Nov. 24, 1931. H. E. ANDERSON 1,832,956

AUTOMATIC OILER FOR JOURNAL BEARINGS

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Fig. 2.

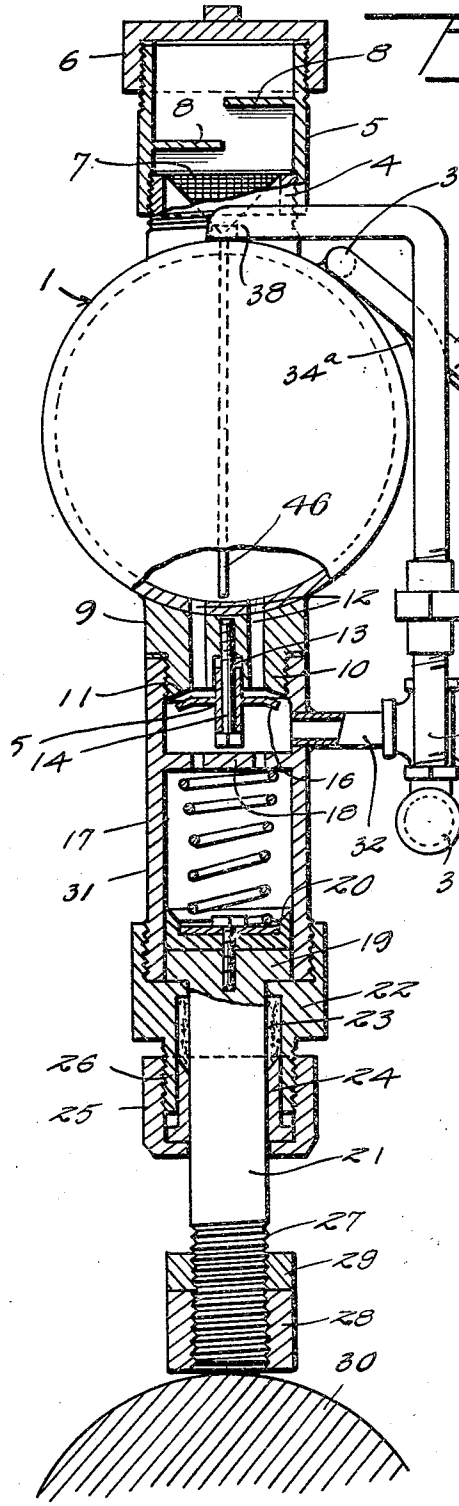

Fig. 1.

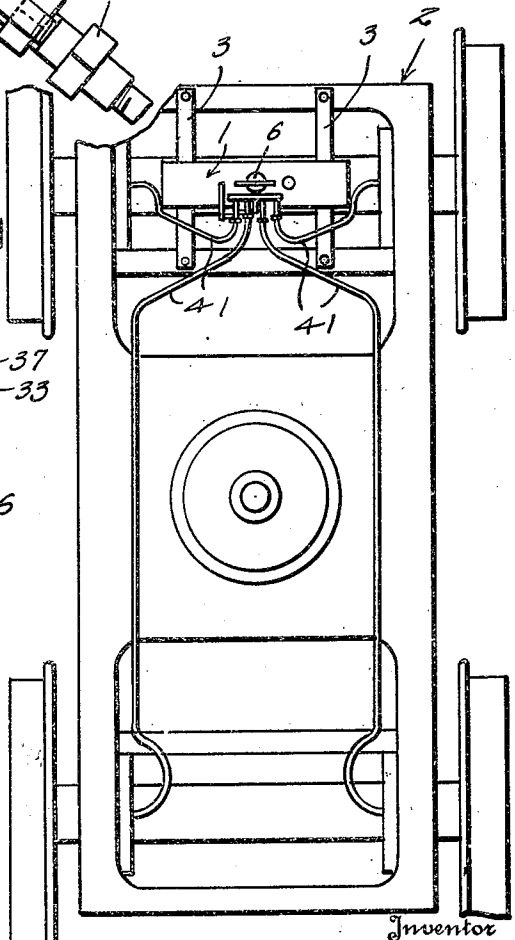

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Fig. 3.

