Oct. 7, 1941. L. P. WINBY ET AL 2,258,082

RAIL LUBRICATING APPARATUS

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Fig. 1.

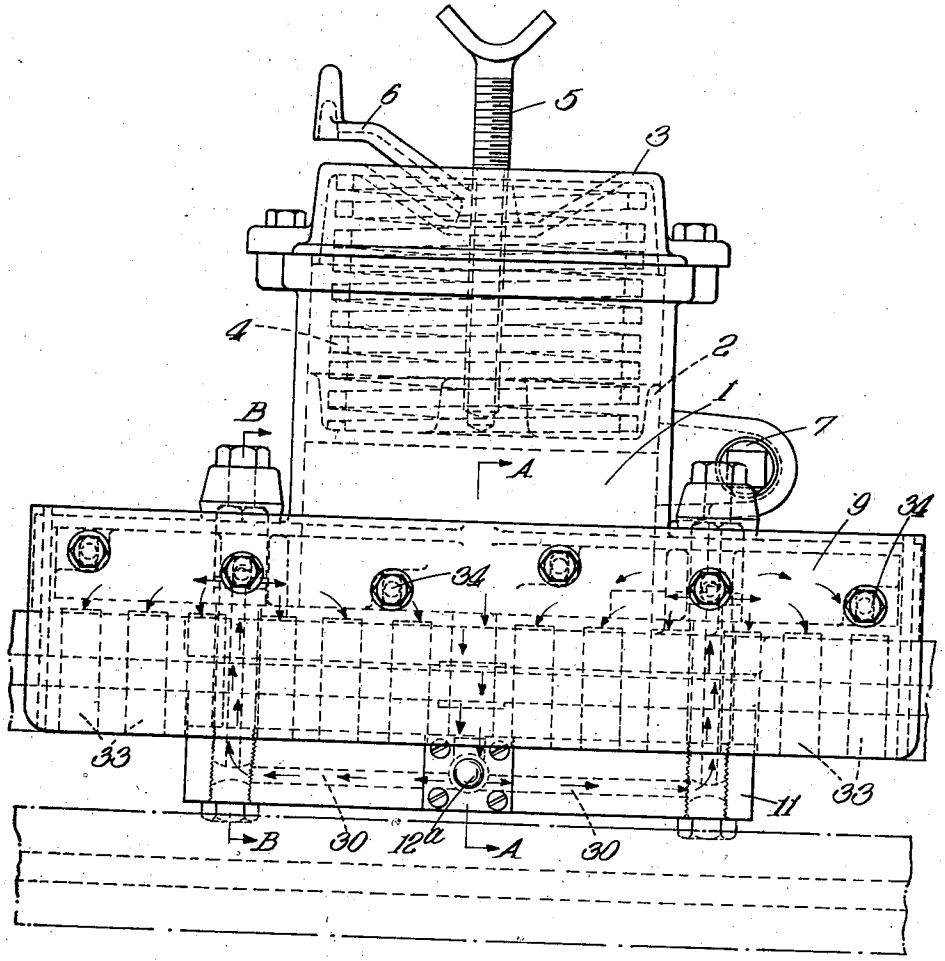

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Fig. 2.

