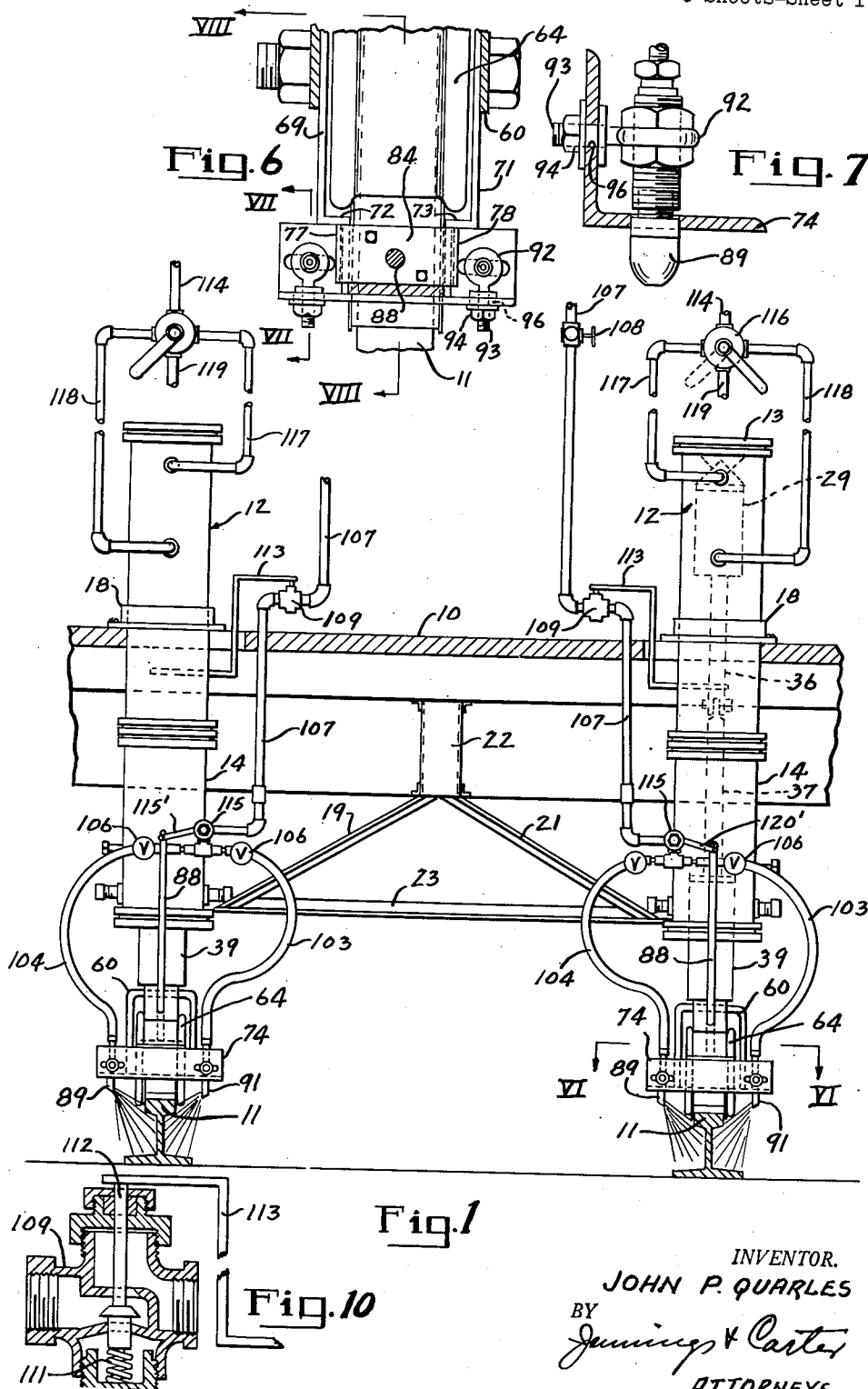


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RAILROAD RAIL SPRAYING APPARATUS

