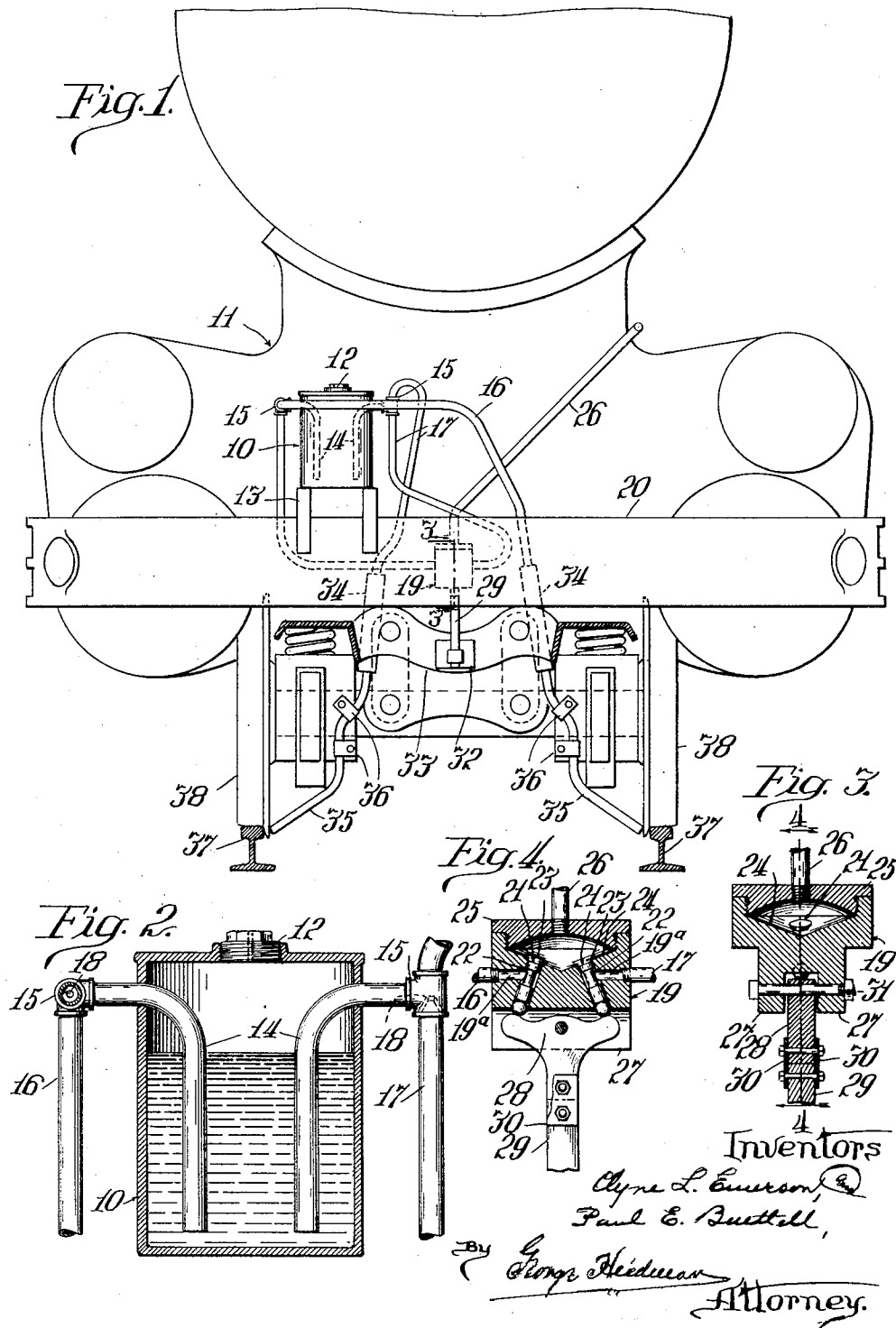


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RAIL AND WHEEL FLANGE OILER

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RAIL AND WHEEL FLANGE OILER

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Our invention relates to means adapted to be secured to a locomotive whereby the inside faces of the balls of the rails, at curves in the track-rails, may be properly lubricated and thereby in turn also lubricate the throat or flange of the wheels of the locomotive and rolling stock.

Our invention has for its object the production of means whereby proper lubrication will be automatically induced through the swinging or lateral movement of the forward locomotive truck induced by a curve in the track-rails; the means operating in such manner that a proper spraying of the lubricant onto the inside face of the ball of the rail at the outside of the curve will occur immediately forward of the wheels of the front truck of the locomotive.

