

J. ABBOTT.

MEANS FOR LUBRICATING AXLE BEARINGS.

(Application filed Apr. 12, 1902.)

(No Model.)

2 Sheets—Sheet 1.

FIG 2

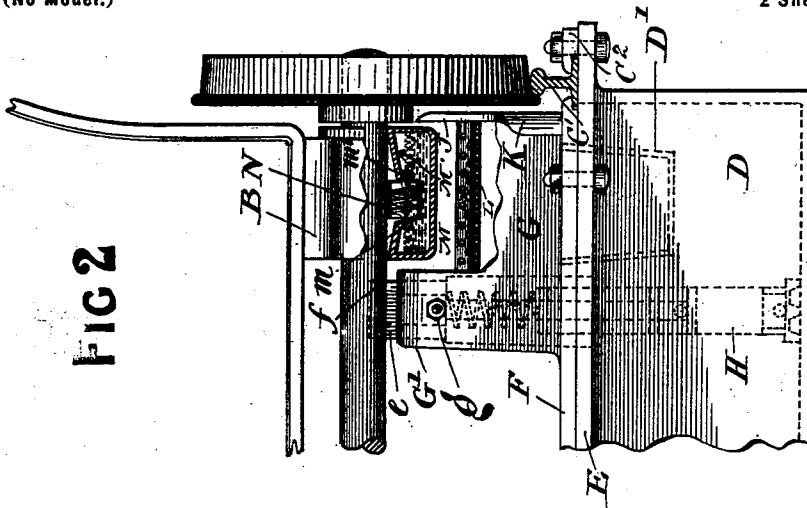
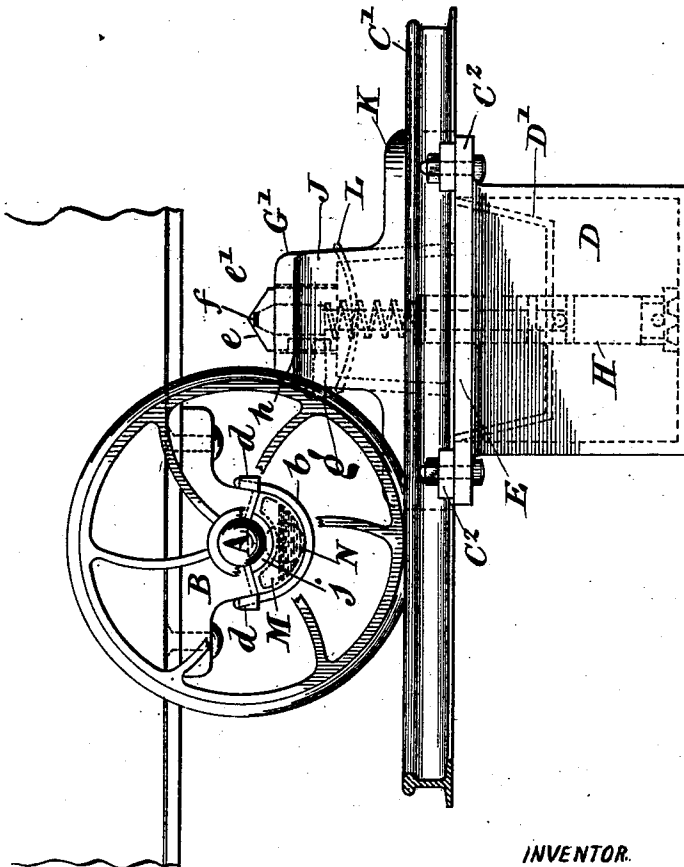


FIG 1



WITNESSES:

