No. 648,821. Patented May 1, 1900.

H. R. WHITE.

LUBRICATOR.

(Application filed Sept. 8, 1899.)

(No Model.)

Fig 1

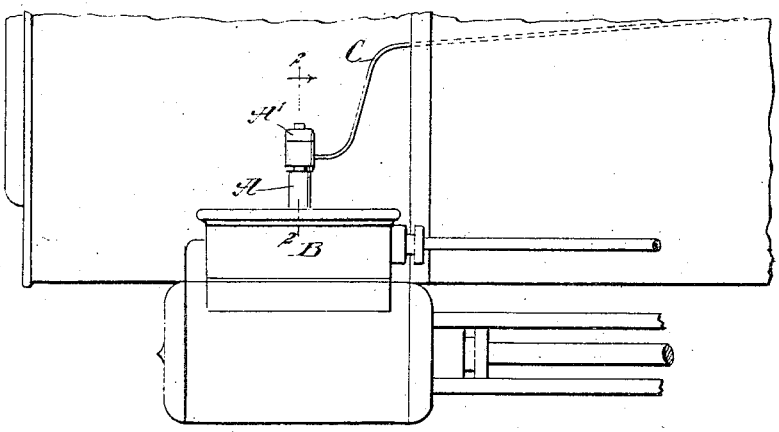


Fig 2

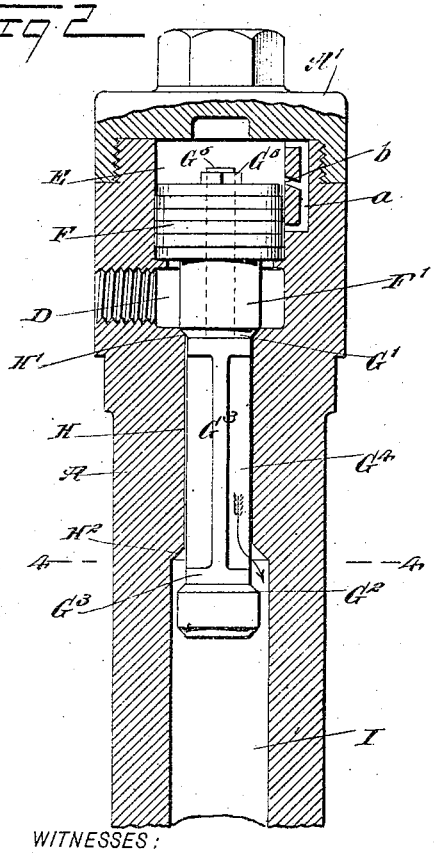
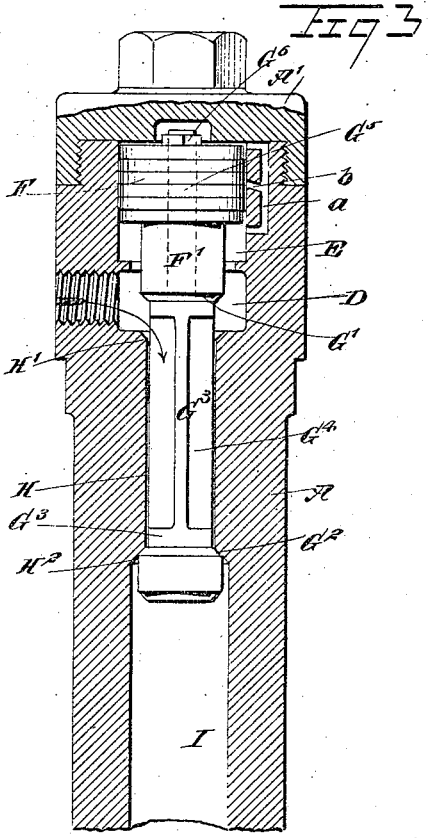


Fig 3



WITNESSES:

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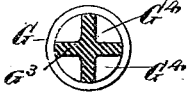
Henry Hoster

Fig 4



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HARRY ROBERT WHITE, OF HARTFORD, CONNECTICUT.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 648,821, dated May 1, 1900.

Application filed September 8, 1899. Serial No. 729,832. (No model.)