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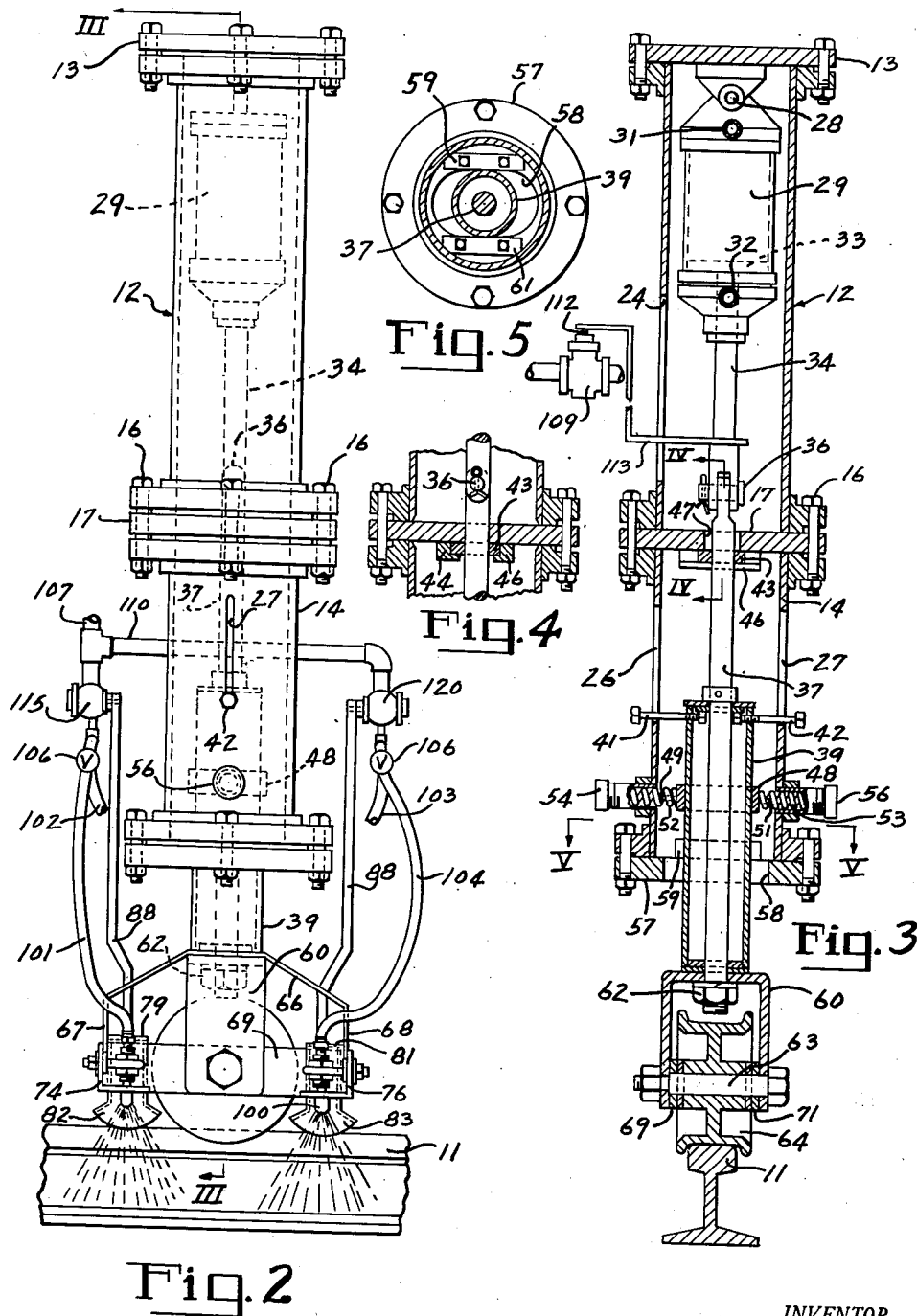
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RAILROAD RAIL SPRAYING APPARATUS