The objects and advantages of our invention will be readily comprehended from the following detailed description of the accompanying drawing, wherein:—

Figure 1 is a front elevation of a portion of a locomotive, with parts in section; showing our improved means applied thereto and in elevation.

Figure 2 is a detail sectional elevation of the lubricant holding receptacle and the discharge controlling conduits.

Figure 3 is a detail sectional view of the valve mechanism; the view being taken substantially on the line 3—3 of Figure 1.

Figure 4 is a sectional view taken substantially on the line 4—4 of Figure 3.

In the particular exemplification of the invention as disclosed in the drawing, a lubricant reservoir or tank is shown at 10, of a suitable capacity and construction and preferably attached in any convenient manner adjacent to the saddle or cylinder casting 11 of the locomotive or at a suitable point near the boiler of the locomotive, in order that the lubricant or oil may be kept warm and therefore at a temperature which will constantly maintain its fluidity. The tank or reservoir 10 in the drawing is shown provided with an opening having a removable plug 12 to permit filling of the reservoir; the plug or top of the tank being provided with a minute air vent or opening so as to permit

proper siphoning of the contents and avoid improper draining of the reservoir. Any suitable manner of fastening the reservoir may be employed, as for example by means of a suitable bracket as shown at 13.

The reservoir 10 is shown provided with a pair of suction tubes 14 which lead from a point slightly removed from the bottom of the reservoir toward the top thereof; curving outwardly through the sides of the reservoir where the outer ends are connected to suitable T-couplings, as at 15, which are arranged in pipes 16 and 17. The section of each pipe 16 and 17 which enters the coupling 15 is provided with a reduced orifice or nozzle, as shown in dotted lines at 18 in Figure 2, and preferably disposed in alignment with the orifice of the tubes 14 so that the medium, air or steam which passes through the pipes 16 and 17, will induce sufficient pressure to cause the lubricant to be siphoned from the reservoir 10 and to be atomized and sprayed by the delivery ends of the pipes 16 and 17 onto the balls of the track-rails under certain conditions encountered in the track-rails.

The lower ends of the pipes 16 and 17 are each connected, preferably at opposite sides, to a valve casing or chambered member 19 which is shown mounted to the rear of the locomotive bumper beam 20; it being understood, of course, that any other suitable location of the valve casing may be employed where it will be properly positioned relative to the lubricant containing reservoir.

The valve casing or chambered member 19 is shown provided with ports 19^a, 19^a with which the pipes 16 and 17 communicate, and these ports in turn are provided with suitable valves 21, 21, which are preferably in the nature of poppet valves having the longitudinal side passages 22 at a point slightly removed from the enlarged heads 23 of the valves.

These heads normally seat at the upper end of the ports through the pressure of the pressure medium in the chamber of the member or casing 19. The ports are arranged in the valve casing 19 so that the poppet valves will be at a slight inclination or angle as shown in Figure 4 and for that reason the

upper surface of the body portion of the valve casing 19 is shown dished or tapered at 24 and thus at the same time provide a cavity or chamber beneath the top or cover 25, which latter is removably secured in place in any suitable manner. The poppet valves may be of a well known construction and are so formed and arranged that the operating medium, when the poppet valves are forced upwardly and their heads moved off the seat, will enter the elongated side passages or ports 22 and flow into the ports 19^a and thence into either of the pipes 16 or 17 as the case may be and as hereinafter explained.

The cover 25 has an opening to receive a suitable pipe 26 which either leads to the air reservoir in the locomotive or which may lead to the steam space or dome of the locomotive if so desired.

The valve casing 19 on its lower side is shown slotted or bifurcated at 27, 27 to receive the oppositely flared head 28 of a rocker arm 29 therebetween. The head 28 extends to opposite sides of the median line of the head and therefore also of the rocker arm 29, so that the ends of the head may be disposed immediately beneath the lower ends of the poppet valves 21. The arrangement is such that when the rocker arm is in vertical or normal position, no upward pressure on the poppet valves will be exerted and the poppet valves therefore will be seated or closed against passage of the operating medium through the ports.

We have shown the head 28 as preferably being made separate from the rocker arm 29 and have therefore shown the head suitably secured to the rocker arm by means of the side plates 30, 30, see Figure 3, which are bolted, respectively, to the lower end of the head 28 and to the upper end of the rocker arm. The head 28, which is disposed between the bifurcations 27, 27 of the valve casing 19 is pivotally secured in place in any suitable manner, as for example by the bolt 31 which is disposed through the bifurcations of the valve casing from front to rear so as to permit the head with the rocker arm to oscillate in a direction transversely of the locomotive.