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FIG 3

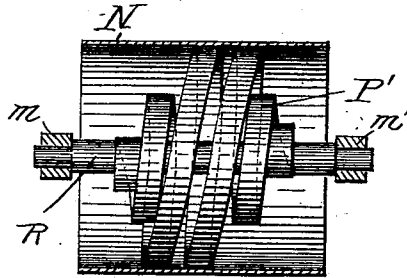


FIG 4

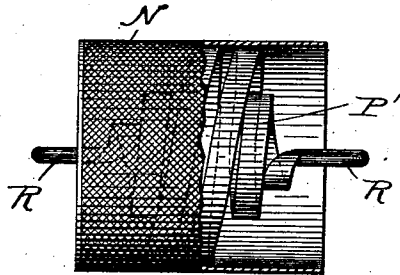
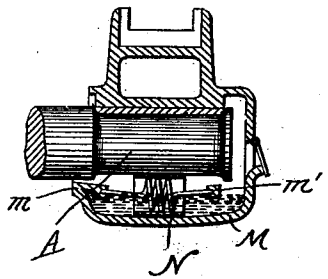


FIG 5



WITNESSES

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UNITED STATES PATENT OFFICE.

JAMES ABBOTT, OF CRUMLIN, ENGLAND.

MEANS FOR LUBRICATING AXLE-BEARINGS.

SPECIFICATION forming part of Letters Patent No. 714,123, dated November 25, 1902.

Application filed April 12, 1902. Serial No. 102,585. (No model.)

To all whom it may concern:

Be it known that I, JAMES ABBOTT, a subject of His Majesty the King of Great Britain, and a resident of Glenview, Crumlin, in Monmouthshire, England, have invented certain new and useful Improvements in Means for Lubricating the Axle-Bearings of Tramway, Railway, and Like Vehicles, (for which I have made application for patent in Great Britain, No. 5,172, dated March 1, 1902,) of which the following is a specification.

My invention relates to an improved means and apparatus in connection therewith for automatically lubricating the axle-bearings of nearly all kinds of tramway and railway vehicles, but more especially the axle-bearings of such trucks or trolleys as are in common use in coal and like mines.

My invention has for its object to provide effective means for lubricating such vehicles automatically and to prevent the waste of lubricant as obtains in the system of lubrication in present use and more especially when such trucks or trolleys are tilted sidewise (as frequently happens in such mines) when in the workings or sidings.

In order that my present invention may be clearly understood, I have hereunto appended four sheets of drawings, in which I have chosen to consider my invention as applied to the trucks or trolleys of coal and like mines, in which a large quantity of free dust is always present.

Figures 1 and 2 are side and end elevations of part of a truck or trolley as used in mines, showing one-half of my invention as applied to one of the axles thereof. Figs. 3, 4, and 5 are sectional detail views.

The trucks or trolleys in use in coal and like mines have the ends of their axles A carried in slotted bearings B, the said bearings being usually (and for the purposes of my invention) open at their under surfaces.

For the purposes of my invention I provide at suitable intervals along the track-rails C C' a suitable sunken reservoir D for containing the lubricant in use. The top or cover E of the said reservoir is clamped to the rails C C' by clamps C², and to the said cover is bolted or otherwise fixed a plate F,

having mounted thereon and cast or otherwise formed integrally therewith a pair of hollow chambers G G, both alike, but arranged in reverse order, so that one may operate upon one end and the other upon the other end of the axles of a passing vehicle. The said chambers G G are heightened at their inner ends G' G', and each therein carries a suitable vertically-placed spring-operated pump H, of any desired and well-known construction and so arranged that its lower end dips into the well or reservoir D, while the upper end of its plunger extends through a rectangular aperture in the roof of G'. The upper end of the said pump-plunger I construct with sloping sides *e* and *e'*, so that the axle ends of a vehicle passing in either direction may roll up one of the said slopes and so depress the plunger and cause the lubricant therein to exude with great force through an aperture *f* upon the inner surface of its top above G', the said pump being retained in position and the extent of the rise and fall of its piston being governed by a pin or bolt *g*, screwed through the face of G' and engaging with a slot *h* in the said plunger, Figs. 1 and 2.