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3 Sheets-Sheet 2



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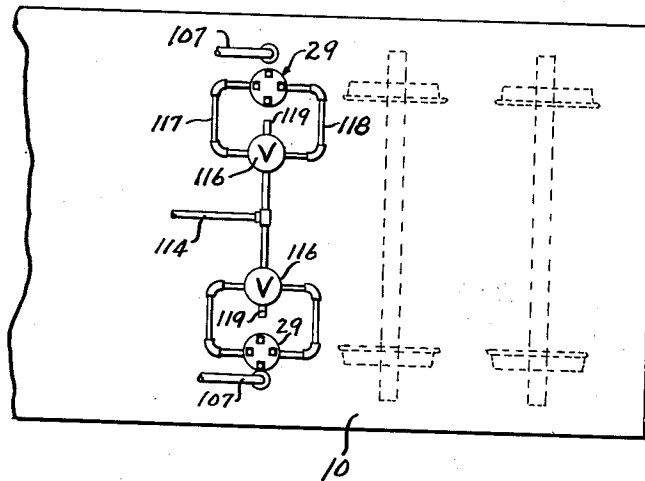
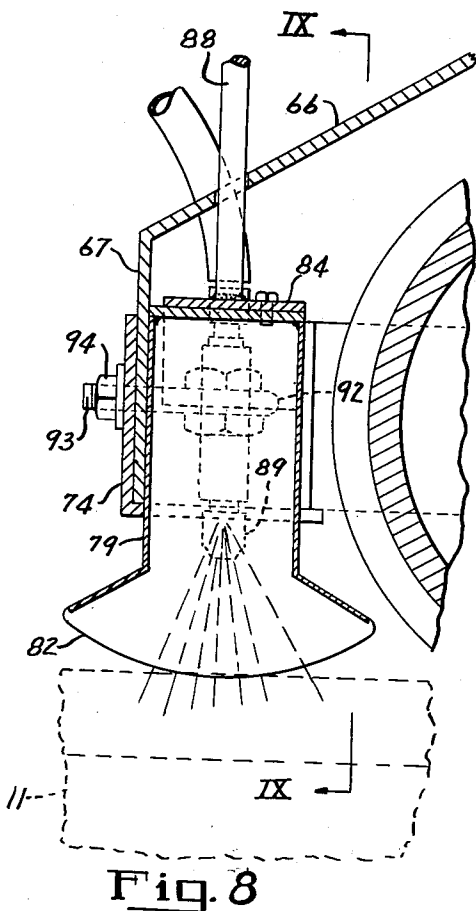
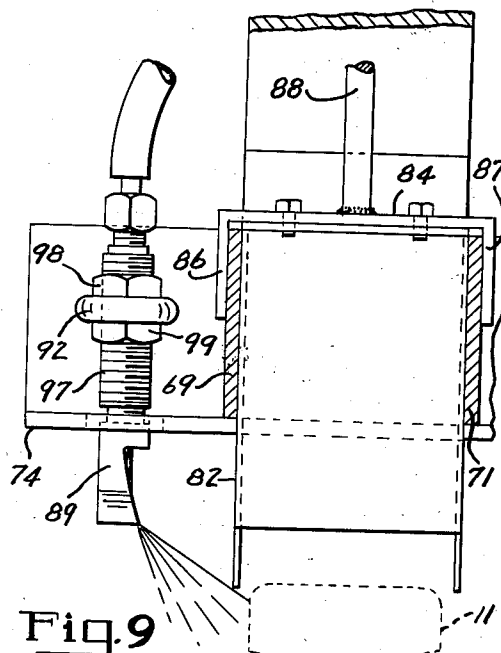
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RAILROAD RAIL SPRAYING APPARATUS

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3 Sheets-Sheet 3

Fig. 11



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RAILROAD RAIL SPRAYING APPARATUS

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12 Claims. (Cl. 299—31)

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This invention relates to apparatus for applying a protective coating to the sides of railroad rails while in their position in the road bed. It has been found that the life of rails and their connections may be materially lengthened by applying thereto a protective coating of oil, paint, or the like. The principal object of this invention is to provide apparatus for applying such a coating which shall be simple and sturdy of construction, and reliable and economical in operation.

A further object of my invention is to provide apparatus for spraying rails which shall include spray nozzles directed against the sides of the rail, and means to hold the nozzles in their proper positions relative to the rail, unaffected by curves in the track, swaying of the vehicle upon which the apparatus is mounted, or up and down movement of the vehicle body due to swaying of the car or end play of the axle bearings.