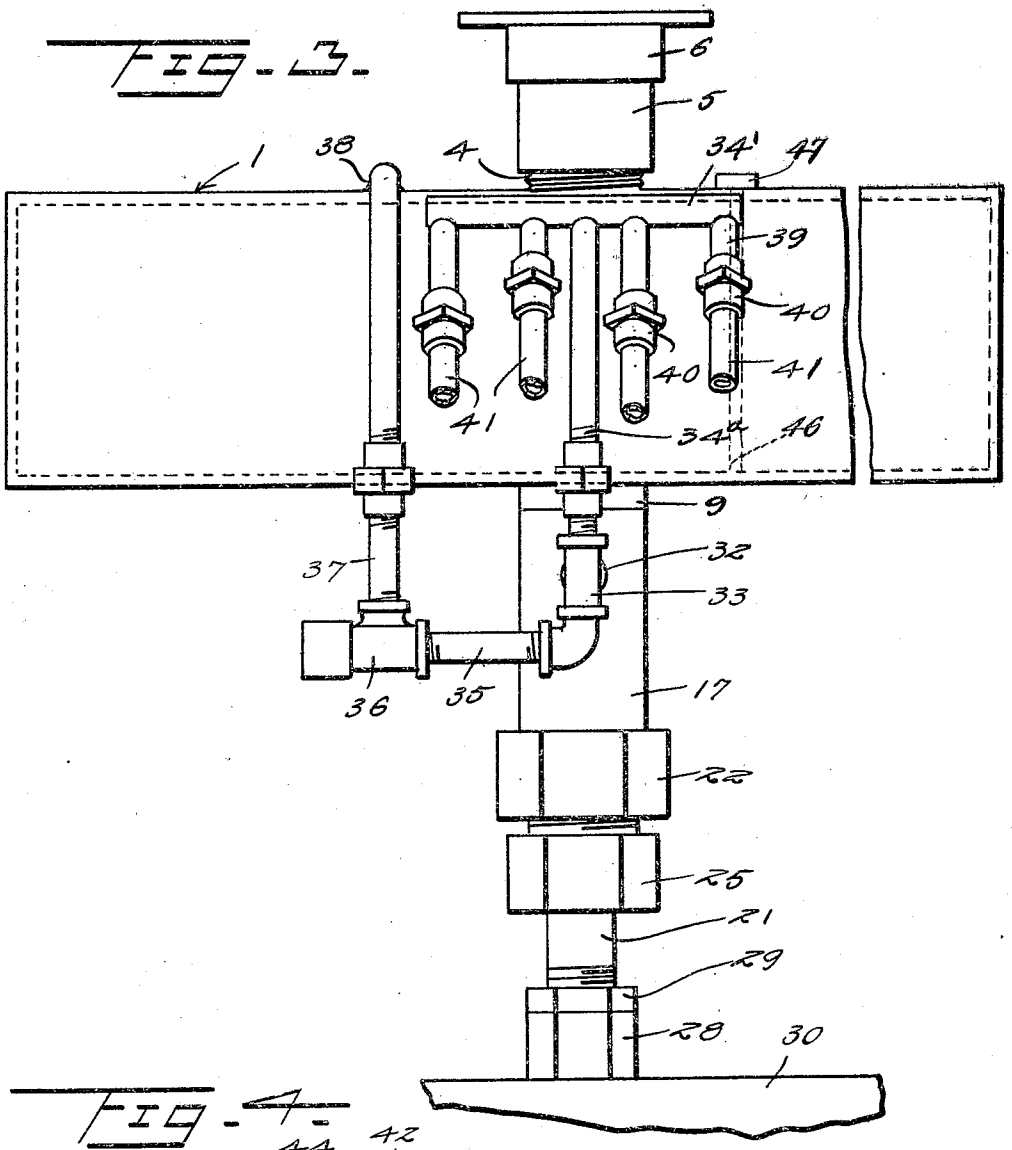
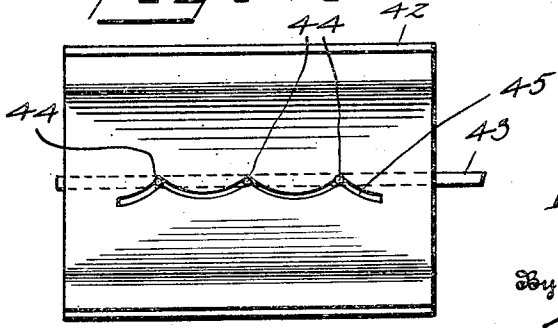


Fig. 4.



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UNITED STATES PATENT OFFICE

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AUTOMATIC OILER FOR JOURNAL BEARINGS

Application filed September 10, 1929. Serial No. 391,637.

This invention relates to improvements in force feed mechanism for supplying oil to bearings.

The primary object of the present invention is to provide an improved force feed oiler designed particularly for use upon the trucks of locomotives and railway cars, the power for forcing the lubricant through various supply pipes being obtained through the utilization of the relative movement between the car axle and the body of the truck while the car is running, the axle of the truck and body thereof normally having relative movement at this time.

Another object of the invention is to provide a force feed oiler for railway car and locomotive trucks so designed that the supply of oil to the various bearings of the truck may be regulated and oil ejected from certain ejector mechanism in excess of the amount which the supply lines for the bearings can handle may be shunted to return to the reservoir from which it is taken.