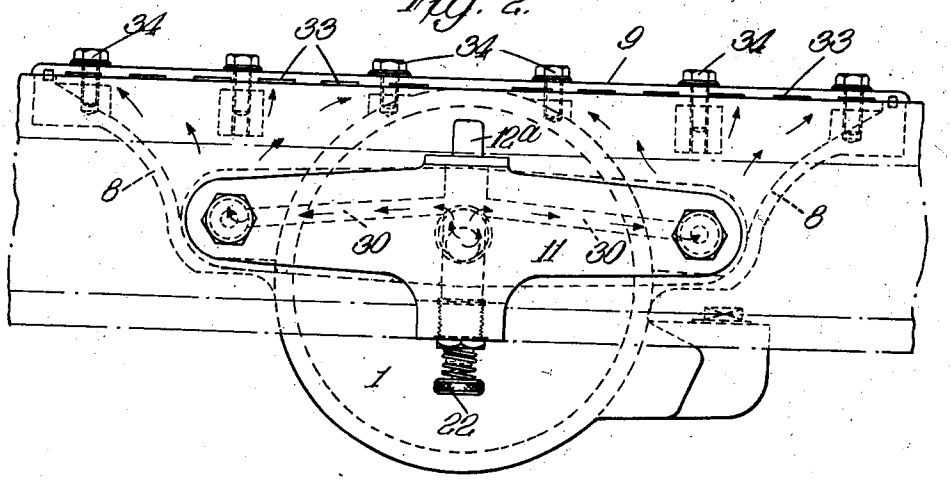
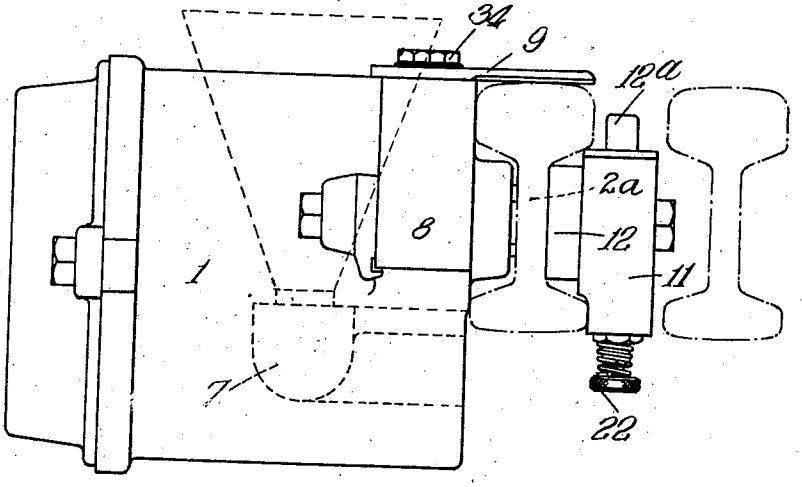


Fig. 3.



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RAIL LUBRICATING APPARATUS

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Fig. 4.

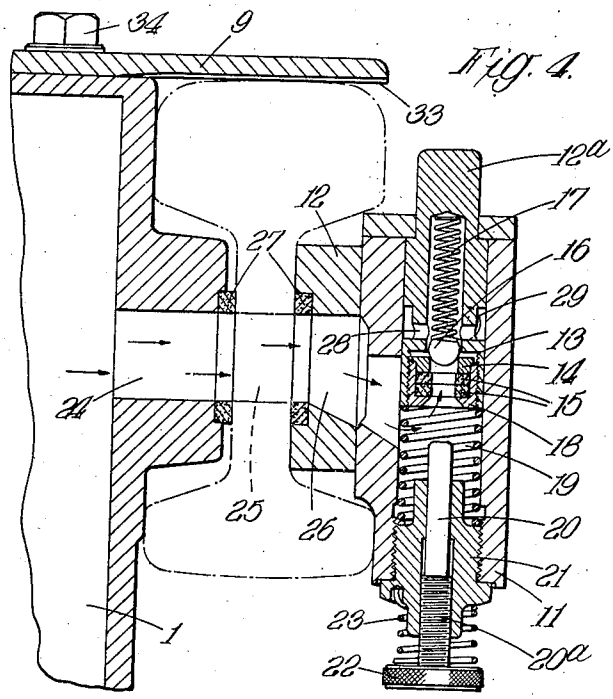
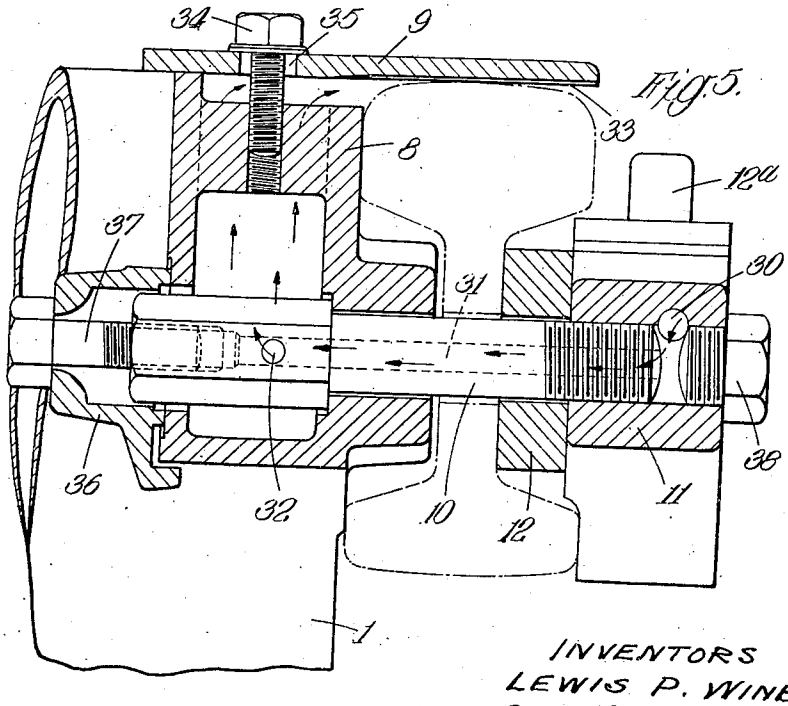