Briefly, my invention comprises a spray nozzle carriage which is flexibly suspended from a railway vehicle and supported by a double flanged wheel riding on the rail. Means are provided for raising and lowering the carriage and supplying liquid and interrupting the supply of liquid responsive thereto when the carriage is raised and lowered. Preferably, the spray nozzles are of the flat spray type and are so mounted on the carriage that their positions may be varied and their angularity with respect to the rails varied to afford the proper distribution of the liquid along the sides of the rail and its fittings. In addition, guide means are provided for the apparatus to limit lateral movements of the spray carriage to a direction transversely of the rail, together with yieldable means for maintaining the carriage centrally of the rail on which it is associated. These and other features of my invention are illustrated in the accompanying drawings, forming a part of this application, in which:

Fig. 1 is a front elevational view showing the apparatus mounted on a railway vehicle;

Fig. 2 is a side elevational view, drawn to a larger scale than Fig. 1;

Fig. 3 is a sectional elevation taken on the line III—III of Fig. 2, with certain parts removed;

Fig. 4 is a detail sectional view taken along the line IV—IV of Fig. 3;

Fig. 5 is a detail sectional view taken along the line V—V of Fig. 3;

Fig. 6 is a detail sectional plan view drawn to a larger scale, taken along the line VI—VI of Fig. 1, with certain parts removed;

Fig. 7 is a detail sectional view taken along the line VII—VII of Fig. 6;

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Fig. 8 is a detail sectional view of a spray nozzle and mounting therefor taken along the line VIII—VIII of Fig. 6;

Fig. 9 is a detail sectional view taken along the line IX—IX of Fig. 8;

Fig. 10 is a detail sectional view of the paint valve; and,

Fig. 11 is a plan view showing the piping arrangement and the position of the apparatus on a railway vehicle.

Referring now to the drawings for a better understanding of my invention, I show a fragment 10 of a railway vehicle. Mounted on a suitable part of the vehicle, and over each rail 11 of the railroad track, is an upper housing 12 which extends downwardly, as shown in Fig. 1, to a point some distance above the rail 11. Inasmuch as the apparatus for spraying the two rails is identical, only one will be described. For convenience of design, the housing 12 may be constructed from a section of large diameter pipe with a cap 13 at the upper end and with a lower section 14 joined to the upper section by means of bolts 16 and with a plate 17 interposed between the sections. The housing 12 may be supported from the vehicle 10 in any suitable manner such, for example, as by means of a flanged collar 18 surrounding the housing and bearing on the platform of the vehicle, and also by means of angle braces 19 and 21 joined to the lower end of the housing and to a sill 22 of the vehicle. Also, a cross brace 23 may join the housing on the opposite rail. The upper section of the housing 12 is provided with a lateral slot 24 and the lower section 14 with lateral slots 26 and 27, for purposes to be described later.

Suspended from the upper plate 13 of the housing 12, by means of a pin 28, is a fluid pressure operated cylinder 29 to which air, or other operating fluid under pressure may be admitted through ports 31 and 32 leading to the opposite ends thereof, for raising and lowering the piston 33 (indicated in dotted lines) therein. Extending downwardly from the cylinder 29 is a piston rod 34. Pivotaly connected to the lower end of the piston rod 34 by means of a pin 36, is an extension rod 37. Mounted on the lower end of the extension rod 37 is a tube 39 of smaller diameter than the housing 14. Bolts 41 and 42 extend into the sides of the tube 39 and out through the slots 26 and 27 to prevent rotary movement of the tube 39 with respect to the housing 14.

Fitting over the piston rod extension 37 is a block, or gib 43 and secured to the underside of the plates 17 are guides 44 and 46 in which the block 43 may slide. The rod 37 passes through a

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hole 47 in the block 17 which is somewhat larger than the rod whereby it is permitted a certain amount of lateral movement. The guides 44 and 46 restrict this movement to a direction transversely of the rail 11 as may be seen from Figs. 3 and 4. Fitting over the tube 39 with a sliding fit is a ring 48 having radial pins 49 and 51 secured thereto and which extend transversely of the rail 11. Fitting over the pins 49 and 51 are springs 52 and 53 which fit into and bear at their outer ends against tubular abutments 54 and 56. The springs 52 and 53 serve to maintain the tube 39 centrally of the lower section 14 of the housing 12, while the radial pins and tubular abutments 54 and 56 serve to restrict movements of the tube 39 to a direction transversely of the rail. A plate 57 is secured to the lower end of the section 14 and is provided with an oblong hole 58 therein through which the tube 39 passes, the longer dimension of the hole 58 extending transversely of the rail 11. Secured to the plate 57 alongside the tube 39 are guide bars 59 and 61 which bear against the sides of the tube 39 and restrict its movements to a direction transversely of the rail 11.

