Nov. 18, 1930. J. S. CHILDS 1,782,133

WHEEL FLANGE OILER

Filed Dec. 7, 1929

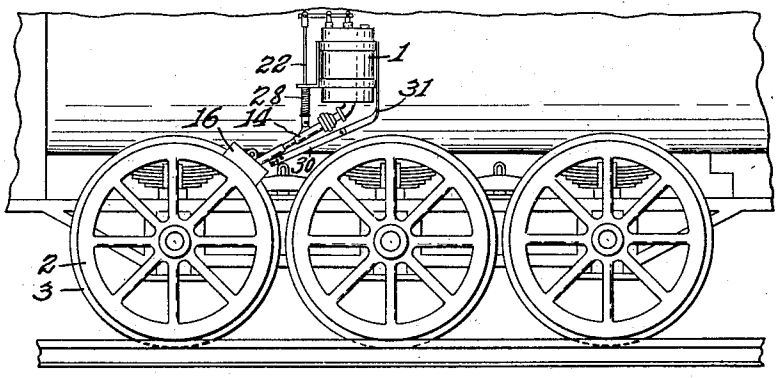


FIG 1

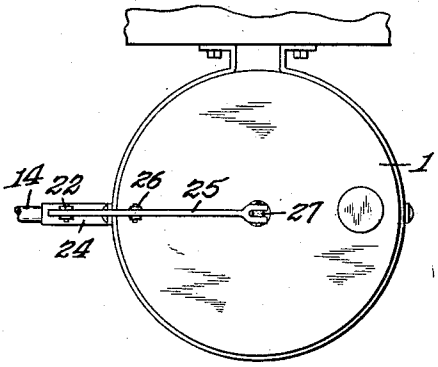


FIG 3

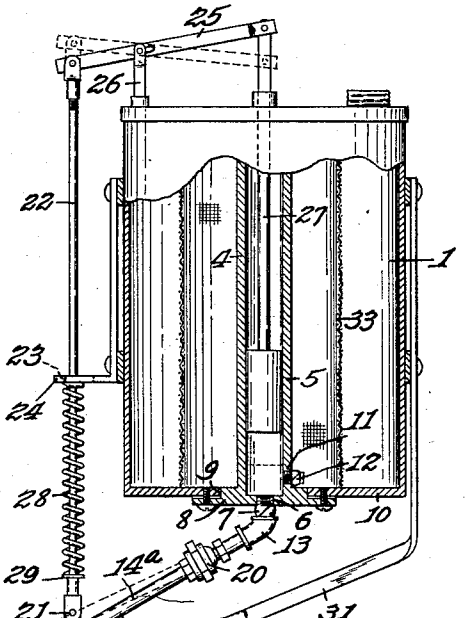
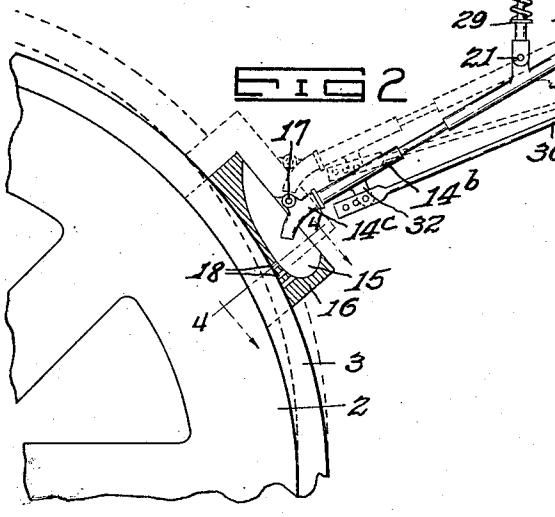


FIG 2



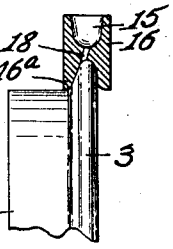


FIG 4

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UNITED STATES PATENT OFFICE

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WHEEL-FLANGE OILER

Application filed December 7, 1929. Serial No. 412,438.

This invention relates broadly to wheel-flange lubricating devices, and more specifically to an apparatus designed particularly for the lubrication of the drive wheels of locomotives.

The principal objects of the invention are to provide a flange oiler of simple construction which is wholly automatic in its operation; which, following application, requires no adjustment; which utilizes the vertical movements of the wheel relative to the engine frame or body for effecting the application, or feed, of the lubricant and remains inoperative while the engine stands idle; which maintains the wheel tread free from lubricant, applying the lubricant to the flange only; and which, finally, is extremely economical in its use of the lubricant.