Fig. 5.



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RAIL LUBRICATING APPARATUS

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Fig. 6.

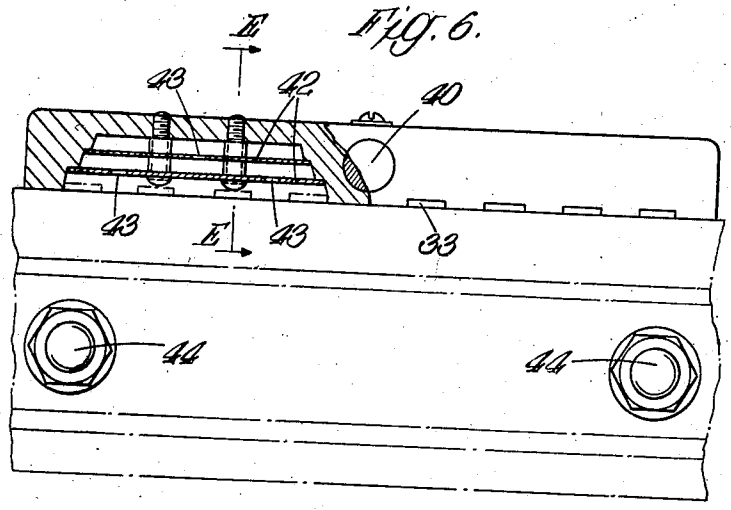
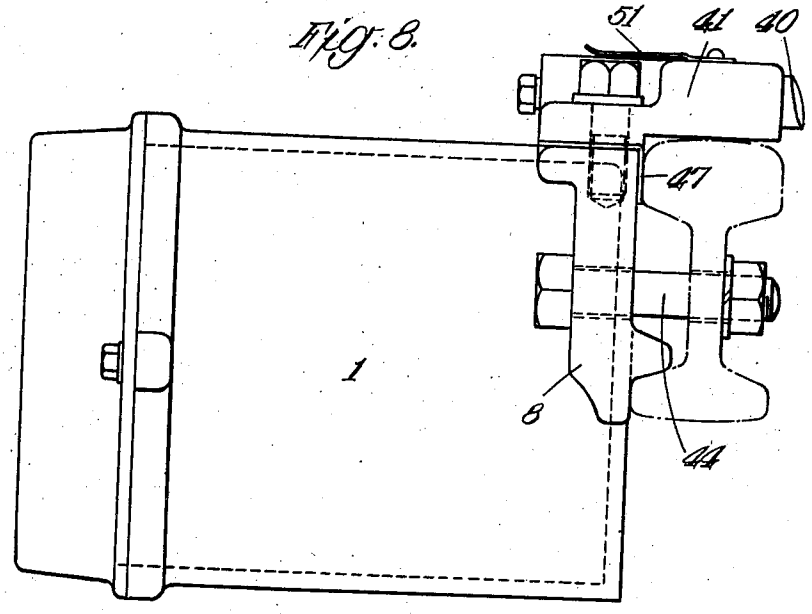


Fig. 8.



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Oct. 7, 1941. L. P. WINBY ET AL 2,258,082

RAIL LUBRICATING APPARATUS

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Fig. 7.