The lower end of the rocker arm 29 is connected to a suitable bracket 32 secured to the swinging bolster 33 of the forward engine truck; the connection of the arm 29 to the bracket 32 being such that there may be relative up and down sliding movement between the arm 29 and the bracket while at the same time inducing the arm to swing about the pivot point 31 through the swinging movement of the truck frame or truck bolster induced by curves in the track-rails.

The pipes 16 and 17, which are properly secured in place against movement, lead beyond the couplings 15 and extend down to-

ward the truck-frame where each pipe 16 and 17 is provided with a flexible tube or hose 34 for making flexible connection with the tubes 35, 35, which are suitably secured to the journal box as for example by means of brackets, as at 36, so as to fixedly hold the tubes in place.

The tubes 35 have their lower ends bent outwardly toward the inside faces of the balls or heads of the rails 37, just forward of the front wheels 38 of the locomotive truck. The flexible connections 34 compensate for the up and down movement between the truck and the fixedly secured pipes 16 and 17.

With our improved means it is apparent that when the forward locomotive truck reaches a curve in the track rails, causing the truck-frame to swing laterally, the arm or lever 29 will likewise be swung about its pivot 31, thereby rocking the head 28 and causing one of the poppet valves 21 to be moved upwardly off its seat. Movement of a poppet valve off its seat will allow the pressure medium, air or steam which is in the cavity or chamber of the valve-casing below the cover 25, to flow past the poppet valve and into one of the ports 19^a and thence into the pipe connected therewith, either pipe 16 or pipe 17, as the case may be. That is to say, if the curvature in the rail is toward the left, as viewed in Figure 1, the truck-frame will swing in that direction, thus causing the arm 29 to likewise swing and therefore induce one end of the head 28 of the arm to force the poppet valve, namely the poppet valve shown to the left in Figure 4, off its seat and allow the pressure medium to enter pipe 16. The medium flowing through the reduced orifice or nozzle, indicated in dotted lines at 18, will siphon a quantity of lubricant or oil from reservoir 10, atomizing the oil and spraying the same onto the inside face of the ball of the rail on the outside of the curve, namely the rail to the right as viewed in Figure 1.

Movement of the truck-frame about a curve toward the right as viewed in Figure 1 will cause an opposite swinging movement of the truck-frame and therefore of arm 29 with its head 28 so that the end of the head to the right as viewed in Figure 4 will move its poppet valve off its seat and allow the pressure medium to induce a siphon action through pipe 17 and therefore spray the oil onto the inner face of the ball of the outer rail to the left, as viewed in Figure 1. That is to say, the lubricant will be sprayed onto the rail and therefore onto the wheel-flanges encountering the frictional wear at a curve in the track-rails.

We prefer to mount the lubricant containing reservoir at a point where it will be kept sufficiently warm during cold seasons of the year so as to maintain fluidity of the lubri-

cant and have therefore shown the reservoir mounted adjacent to the saddle casting, although it is apparent that it may be mounted at a suitable point near the boiler of the locomotive. It is apparent that either air or steam may be used as the medium for siphoning the oil from the reservoir and spraying it onto the inner faces of the balls of the rails, depending upon the season of the year or the climatic conditions or zones in which the locomotive is operating.

By spraying the lubricant onto the inner faces of the balls of the rails, immediately forward of the front wheels, it is evident that the throats or flanges of the wheels will likewise be lubricated in their contact with the inner faces of the rails and that wear and tear on the wheel flanges as well as on the rails will be greatly reduced.

Through the use of our improved means, a material saving in fuel will also be obtained by reason of the reduction of the wheel-flange friction encountered on a train of cars.

We have disclosed a rail and wheel-flange oiler or lubricator which is automatic in its operation and which is adapted to operate in keeping with the respective curves in the track-rails and have presented what we believe to be a simple adaptation of the invention which has been described in terms employed merely as terms of description and not as terms of limitation, as structural modifications may be made in certain respects without, however, departing from the spirit of our invention.

What we claim is:—

1. A rail and wheel-flange oiler comprising, in combination with a locomotive-truck frame, a lubricant holding reservoir, a chambered member arranged in communication with a pressure medium supply and having a pair of ports provided with valves closing in the direction of medium flow, conduits between the ports and track rails and having communication with the reservoir adapted to withdraw the lubricant therefrom when the pressure medium flows through said conduits, and means pivotally secured to said member to swing laterally and having portions adapted to separately move the valves off their seats and having yielding operative relation with the truck frame to be oscillated thereby.