With these and other objects in view, the invention resides in the features of construction, arrangement of parts and combinations of elements which will hereinafter be fully described, reference being had to the accompanying drawings, in which—

Figure 1 is a partial side elevation of a locomotive equipped with the invention;

Figure 2 is an enlarged view of the invention, partly in vertical section and partly in side elevation;

Figure 3 is a top plan view of the lubricant container; and—

Figure 4 is a cross section of the lubricant-applying element.

Referring to said drawings, 1 designates a lubricant container or tank, herein shown as of cylindrical form, which is adapted to be mounted rigidly upon a stationary part of the engine, as a portion of the truck frame, at a suitable point adjacent to the wheel 2 whose flange 3 is to be lubricated. Disposed vertically within said container, preferably in a central location, is a pump cylinder 4, and arranged for reciprocating movements within said cylinder is a piston, or plunger, 5. A port 11, controlled by a suitable check-valve 12, is provided adjacent to the lower end of the cylinder 4 and normally constitutes an inlet passage through which oil flows from the container 1 to the interior of said cylinder.

The cylinder 4 is herein shown as formed integral with a closure 8 by means of which a centrally located opening 9 provided in the bottom 10 of the container is sealed. Provided in said closure 8 at the lower end of said cylinder is a port 6 in which is mounted a normally closed check valve 7 which is connected by a suitable coupling 13 to the upper end of a downwardly and forwardly inclined feed pipe 14 through which the lubricating oil is supplied, as will hereinafter be described.

The feed pipe 14 is composed of relatively telescoping sections 14^a and 14^b, as shown, the lowermost section 14^b having a nozzle-like end 14^c disposed for discharging into a pocket-like oil reservoir 15 provided in the upper part of a lubricant-distributing block 16 which is adapted to be so mounted that it will ride upon the wheel flange 3 to be lubricated.

The block 16 is preferably made of metal, being channeled on its under side to conform to the cross-sectional dimensions and shape of the wheel flange 3. The nozzle 14^c of the feed pipe 14 has said block pivotally attached thereto, as shown at 17, for maintaining said parts in their proper relative positions. The oil received in the reservoir 15 passes by gravity through one or more suitably located passages or ports 18 to the inner face of the wheel flange 3, as is most clearly shown in Fig. 4, for lubricating the latter. The inner leg 16^a of the saddle-like lower portions of said block rides upon the tread surface of the wheel adjacent to the flange and, in effect, forms a seal by which flow of oil to said tread surface is largely, if not wholly, prevented.

Located at a suitable point intermediate the ends of the section 14^a of the telescoping feed pipe 14 is a universal joint 20, preferably of ball-and-socket type, designed to allow the main body portion and discharge end of said feed pipe to have a limited range of universal movement to accommodate said parts to the various positions assumed by the wheel 2 relative to the truck frame or other stationary part on which the oil container 1 is mounted, it being understood that said wheel

not only has a range of lateral movement, but also of vertical movement, relative to the frame.

Pivotally attached to the feed pipe 14, as at 21, is the lower end of a vertical rod 22 which is directed upwardly through a guide slot 23 provided therefor in a lug 24 mounted upon the lubricant container 1 and which has its upper end pivotally attached to the outer end of a lever 25. Said lever is pivotally mounted intermediate its ends upon a suitably located stationary part, as upon an upright post 26 fixed on the top of said container, and has its inner end pivotally mounted on the upper protruding end of the rod 27 which carries the plunger 5. A compression spring 28 of spiral form is carried by the rod 22 for normally maintaining said feed tube 14 and the attached block 16 depressed, said spring being shown with its upper end resting against the lug 24 and its lower end seated upon a collar 29 fixed on said rod.

In practice, the slight elevating movements of the wheel 2 relative to the stationarily mounted container 1, permitted by the usual springs overlying the journal box, serve to elevate the block 16 and the attached feed pipe 14, substantially as shown in dotted lines in Fig. 2, thus effecting a corresponding elevation of the rod 22 against the tension of spring 28. This elevating movement of said rod produces a rocking movement of the lever 25 which actuates the plunger 5 located within the pump cylinder 4 to lower for forcing oil from the latter to the feed pipe 14. Manifestly, the movements communicated to the plunger are ordinarily slight, but they are sufficiently frequent to effect the feed of lubricant at the relatively slow rate required for lubrication of the wheel flange.