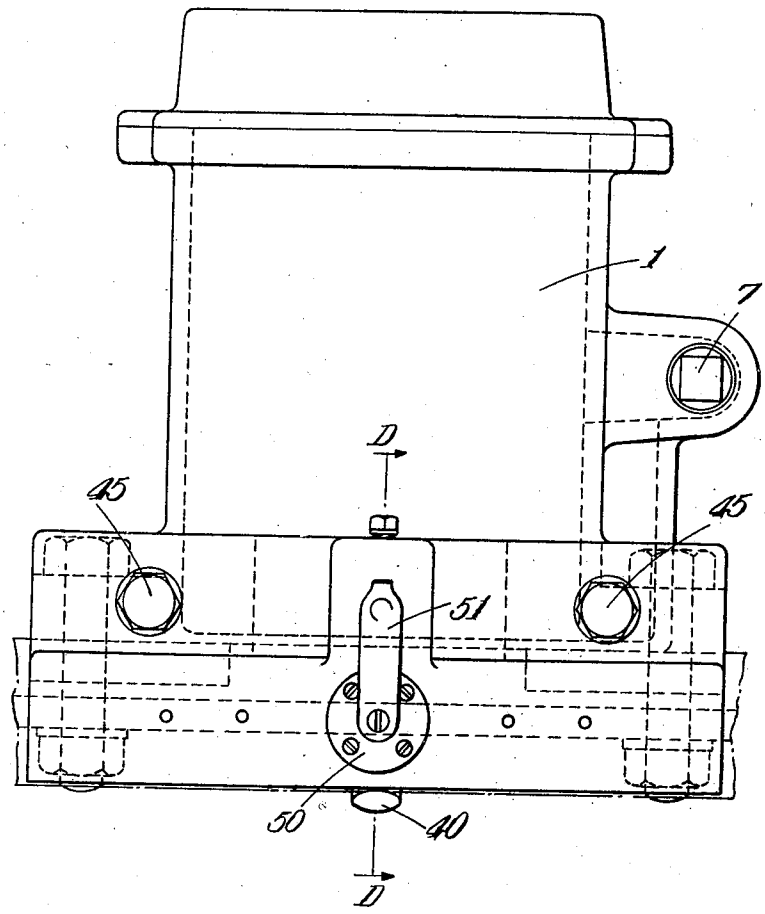

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Fig. 9.

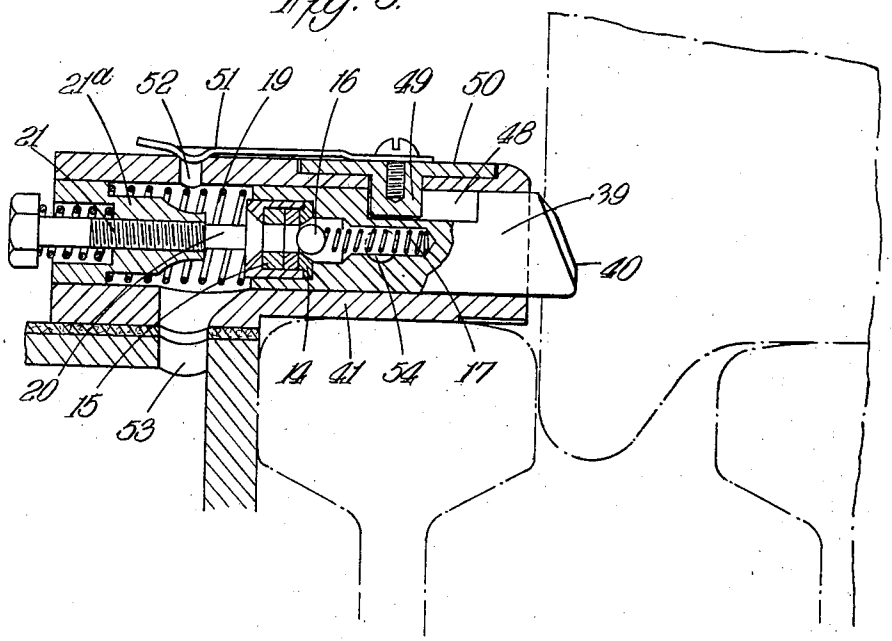
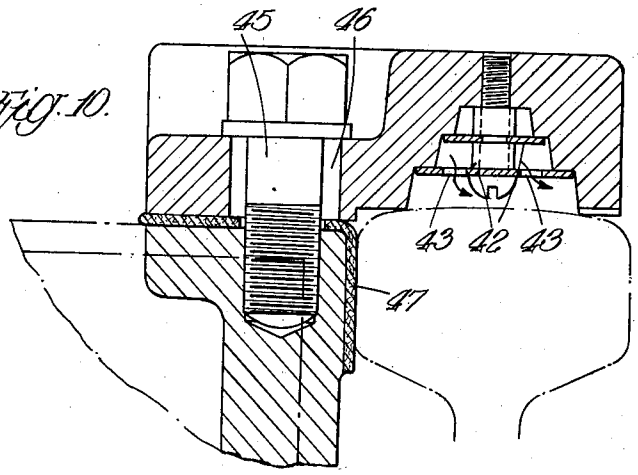