The rod 37, as shown in Fig. 3 of the drawing, extends through the tube 39 and has secured to its lower end a U-shaped stirrup 60 by means of a nut 62. An axle 63 extends through the lower ends of the arms of the stirrup 60 and has journaled thereon a double flanged wheel 64. Also supported from the stirrup 60 is a spray carriage frame comprised of an upper member 66, having a hole therethrough through which the rod 37 passes and which has downwardly sloping sides terminating in downturned ends 67 and 68. The ends 67 and 68 are joined by lateral frame members 69 and 71 through which the axle 63 passes. The lateral frame members 69 and 71, as may be seen from Fig. 6, are turned inwardly at right angles as shown at 72 and 73 near their outer ends, the outer ends of both frame members being similar and only one end of each being shown. The extreme outer ends of the side frame members are joined by means of angle members 74 and 76 which have their lower flanges notched out as shown at 77 and 78 in Fig. 6. Slidably fitting between the outer ends of the side frame members 69 and 71 are masks 79 and 81 which are generally rectangular in shape at their upper ends and which extend downwardly to terminate in arcuate sides 82 and 83 extending lengthwise of the rail and immediately above the rail 11. Secured to each of the masks is a guide member 84 having downturned ends 86 and 87 which fit over the side frame members 69 and 71. Each mask is thus capable of a limited amount of vertical movement in the spray carriage frame. Joined to the guide member 84 on each of the masks is a rod 88 which extends upwardly therefrom through the frame member 66.

Mounted in the opposite ends of each of the angle members 74 and 76, in the vertical flange thereof are opposed spray nozzles 89 and 91 which are directed downwardly and inwardly against opposite sides of the rail 11. Each of the nozzles is carried in a yoke 92 having a threaded stem 93 extending through an elongated hole 96 in the vertical flange of the angle and having screwed thereon a nut 94, whereby the nozzle may be adjusted angularly and toward and away from the rail. The nozzle 89, as shown in Fig. 9 of the drawing is screwed into a nipple 97 which passes through the yoke 92 and is held in position therein by means of lock nuts 98 and 99. The spray nozzles are preferably of the well

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known flat angle type whereby a flat, wide spray is thrown. By mounting them in the threaded nipples 97, as shown, I am enabled to vary the angular relation of the sprays to the rail. This is very important for the reason that it enables me to spray the ends of the fish plates and angle fittings of the rails. For example, the leading spray nozzle on one side of the rail 11 may be directed forwardly so that it impinges against the ends of the connecting bars, whereas the rear nozzle such as 100, indicated in Fig. 2 of the drawings, may be directed rearwardly to impinge more against the opposite ends of the rail fitting.

Connected to the upper end of each of the nipples 97 is a flexible tube supplying liquid, such as paint, under pressure to the nozzles, the several connections being shown at 101, 102, 103 and 104 in Fig. 2 of the drawing. A shut-off valve 106 is shown in each of the tubes whereby any one of the individual spray nozzles may be cut out of operation. At 107 is shown a conduit connected to a source of liquid under pressure, not shown. A manually operated control valve 108 is provided in the conduit and at 109 is shown a normally closed spring operated valve in the supply line. The valve is held normally closed by means of a spring 111 and is provided with a stem 112 which extends upwardly from the valve in the path of an arm 113 which is carried by the piston rod 34 and extends out through the slot 24. By reference to Figs. 1 and 3 of the drawing, it will be seen that when the wheel 64 is in its lowered position, resting on the rail 11, the arm 113 has engaged the stem 112 and holds the valve 109 open. When the wheel 64 is raised up off the rail, as when transferring the apparatus from one location to another, the arm 113 rises above the stem 112 and the valve is closed.