The opposite sides of the chamber G are each constructed to provide a vertical guard-plate J, the height of which is such as to form a bare clearance with the wheel-bosses of the vehicles, the said sides extending fore and aft parallel with the track-rails and have inwardly-curved ends K K', which operate as guides for retaining the wheels upon the track-rails.

The top of G between G' and J is open, and through this aperture the reservoir D may be charged, the lubricant being first deposited into a second and clarifying chamber D' in D, and overflowing this the said lubricant falls into and charges the chamber D, the said space between G' and J being then covered with a perforated lid or plate L, concave upon its upper surface, so that any of the lubricant falling from a passing axle or deflected from the guard-plate J may be guided thereby into the chamber D', which when full will overflow into D, any dust and dirt which may accompany such lubricant in passing through the plate L being thus allowed

to fall to the bottom of the clarifying-chamber D', the lubricant then flowing over clean and clear into the chamber D.

According to the method of carrying my invention into effect I provide and fix upon the under surface of the bearings B a cup M, this being fixed to the said bearing by any suitable means, but which may conveniently be by that of a strap or band, such as *b*, passing under the bottom of the said cup and bolted or otherwise connected to lugs or ears *d*, formed upon or attached to the said bearings, as at Fig. 1, in such a manner that a space *j* exists between such cup M and the axle A, as shown in Fig. 1, for purposes hereinafter explained. The crown or cover M' of the said cup M is of concave formation for the prevention of the lubricant being emptied therefrom when the truck or trolley is tilted sideways, the said cover being provided with a central opening in which is placed a hollow cylinder N, formed of solid metal, as at Fig. 3, or of perforated metal or gauze-wire material, as at Fig. 4, and within the said cylinder is placed a convolute spiral spring P', as in Figs. 3 and 4, the said spring or springs being either connected to a spindle R, as in Fig. 3, or having its ends bent or curled to form the equivalent of a spindle, as at Fig. 4, and in either case the bearing ends of each spindle are borne in bearings *m m'*, formed upon or by or attached to the under surface of the said cover of the cup M, as shown in Figs. 2 and 5.

The operation of the apparatus is as follows: Upon the axle A of a vehicle passing over the apparatus such axle would ride over the surfaces *e e'* and depress the plunger of the pump, such depression of the plunger causing the lubricant therein to exude with force through the aperture *f* at the moment the axle A was on the apex between the slopes *e e'*, and such lubricant would at this moment be forced through the space *j* into the cup M, the rising of the plunger by the power of its spring when the axle had passed again

charging the pump with a fresh supply of lubricant for operating in like manner upon the next passing vehicle. The cylinder N in the said cup would always be with its downmost portion dipping into the lubricant in the cup M, while its upper portion would always be kept in close contact with the axle A by the tension of the spring or springs P, P', or P², whichever may be in use, and such contact between A and N would cause them to rotate together, and by this means the lubricant would be fed to the axle-bearing continuously during such rotation, and such of the lubricant issued from the aperture *f* as may fail to enter the orifice *j* would fall upon the perforated cover L, as also would the overflow (if overfed) of the cup M.

Having now particularly described and ascertained the nature of my said invention, I declare that what I claim is—

1. In a device of the class described, an axle-box having an oil-cup beneath the axle, a hollow cylinder in said cup and in contact with the under side of the axle, and a helical spring arranged within said cylinder and having ends connected with the cup, substantially as and for the purposes described.

2. In a device of the class described, an axle-box having an oil-cup beneath the axle, said cup having a concave canopy with a central opening therein, a hollow cylinder located in said opening, and a helical spring within said cylinder having its ends suspended on the said concave canopy at the edges of the said opening, with deflecting-surfaces J for directing the otherwise waste lubricant back to the reservoir, substantially as described and shown.

In witness whereof I have hereunto set my hand in presence of two witnesses.

JAMES ABBOTT.

Witnesses:

CHARLES HENRY JONES,
FRANK PHILLIPS.