construction of the above-described apparatus without departing from the spirit and scope of my invention, and it will therefore be understood that I do not limit myself to the precise construction and arrangement illustrated and described.

What I claim, and desire to secure by Letters Patent, is—

1. In a distributing apparatus, the combination with a car, of distributing-pipes connected at the sides of the car by universal joints, and means for adjusting said distributing-pipes both horizontally and vertically and holding them in any desired adjustment, substantially as described.

2. In a distributing apparatus, the combination with a car, of a distributing-pipe arranged transversely beneath the car, additional distributing-pipes connected at the sides of the car by universal joints, means for adjusting said pipes both horizontally and vertically, and flexible connections to said side pipes, substantially as described.

3. In a distributing apparatus, the combination with a car, of a transverse distributing-pipe beneath the car, independent distributing-pipes connected by universal joints at the sides of the car, means for adjusting said side pipes vertically and horizontally, valves for governing the flow of oil to each of said pipes independently, levers for operating said valves and locking devices for said valves, substantially as described.

4. In a distributing apparatus, the combination with a car, of a distributing-pipe pivotally connected at the side of the car, and devices for locking said pipe yieldingly in any desired horizontal adjustment, whereby said distributing-pipe may yield and swing back toward the car upon coming in contact with any obstacle, substantially as described.

5. In a distributing apparatus, the combination with a car, of a distributing-pipe pivotally connected at the side of the car, a vertical shaft upon which said pipe swings and a yielding locking device for holding said pipe yieldingly in any desired position, substantially as described.

6. In a distributing apparatus, the combination with a car, of vertical shafts at the sides of the car, distributing-pipes connected to said shafts, means for turning the shafts to adjust the pipes horizontally, and means for locking the shafts in any desired position, substantially as described.

7. In a distributing apparatus, the combination with a car, of vertical shafts mounted at the sides of the car and distributing-pipes pivotally connected to said shafts for vertical adjustment, and means for sustaining the pipes at any desired vertical angle, substantially as described.

8. The combination of the car, the vertical shafts mounted on the sides of the car, the yokes connected to the lower ends of said shafts, the pipes pivotally mounted in the yokes, and means for adjustably suspending the pipes from the upper ends of the shafts, substantially as described.

9. The combination with a car, of the vertical shafts, the pipes pivotally connected to the lower ends of the shafts, means for vertically adjusting the pipes and sustaining them in any desired position, and means for adjusting the shafts horizontally and locking them in any desired adjustment, substantially as described.

10. The combination with a car, and oil-distributing apparatus carried by the car, of shields sustained by the car in line with the wheels and in proximity to the rails, whereby the oil is prevented from falling upon the rails, substantially as described.

11. In combination with a car, of a transverse oil-distributing pipe carried beneath the car and shields sustained beneath said pipe and over the rails whereby the oil from the pipe is prevented from falling on the rails, substantially as described.

12. The combination with a car and oil-distributing apparatus, of shields for preventing the oil from falling on the rails, said shields having upturned end flanges, substantially as described.

13. The combination with a car and a perforated oil-distributing pipe, of a steam-pipe communicating with said distributing-pipe, whereby heat and pressure may be applied to assist the discharge of oil from said latter pipe, substantially as described.

14. The combination with a car and an oil-distributing pipe provided with suitable openings or perforations, of a pressure-pipe arranged within the oil-distributing pipe, said pressure-pipe having openings to permit its contents to mingle with the oil in the distributing-pipe, substantially as described.

15. The combination with a car and an oil-distributing pipe having suitable openings or perforations in its lower side, of a pressure-pipe within said oil-pipe, said pressure-pipe being provided with openings in its lower side opposite the openings in the distributing-pipe, substantially as described.

16. The combination with a car and oil-distributing apparatus mounted on the car, of a main oil-supply pipe, means for connecting said supply-pipe with an oil-tank car, a pres-

sure-pipe, and means for connecting said pressure-pipe with a source of fluid-pressure such as steam or air, substantially as described.

17. The combination with a car and oil-distributing apparatus, of shields for preventing the oil from falling on the rails, said shields comprising top plates located over the rails and flexible curtains extending down from said plates upon both sides of the rails, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES H. NICHOL.

Witnesses:
M. GLEESON,
GEORGE P. FOSTER.