The pipe 107 is provided with a cross connection 110 to serve both opposed pairs of spray nozzles. A valve 115 in the cross connection controls the supply of liquid to the flexible tubes 101 and 102, while a valve 120 controls the supply of liquid to the tubes 103 and 104. The valves 115 and 120 are provided with operating handles 115' and 120' each of which is connected to the rod 88 extending upwardly from its associated mask 79 or 81 as the case may be. It will be seen that when either of the masks 79 or 81 rises, its associated rod 88 will close the associated valve 115 or 120, as the case may be, and cut off the supply of paint, oil, or other protective coating supplied to the rail by that valve.

At 114 is shown a source of fluid under pressure, such as air, for operating the cylinder 29. Air is admitted selectively to the ports 31 and 32 at opposite ends of the cylinder 29 by means of a four way valve 116. Conduits 117 and 118 lead respectively from the valve 116 to the ports 31 and 32 at the upper and lower ends of the cylinder 29. Fluid from the ends of the cylinder is exhausted through an exhaust pipe 119.

From the foregoing the operation of my improved apparatus will be readily understood. In use, when a section of railroad track is to be painted, the spray carriage is lowered until the wheel 64 is resting on the rail 11 and, as the vehicle is moved along the track the protective coating is sprayed on the opposite sides of the rail. So long as the wheel 64 is down on the rail, the arm 113 holds the valve 109 open so that liquid is supplied under pressure to the valves 115 and 120 which control the supply to the spray nozzles. So long as the masks 79 and 81 are in their lower positions in the spray carriage, the

valves 115 and 120 are open and liquid under pressure is supplied to the nozzles. Should any obstruction be encountered on the rail, and the masks 79 or 81, as the case may be, is moved up above the rail, the associated valve 115 or 120 is immediately closed by the upward movement of the rod 88. Upon passing the obstruction, the mask is lowered by gravity and the associated valve opened by downward movement of the mask. This is important in that it prevents oil getting on top of the rail where it would interfere with the operation of the locomotives and trains.

It will be seen that my improved apparatus operates only when the spray carriage with its spray nozzles is in the proper position to apply the protective coating to the rail. The housing 12, secured to the vehicle provides a sturdy, rigid support for the apparatus while the flexible suspension means employed for the wheel 64 and the spray carriage, permits the spray apparatus to follow the unevenness of the track and compensates for the sway of the vehicle and the end play in the wheel bearings. The double flange on the wheel 64, in combination with the springs 52 and 53, hold the spray apparatus centered with respect to the rail 11 and thus provides for the accurate spraying of the protective coating onto the sides of the rail.

It will accordingly be apparent that I have devised an improved railroad rail spraying apparatus, which is simple and sturdy of design, reliable in operation, and adapted for varied conditions met with in railroad practice.

While I have shown my invention in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. In a railroad rail spraying apparatus including a railway vehicle, a spray carriage suspended from the vehicle and free for lateral movement relative to the vehicle, a wheel for the carriage riding on the rail, spray nozzles mounted on the carriage and directed toward the rail, and means limiting lateral movements of the carriage relative to the vehicle and restricting said movements to a direction transversely of the rail.

2. In a railroad rail spraying apparatus including a railway vehicle, a spray carriage suspended from the vehicle and movable relative to the vehicle, a wheel for the carriage riding on the rail, spray nozzles mounted on the carriage and directed toward the rail, means limiting lateral movements of the carriage relative to the vehicle and restricting said movements to a direction transversely of the rail, a mask interposed between the spray nozzles and the top of the rail and movable vertically with respect to the spray carriage, means to supply liquid under pressure to the spray nozzles, and means to shut off the supply of said liquid responsive to vertical movement of the mask relative to the carriage.

3. Apparatus as set forth in claim 1 in which the nozzles are mounted on opposite sides of the rail and in which means are provided for adjusting the position and angularity of the nozzles with respect to the carriage.

4. Apparatus as set forth in claim 1 in which there are mounted on the carriage a pair of leading nozzles on opposite sides of the rail and a

pair of trailing nozzles on opposite sides of the rail, and in which the said pairs of nozzles are directed downwardly toward the side of the rail and the nozzles on each side of the rail are also directed in opposite angular directions against the side of the rail.