Fig. 10.



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Patented Oct. 7, 1941 2,258,082

UNITED STATES PATENT OFFICE

2,258,082

RAIL LUBRICATING APPARATUS

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Application June 24, 1940, Serial No. 342,186
In Great Britain June 24, 1939

3 Claims. (Cl. 184—3)

This invention relates to rail lubricating apparatus of the kind designed to lubricate a rail automatically as a result of the passage of a vehicle wheel along the rail and is particularly concerned with the type of rail lubricator including a grease container and a plunger type pump, the plunger being actuated directly by the vehicle wheels passing along the rail, a predetermined quantity of grease being applied to the rail each time the plunger is depressed. Such plunger type automatic rail lubricators have, in the past, been associated with running rails, but the chief object of the present invention is to evolve a construction of lubricator which can be readily applied to guard or check rails, and which will be of a simple and neat construction.

Rail lubricating mechanism, in accordance with the present invention, for application to a check or guard rail comprises a plunger type grease distributing pump having means for its attachment to the check rail in a position in which the extremity of the plunger lies in the path of the wheels of a vehicle passing along an adjacent running rail and a grease container associated with said pump for supplying grease thereto under pressure and a grease distributor supplied with grease from said pump and serving to distribute grease over the surface of the check rail to be lubricated, the pump plunger being actuated by the wheel flanges.

In order that the said invention may be clearly understood and readily carried into effect, the same will now be described more fully with reference to the accompanying drawings, in which—

Figure 1 is a plan view of a check rail lubricator constructed in accordance with the invention;

Figures 2 and 3 illustrate the lubricator in front elevation and end elevation respectively;

Figures 4 and 5 are vertical sections on the lines A—A and B—B respectively in Figure 1, the two views being drawn to an enlarged scale; and

Figures 6, 7 and 8 are fragmentary front elevation, plan view, and end elevation respectively of a modified construction of rail lubricator. Figures 9 and 10 are vertical sections on the lines D—D in Figure 7, and E—E in Figure 6 respectively, both views being drawn to an enlarged scale.

In the preferred form of the invention illustrated by Figures 1–5 of the accompanying drawings, the lubricator comprises a cylindrical container or reservoir 1, adapted to contain grease or other lubricant under pressure, which is adapted to be secured in position on the inner side of the guard or check rail 2*a*, the reservoir containing a piston 2 and being fitted with a closure cap 3, a coil spring 4 being interposed between the piston and said closure cap, the spring due to its action on the piston causing the latter to be moved axially of the reservoir to compress the lubricant. The piston and cap are internally threaded to receive a withdrawing screw 5, whilst the latter is fitted with a handle 6 for the purpose of withdrawing the spring.

The reservoir is fitted with a filling plug 7 for the insertion of the lubricant and is formed with two outwardly directed lugs or arms 8, which serve to support a grease distributor plate 9, and also serve to locate the reservoir in position on the check rail, the reservoir being maintained in position by means of two securing bolts 10 passing through holes formed in the check rail, and entering a pump casing 11, hereinafter described in detail, disposed on the opposite side of the check rail, a spacing member 12 being interposed between the web of the check rail and the pump casing. In this way the lubricant reservoir and pump casing are maintained firmly in position on the check rail, whilst the lugs 8 are of hollow construction and serve to accommodate grease delivered from the lubricant reservoir prior to it being delivered onto the check rail under the action of the pump.