An inclined rod 30 having one end pivotally attached to a stationary part, as to a bracket arm 31 rigidly carried by the container 1, is herein shown as located at a slightly lower level than the feed pipe 14, the same having its forward end pivotally attached to a depending lug 32 fixed on the under side of the section 14^b, as shown. Said rod serves not only to prevent relative detachment of the sections 14^a and 14^b of the telescoping feed pipe, but to limit the extent of relative rotary movement of said sections. The joints formed at opposite ends of said rod 30 are sufficiently loose and free to allow of the range of lateral movements required to accommodate itself to the lateral movements of the feed pipe in following shifting movements of the wheel.

A wire mesh strainer 33 is preferably disposed in enclosing relation to the pump cylinder 4, as shown.

What is claimed is—

1. In a wheel-flange oiler, a stationarily mounted oil container, a pump cylinder to which oil is supplied from said container, a plunger within said cylinder, a saddle-like member mounted to ride on the wheel flange, said member having therein a reservoir and ports leading from the reservoir, a flexible telescoping feed pipe leading from said pump cylinder to said member and having connection with the latter, and connections intermediate said feed pipe and said plunger whereby vertical movements imparted to the former are communicated to the latter for forcing oil to said feed pipe.

2. In a wheel-flange oiler, a stationarily mounted oil container, a pump cylinder to which oil is supplied from said container, a plunger within said cylinder, a saddle-like member mounted to ride on the wheel flange, said member having therein a reservoir and ports leading from the reservoir, a feed pipe leading from said pump cylinder to and being adapted to conduct oil to the reservoir of the latter, said feed pipe having therein a universal joint and being adapted to be elevated and lowered with vertical movements of the wheel imparted to said member, and connections between said feed pipe and said plunger whereby the latter is actuated by movements of the former to reciprocate within said cylinder.

3. In a wheel-flange oiler, a stationarily mounted oil container, a pump cylinder to which oil is supplied from said container, a plunger within said cylinder, a saddle-like member mounted to ride on the wheel flange, said member having therein a reservoir and ports leading from the reservoir, a feed pipe leading from said pump cylinder to and having pivotal connection with said member, said feed pipe being adapted to conduct oil to the reservoir of said member and being composed of telescoping sections, said pipe being flexible to permit a range of universal movement of its discharge end, and means connecting said end to said plunger whereby vertical movements of the former are communicated to the latter.

4. In a wheel-flange oiler, a stationarily mounted oil container, a pump cylinder disposed to receive oil from said container, a plunger arranged to operate in said cylinder, an oil distributing member disposed to ride on the wheel flange and having therein an oil reservoir with feed ports leading therefrom, a feed pipe leading from the lower end of said cylinder to said reservoir and having pivotal connection with said member, said pipe having therein a flexible joint permitting shifting movements of the discharge end of said pipe to correspond to movements of said member, and connections between the shiftable end of said pipe and said plunger whereby vertical movements of the former are communicated to the latter.

5. In a wheel-flange oiler, a stationarily mounted oil container, a pump cylinder disposed to receive oil from said container, a

plunger arranged to operate in said cylinder, an oil distributing member disposed to ride on the wheel flange and having therein an oil reservoir with feed ports leading therefrom, a feed pipe leading from the lower end of said cylinder to said reservoir and having pivotal connection with said member, said pipe having therein a flexible joint permitting shifting movements of the discharge end of said pipe to correspond to movements of said member, a pivotally mounted lever connected at one end to said plunger, a rod connecting the opposite end of said lever to the shiftable end of said feed pipe, and yieldable means normally holding said rod depressed for maintaining said plunger elevated and said discharge end of the feed pipe lowered.

6. In a wheel-flange oiler, a stationarily mounted oil container, a pump cylinder disposed to receive oil from said container, a plunger arranged to operate in said cylinder, an oil distributing member disposed to ride on the wheel flange and having therein an oil reservoir with feed ports leading therefrom, a feed pipe leading from the lower end of said cylinder to said reservoir and having pivotal connection with said member, said pipe having therein a flexible joint permitting shifting movements of the discharge end of said pipe to correspond to movements of said member, a pivotally mounted lever connected at one end to said plunger, a rod connecting the opposite end of said lever to the shiftable end of said feed pipe, and yieldable means normally holding said rod depressed for maintaining said plunger elevated and said discharge end of the feed pipe lowered, said feed pipe embodying telescoping sections.

In testimony whereof, I affix my signature.

JOHN S. CHILDS.