2. A rail and wheel flange oiler comprising, in combination with a truck, a lubricant holding reservoir, a pressure medium receiving member provided with a plurality of ports, valves in said ports, a plurality of pipes leading from the outer ends of the ports and extending down forward of the front wheels of the truck, said pipes intermediate of their ends having communication with the interior of said reservoir, a pipe connection between the pressure medium receiving member and a pressure medium supply, and valve operating means operatively connected to the

truck-frame so as to move laterally thereby whereby lateral swinging movement of the truck-frame will cause said means to move said valves off their seats, permit flow of the pressure medium through said pipes and cause the lubricant to be entrained therewith.

3. A rail and wheel flange oiler comprising, in combination with a truck and a medium under pressure, a lubricant holding reservoir, a ported member arranged in communication with the pressure medium supply, valves in said ports normally seated against outflow of the pressure medium, pipes leading from the outlet ends of said ports and extending forward of the truck-wheels adjacent to the balls of the track-rails, connections between said pipes and the reservoir whereby lubricant will be siphoned from the reservoir by the pressure medium flowing through the pipes when said valves are moved off their seats, and oscillatable means operatively connected to the truck-frame and arranged to alternately operate said valves when the truck-frame moves about a curve in the track-rails.

4. A rail and wheel flange oiler comprising, in combination with a truck and a medium under pressure, a lubricant holding reservoir provided with outlet tubes extending upwardly from the lower end of the reservoir, a pressure medium receiving member arranged in communication with the pressure medium supply, said member having valve controlled outlets, pipes leading from said outlets and extending toward opposite sides of the truck forward of the truck-wheels, said pipes intermediate of their ends having connection with the reservoir outlet tubes, and a pivotally mounted lever adapted to alternately open the valve controlled outlets of said member, and an operative connection between the said lever and the truck-frame whereby movement of the truck about curves in the track-rails will cause said lever to swing laterally, said last mentioned connection being adapted to compensate for vertical movement of the truck.

5. A rail and wheel flange oiler comprising, in combination with a truck and a pressure medium supply, a lubricant holding reservoir, a pressure medium receiving member arranged in communication with the pressure medium supply, said member having a pair of normally closed valved outlets, a pipe connected with each of said outlets and extending forward of the wheels on opposite sides of the truck, a siphoning connection between each of said pipes and the reservoir interior, an arm pivotally mounted intermediate of its ends to swing laterally, the upper end of said arm being formed to alternately open said valved outlets when the arm is oscillated, and a yielding connection between said arm and the truck-frame adapted

ed to permit relative vertical movement between the arm and truck-frame and to oscillate said arm when the truck moves laterally.

6. A rail and wheel flange oiler comprising in combination with a truck and a pressure medium supply, a lubricant holding reservoir having a pair of outlet tubes leading from the lower part of the reservoir, a chambered member arranged in communication with the pressure medium supply, said member having outlet ports, valves in said ports normally closed against the outflow of the medium from said chamber, pipes leading from said outlets and communicating with the outlet tubes of said reservoir, discharge pipes connected to the journal box with the outlet ends disposed adjacent to the inner sides of the balls of the track-rails forward of the truck-wheels, flexible connections between said discharge pipes and the first mentioned pipes whereby relative movement between the truck and said first mentioned pipes is permitted, means whereby said valves are alternately moved to open position, and means intermediate of said first means and the truck whereby said first means is actuated when the truck moves laterally.

7. A rail and wheel flange oiler comprising, in combination with a truck and a medium supply under pressure, a lubricant holding reservoir secured adjacent to the cylinders of the locomotive, a pair of tubes leading from the bottom of said reservoir, a chambered member arranged in communication with the fluid medium supply and provided with a pair of outlet ports, poppet valves in said ports normally seated by the pressure of said medium, pipes leading from the outlet ends of said ports and communicating with said reservoir tubes, said pipes having restricted orifices at the communicating points with said reservoir tubes, discharge pipes fixedly secured to the journal box with the discharge ends disposed adjacent to the inner faces of the balls of the track-rails, flexible connections between said pipes and the first mentioned pipes, a lever pivoted to swing laterally and having an enlarged head adapted to alternately move said poppet-valves to open position, and a connection between said lever and the truck adapted to permit vertical movement of the truck and to oscillate the lever when the truck moves about a curve in the track-rails.

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