The pump casing 11 contains a plunger 12*a* axially slidable therein, a valve body 13 containing brass and leather washers 14 and 15, the brass washer forming a seating for a ball valve 16 which is urged into engagement with its seating by means of a coil spring 17. The valve casing and plunger are formed integrally whilst the washers are maintained in position by means of a sleeve-like member 18 in threaded engagement with the inner surface of the valve body. The plunger is actuated by the wheel flanges of the wheels of the vehicle passing along the running rail, the plunger being thus moved downwardly, a coil spring 19 being provided to return the plunger to its initial raised position after depression.

The washers 15 form the female part of the pump, the male part being in the form of an upstanding pin or ram 20 of a diameter equal to the internal diameter of the washers, the pin being located within an internally and externally threaded plug 21 fitting into a correspondingly threaded hole formed in the underside of the pump casing, the pin 20 being externally threaded at 20*a* for the purpose of adjusting the pin in an axial direction, the pin being fitted with a

milled head 22 for facilitating adjustment, a coil spring 23 being interposed between the milled head and the plug for the purpose of preventing rotation of the pin under the action of vibration. By moving the pin 20 upwardly or downwardly the effective stroke of the pump can be varied. The lubricant supplied by the reservoir under pressure passes through slots or other openings 24 in the lugs of the lubricant reservoir through an aligned opening 25 in the web of the check rail, and through a further opening 26 in the distance piece 12, felt or other washers 27 being interposed between the reservoir and distance piece and the rail web for preventing the escape of lubricant, the lubricant passing into the pump in the direction of the arrows shown in Figures 1 and 4.

The lubricant, under the action of the upstanding pin 20, and downwardly moving plunger, passes upwardly through the washers 14 and 15 and past the non-return ball valve 16, the lubricant thence passing radially through holes 28 into an annular passage 29 encircling the plunger and thence into borings 30, shown in Figures 1, 2 and 5, in the pump casing. The lubricant thence passes through axially arranged holes 31 bored in the securing bolts 10 and emerges from said bolts by way of a radially arranged hole or holes 32 into the hollow interior of the lugs 8. The lubricant then passes upwardly in the direction of the arrows shown in Figures 1, 2 and 5, and emerges through openings formed in the upper surfaces of the lugs 8 and onto the under surface of the distributor plate 9, the distributor plate being formed with recesses 33 lying transversely of the check rail, through which recesses the lubricant passes over the upper surface of the rail and onto its outer vertical surface.

The distributor plate is maintained in position by means of securing studs 34 passed through slots 35 in the distributor plate, thus permitting of a certain degree of adjustment.

The heads of the securing bolts 10 are protected by means of grease caps 36 each maintained in position by means of a threaded stud 37 which enters a correspondingly threaded hole in the bolt head, whilst the pump casing is fitted with threaded studs 38 arranged co-axially with the bolts 10.

In a modified arrangement, illustrated by Figures 6–10, the pump casing is arranged horizontally as distinct from vertically and is situated upon the upper surface of the check rail, the pump plunger 39 having an inclined operating face 40, which is engaged by the downwardly descending wheel flange as the wheel passes along the running rail, and results in the plunger being moved inwardly within its associated pump casing 41. The pump casing 41 is combined with the lubricant distributor plate, the plunger being located within a boring formed in the distributor plate, the pump casing and distributor plate being therefore given the same reference numeral. The undersurface of the distributor plate is cut away to provide a series of grooves 33, as in the previously described construction, through which the grease is delivered from the pump, the distributor plate being fitted with a series of superimposed baffle plates 42 having grease exit holes 43 arranged in staggered relationship, whereby the lubricant is uniformly distributed throughout the length of the distributor plate.

As in the previously described arrangement, the lubricant containing reservoir 1 is formed with outwardly directed lugs 8 by which it is secured in position upon the vertical face of the check rail, the reservoir being maintained in position by means of securing bolts 44. The securing bolts 44 pass through holes formed in the lugs 8, and in the web of the check rail, the combined distributor plate and pump casing being maintained in position on the reservoir by means of two further securing bolts 45, which pass through slots 46 in the distributor plate, which slots enable the position of the distributor plate to be adjusted slightly to compensate for wear of the vertical face of the check rail. A suitable packing material 47 is interposed between the distributor plate, reservoir and adjacent face of the check rail.