A still further object of the invention is to provide a force feed lubricator of the character above described which may be readily applied to car trucks and which will operate indefinitely without attention except for periodic replenishments of the oil supply in the tank of the device.

Other objects and advantages of the present invention will become apparent as a description of the same proceeds and the invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming a part of the present specification with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawings but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention, as expressed in the appended claims.

In the drawings:—

Figure 1 is a view in plan of a locomotive or railroad car truck showing the application of the present force feed lubricator.

Figure 2 shows the lubricator device partly in end elevation and partly in longitudinal section.

Figure 3 is a view in side elevation of the device showing the oil distributing pipes and manifold therefor.

Figure 4 is a view of the inner face of a standard bearing brass showing the means employed for ejecting the oil therethrough to the face of the bearing.

Referring more particularly to the drawings wherein like numerals of reference indicate corresponding parts throughout the several views, the numeral 1 indicates an oil supply tank which is here shown as of cylindrical construction and relatively long.

This tank when applied to a car truck, such for example as that indicated generally by the numeral 2 and shown in Figure 1, is mounted directly above an axle of the truck, preferably upon supporting bands 3 mounted upon the truck frame transversely of and above the axle in such a manner as to provide a cradle for the tank.

The tank 1 has, opening through the wall thereof, a nipple 4, this nipple being preferably welded to the tank wall and having external screw threads for the reception of a sleeve 5 which is normally closed at its upper end by a cap 6 which has threaded connection therewith, as shown in Figure 2. The sleeve 5 when secured in place upon the nipple 4 maintains in position in the nipple a wire gauze strainer 7 through which the oil introduced to the tank must pass before it is used to lubricate the truck bearings. In order to prevent damage to the strainer by the careless insertion of a funnel spout, the sleeve 5 is provided with a pair of baffle plates 8 arranged in the staggered relation shown.

From the underside of the tank 1 which would be at a point diametrically opposite the inlet sleeve 5 in the case that a cylindrical tank is employed, there is secured a suitable stud 9 which has a reduced terminal portion 10 provided with screw threads. The lower face of this terminal portion is formed to provide a seat 11 for a valve, hereinafter described, and formed longitudinally through the stud is a pair or more of oil outlet pas-

sages 12 which, at their inner ends, open into the tank 1, as shown. In the central portion of the stud there is formed a bore 13 which at its external inner end is of reduced diameter and internally threaded to receive the end of a bolt 14.

This bolt 14 passes through a sleeve 15, one end of which slidably extends into the bore 13. This sleeve carries, intermediate its ends, a disc valve 16 which is formed to position, during certain periods in the operation of the lubricator, upon the seat 11 to close the passage 12 and prevent flow of oil from the reservoir.

The reduced portion 10 of the stud 9 threadably engages in one end of a cylinder 17 which cylinder has formed transversely thereof and adjacent the end attached to the stud 9, an apertured partition 18.

In the lower end of the cylinder 17 a piston head 19 positions, there being secured to the face of this piston head a suitable washer 20 which is held to frictionally engage the wall of the cylinder. The piston head 19 carries a relatively heavy rod 21 and this head is prevented from accidental displacement from the cylinder by the cap 22 which threadably engages the lower end of the cylinder and through which the rod 21 passes.

A portion of the bore through the cap 22 is of a diameter materially greater than the rod 21 so that space is provided for packing material 23 and this packing material is held in place by a suitable gland 24 which in turn is forced inwardly by a nut 25 which receives the outer end of the gland and which has threaded engagement with a reduced portion 26 forming a terminal part and extension of the cap 22.

At its outer end the rod 21 is threaded as at 27 to receive the adjusting nut 28 and locking nut 29.

As previously stated the lubricator is so mounted on a truck as to position over an axle thereof and it is also so positioned that the lower end of the piston rod 21 comes into close proximity to the axle. By manipulating the adjusting nut 28, a very small amount of play can be allowed between the axle and the nut and when the nut is adjusted to suit it is fixed by the locking nut 29. A portion of an axle is indicated in Figure 2 by the numeral 30.

In order to maintain the piston 19 in outwardly extending or projecting position there is housed within the cylinder 17 between the partition 18 and the face of the piston a coiled spring 31 of suitable weight, the office of which is to keep the piston in the outer or lower end of the cylinder.