5. A railroad rail spraying apparatus including a railway vehicle for transporting the apparatus and comprising an upper stationary housing, a fluid pressure operated cylinder mounted for lateral movement in the housing and having a piston rod extending downwardly therefrom, an extension rod pivotally connected to said piston rod, a spray carriage suspended from said extension rod over the rail, means restricting lateral movements of the carriage relative to the housing to a direction transversely of the rail, a double flange wheel for the spray carriage riding on the rail, leading and trailing spray nozzles mounted on the carriage on both sides of the rail, means to supply liquid under pressure to the nozzles, means to supply fluid under pressure to the cylinder to raise and lower the carriage, and means operable responsive to raising the carriage to intercept the supply of liquid to said nozzles.

6. A railroad rail spraying apparatus including a railway vehicle for transporting the apparatus and comprising an upper stationary housing, a fluid pressure operated cylinder pivotally mounted in the housing and having a piston rod extending downwardly therefrom, an extension rod pivotally connected to said piston rod, a spray carriage suspended from said extension rod over the rail, means associated with the housing restricting movement of the carriage relative to the housing to a direction transversely of the rail, a flange wheel for the spray carriage riding on the rail, a pair of leading spray nozzles mounted on the carriage on opposite sides of the rail, a pair of trailing spray nozzles mounted on the carriage on opposite sides of the rail, means to supply liquid under pressure to all of said nozzles, means to supply fluid under pressure to the cylinder to raise and lower the carriage, and means operable responsive to raising the carriage to intercept the supply of liquid to said nozzles.

7. A railroad rail spraying apparatus including a railway vehicle for transporting the apparatus and comprising an upper stationary housing, a fluid pressure operated cylinder pivotally mounted in the housing and having a piston rod extending downwardly therefrom, an extension rod pivotally connected to said piston rod, a spray carriage suspended from said extension rod over the rail, means restricting lateral movement of the carriage relative to the vehicle to a direction transversely of the rail, a flange wheel for the spray carriage riding on the rail, a pair of leading spray nozzles mounted on the carriage on opposite sides of the rail, a pair of trailing spray nozzles mounted on the carriage on opposite sides of the rail, means to supply liquid under pressure to all of said nozzles, means to supply fluid under pressure to the cylinder to raise and lower the carriage, and means operable responsive to raising the carriage to intercept the supply of liquid to said nozzles.

8. Apparatus as defined in claim 7 in which means are provided for adjusting the position and angularity of each of the spray nozzles on the carriage with respect to the rail.

9. In apparatus for spraying railroad rails in place in a railroad track and embodying opposed

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nozzles located above and on opposite sides of the rail and directed downwardly against the rail, a conduit supplying liquid under pressure to said nozzles, a valve in said conduit, a mask mounted between said nozzles and the top of the rail and movable up and down relative to said nozzles, and an operative connection between said mask and said valve effective to close the valve upon upward movement of the mask.

10. A railroad rail spraying apparatus including a railway vehicle for transporting the apparatus and comprising an upper stationary housing, a fluid pressure operated cylinder mounted in the housing and having a piston rod extending downwardly therefrom, an extension rod pivotally connected to said piston rod, a spray carriage suspended from said extension rod over the rail, means restricting lateral movement of the carriage relative to the housing to a direction transversely of the rail, a flanged wheel for the spray carriage riding on the rail, a pair of leading spray nozzles mounted on the carriage on opposite sides of the rail, a pair of trailing spray nozzles mounted on the carriage on opposite sides of the rail, means to supply liquid under pressure to all of said nozzles, means to supply fluid under pressure to the cylinder to raise and lower the carriage, a mask mounted in each end of the carriage between the opposed nozzles and the top of the rail, said mask being movable

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vertically relative to the carriage, and means operable responsive to upward movement of the mask relative to the carriage to interrupt the supply of liquid to said opposed nozzles.

11. In a railroad rail spraying apparatus including a railway vehicle, a spray carriage suspended from the vehicle and free for lateral movement relative to the vehicle, a flanged wheel for the carriage riding on the rail, means for increasing and decreasing the pressure between the rail and the wheel, spray nozzles mounted on the carriage and directed toward the rail, and means limiting lateral movements of the carriage relative to the vehicle and restricting said movements to a direction transversely of the rail.

12. Apparatus as defined in claim 11 in which there is a spray carriage mounted over each rail, each carriage being adapted for vertical movement independently of the other.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
429,990	Bauer	June 10, 1890
1,597,346	Fantz et al.	Aug. 24, 1926