Regarding the pump plunger, this is of similar construction to that previously described and includes a non-return valve 16 which is maintained in position upon a seating member 14 by a coil spring 17, the plunger containing leather or other washers 15 with which co-operates a pin or ram 20 as in the previously described construction, the pin having a threaded portion 20*a* in threaded engagement with an internally threaded plug 21, which is itself disposed in the pump casing, the position of the pin 20 being adjustable to vary the effective stroke of the plunger. A coil spring 19 is interposed between the plug and the pump plunger to maintain the latter normally in its projected position.

In order to prevent the plunger turning about its axis during operation, the plunger is formed with a longitudinally arranged spline groove 48 which is engaged by a protuberance 49 on a plate 50 screwed in position upon the pump casing, the plate carrying a spring pressure plate 51 which serves to close normally a hole 52 in the pump casing provided for the escape of air, the lubricant from the reservoir entering by way of the lubricant admission hole 53.

The grease supplied under pressure from the lubricant reservoir enters the space within the interior of the leather or other washers, as in the previously described arrangement, when the plunger is in its projected position. Grease contained in said space is thus trapped by means of the pin or ram 20, the pump plunger being moved rearwardly under the action of the vehicle wheel. The grease is thus forced past the ball valve and into the axial boring containing the coil spring 17, and thence passes radially through holes 54 in the plunger and into further holes or passages formed in the pump casing through which passages the grease passes through the holes in the baffle plates in the distributor onto the face of the check rail, the lubricant eventually emerging from the distributor by way of the slots or recesses 33.

In the constructions previously described, the apparatus is virtually in the form of a self-contained unit, which is supported entirely and upon the check rail, whilst the provisions made for adjustment enable the apparatus to be easily adjusted to compensate for wear on the pump plunger or wear of the vertical face of the check rail.

What we claim and desire to secure by Letters Patent of the United States is:

1. A guard rail lubricator comprising a plunger type grease distributor pump, the plunger of which is engaged and actuated by the wheel flanges, a grease container in operative connection with said pump to permit of the supply of

grease thereto, means in said grease container for supplying said pump with grease under a constant pressure, means for securing said pump and grease container to the web of said guard rail on opposite sides thereof, and a grease distributor plate attached to said grease container in a position in which it overhangs said guard rail but permits of grease supplied by said pump to pass between said distributor plate and the head of said guard rail into a position in which it will be distributed over the side of the guard rail head engaged by the wheel flanges.

2. A guard rail lubricator comprising a plunger type grease distributor pump, the plunger of which is engaged and actuated by the wheel flanges, a grease container in operative connection with said pump to permit of the supply of grease thereto, means in said grease container for supplying said pump with grease under a constant pressure, means for securing said pump and grease container to the web of said guard rail on opposite sides thereof, lugs on said grease container bored to permit of the passage of grease from said container to said pump by way of borings in the web of said guard rail, and a grease distributor plate attached to said grease container in a position in which it overhangs said guard rail but permits of grease supplied by said pump to pass between said distributor plate and the head of said guard rail into a position in which it will be distributed over the side of the guard rail head engaged by the wheel flanges.

3. A guard rail lubricator comprising a plunger type grease distributor pump, the plunger of which is engaged and actuated by the wheel flanges, a grease container in operative connection with pump to permit of the supply of grease thereto, means in said grease container for supplying said pump with grease under a constant pressure, means for securing said pump and grease container to the web of said guard rail on opposite sides thereof, lugs on said grease container bored to permit of the passage of grease from said container to said pump by way of borings in the web of said guard rail, bolts securing said grease container and pump in position on said web and having passages therein for the passage of grease supplied by said pump, and a grease distributor plate attached to said grease container in a position in which it overhangs said guard rail but permits of grease forced by said pump through said securing bolts to pass between said distributor plate and the head of said guard rail into a position in which it can be picked up by the wheel flanges and distributed over the side of the guard rail head engaged by the wheel flanges.

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