Leading from the upper end of the cylinder 17 is an outlet nipple 32, which at its outer end opens into one branch of a three-way coupling 33, a second branch of this coupling having joined thereto an upwardly extending pipe 34 which, at its upper end opens into an oil manifold 34′ which is supported at some point adjacent the upper part of the oil reservoir 1, preferably by welding or otherwise securing it directly to the body of the reservoir. The third outlet of the coupling is connected by a suitable coupling with a lateral pipe 35 which opens into the casing of an adjustable spring pressed valve 36. This valve may be of any suitable type which can be so adjusted that a predetermined amount of pressure must be applied thereto before it will open and it is so positioned that the pressure must be applied from the pipe 35 so that when it opens it will permit the passage of oil from the pipe 35 into the return pipe 37 which leads back to the oil reservoir 1, discharging preferably through the top thereof, as indicated at 38.

From the manifold 34′ there extends four lead-off nipples 39, one for each of the bearing brasses of the truck and each of these nipples has coupled thereto by a reducer coupling 40, an oil conducting pipe 41.

In Figure 4 there is shown in detail the inner face of a bearing brass showing the manner in which an oil pipe may be extended longitudinally therethrough. The brass is indicated as a whole by the numeral 42 and the oil pipe extending longitudinally therethrough is indicated by the numeral 43. Two of these brasses, which are of usual construction, are employed in association with each axle, one adjacent each wheel thereof in the usual well-known manner and each of the pipes 43 thereof has one of the oil supply pipes 41 connected thereto. Suitable oil escape apertures 44 are formed in the face of the brass and each of these apertures connects with the arcuate distributing grooves 45.

Extended into the reservoir 1 through the top or upper portion thereof is a graduated measuring rod 46 having a head 47 which rests upon the wall of the tank to hold the rod in position. The height of the oil in the tank can be readily determined by withdrawing this rod and observing the point where the oil film ceases.

In operation, the present lubricator is mounted, as previously described upon suitable supports over an axle of the truck and the piston rod nuts 28 and 29 are then adjusted so that they will be in close proximity to the axle. After the proper connection has been made between the pipes 41 and the brasses of the truck, the spring controlled check valve 36 is adjusted to approximately the correct position and the lubricator is then ready for use.

During the running of the truck to which the lubricator is applied there will be a slight vertical movement of the truck frame upon the supporting axles which movement will cause the axle adjacent the lubricator to come

into contact with and move the piston rod 21, thus forcing the piston head 19 upwardly to eject oil from the cylinder into the lateral lead-off pipe and into the manifold from which it will be distributed through the pipes 41 to the various brasses to lubricate the same. It will be obvious that upon certain occasions when the pressure of the axle against the piston rod will be greater than upon others, more oil will be ejected from the cylinder than can be carried off by the manifold and the pipes 41 and when this occurs a portion thereof will be forced through the valve 36 into and through the pipe 37 which leads back to the reservoir, thus rupture of any of the pipes through the application of too great pressure will be avoided.

Having thus described my invention, what I claim is:—

1. A bearing lubricator for trucks of the character described, comprising a receptacle designed to be positioned over an axle of the truck, an apertured lead-off body at the underside of the receptacle, a piston cylinder attached to said body and having the same opening thereinto, a check valve controlling the passage of oil through the lead-off, a piston within the cylinder having a rod extending downwardly to a point adjacent the underlying axle, adjustable elements carried upon the lower end of the rod for governing the clearance between the same and the axle, lead-off means from said cylinder at the upper end thereof, a manifold for receiving oil from the lead-off, and distributing pipes leading from said manifold to the bearings of the trucks.

2. A bearing lubricator of the character described, for trucks, comprising an oil receptacle positioned over an axle of the truck, a stud formed on the exterior surface of the receptacle wall and having passages formed therethrough and in communication with the interior of the receptacle, a cylinder threaded at one end onto said stud and having said passages discharge thereinto, said cylinder having an apertured partition wall therein, a stem carried by said stud, a valve mounted on said stem to close said passages, a piston mounted in said cylinder and having a rod extending from the other end thereof to a point in close proximity to said axle, resilient means interposed between said partition wall and said piston normally urging the latter outwardly, and means for conducting oil from said cylinder from a point adjacent said valve to bearings for said axle.

3. A bearing lubricator of the character described, for trucks, comprising an oil receptacle positioned over an axle of the truck, a stud formed on the exterior surface of the receptacle wall and having passages formed therethrough and in communication with the interior of the receptacle, a cylinder threaded at one end onto said stud and having an apertured partition wall therein, a stem carried by the stud, a valve mounted on said stem to close said passages, a piston mounted in said cylinder and having a rod extending from the other end thereof to a point in close proximity to said axle, a manifold comprising an elongated casing mounted upon said oil receptacle, a plurality of pipe lines leading from said manifold to bearings of the truck, a pipe line leading from said cylinder from a point of the latter adjacent the end connected with said stud, to said manifold, and a check valve controlled pipeline in communication with said last mentioned pipe line and leading therefrom to the oil cylinder.

In testimony whereof I hereunto affix my signature.

HARRY E. ANDERSON.