To all whom it may concern:

Be it known that I, HARRY ROBERT WHITE, of Hartford, in the county of Hartford and State of Connecticut, have invented a new and Improved Lubricant-Feed, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved lubricant-feed, more especially designed for use on locomotive-engines and other engines and machines and arranged to automatically feed measured quantities of the lubricant at regular intervals to the steam-chest or other part to be lubricated.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

A practical embodiment of my invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of the improvement as applied to a locomotive-engine. Fig. 2 is an enlarged transverse section of the improvement on the line 2 2 in Fig. 1. Fig. 3 is a similar view of the same with parts in a different position, and Fig. 4 is a sectional plan view of the carrier-valve on the line 4 4 in Fig. 2.

The improved device is provided with a body A in the form of a plug, and, as shown in Fig. 1, is attached to steam-chest B, an oil-pipe C discharging oil and steam under pressure into a receiving-chamber D, formed in the body A, it being understood that the oil-pipe is also connected with the usual oil and steam supply located in the cab of the locomotive and of the usual construction. The receiving-chamber D connects at its top with the lower end of a cylinder E, formed in the body A, and closed at the top by a cap A', forming part of the body A. In the cylinder E is mounted to reciprocate a piston F, normally in a lowermost position and adapted to be forced upward by the steam entering the receiving-chamber D and pressing against the under side of the piston, so that the latter moves to the position shown in Fig. 3. When in this position, the lower and upper ends of the cylinder E are connected by a port *a* in the side wall of the cylinder to allow the steam to pass from the lower end of the cylinder by way of the port *a* into the upper end of the cylinder to exert equalizing pressure on the top thereof, so that the piston F immediately descends to a lowermost normal position by its own gravity. In doing so the piston closes the lower end of the port *a* and opens a branch port *b*, leading from the inside of the cylinder to the port *a* directly above the piston when the latter is in a lowermost position, as shown in Fig. 2.

Now the steam is cut off from the upper end of the cylinder E, and that portion of the steam entrapped in this end of the cylinder gradually condenses, and as soon as this has taken place the pressure of the steam in the receiving-chamber and the lower end of the cylinder is again sufficient to move the piston F to its previous position (shown in Fig. 3) and to open the lower end of the port *a*, so that the steam under pressure can again pass to the upper end of the cylinder E to equalize the pressure on the piston and to cause the same to again descend, as previously explained. The water of condensation in the upper end of the cylinder can readily flow through the branch port *b* into the port *a* and from the latter through the lower end of the cylinder E into the receiving-chamber D and pass with the oil to the object to be lubricated, as hereinafter more fully explained.

From the lower end of the piston F extends a short piston-rod F', which supports a carrier-valve G, adapted to receive a measured quantity of oil from the receiving-chamber D, to hold the same in a bore II for the time being, and to finally deliver the same to the delivery-chamber I, opening into the steam-chest or other part to be lubricated and connected by the bore II with the receiving-chamber D. The carrier-valve G consists, essentially, of two valves G' G^2, connected with each other by a stem G^3, formed through part of its length with recesses or side chambers G^4 (see Figs. 2, 3, and 4) to receive and contain a measured quantity of the oil. The valves G' G^2 are adapted to be seated on valve-seats II' II^2, formed at the upper and lower ends of the bore II, the stem G^3 being of such

length that when one valve is seated on its seat the other valve is a distance off its seat, as will be readily understood by reference to Figs. 2 and 3, and the chambers G^4 terminate such a distance from the valves G' G^2 that the valves have to move a distance before the chambers G^4 connect with the receiving-chamber D or the delivery-chamber I.

When the piston F is in a lowermost position, the valve G' is on its seat H', and when the piston F is moved upward, as previously explained, then the valve G^2 moves to its seat H^2, while the valve G' moves off its seat H', and the upper ends of the chambers G^4 connect with the lower end of the receiving-chamber D, so that the oil can pass from the receiving-chamber into the said valve-stem chambers G^4 to fill the same. In the meantime the pressure on the piston F has been equalized, so that the piston descends and carries with it the carrier-valve G, whereby the upper end of the bore H is closed before the lower end of the said bore is opened into the delivery-chamber I to prevent communication between the delivery-chamber and the receiving-chamber. When the valve G' is finally moved off its seat H', the lower end of the bore H is completely opened, and the lower ends of the chambers G^4 likewise open into the delivery-chamber I, so that the oil carried by the carrier-valve and contained in the chambers G^4 can now flow by its own gravity down into the delivery-chamber I and to the part to be lubricated. (See Fig. 2.) At the next upward movement of the piston F the above-described operation is repeated—that is, the oil in the receiving-chamber can pass into the chambers G^4 and be then transferred to the delivery-chamber I, as above explained, on the next downward movement of the piston F.

In constructing the carrier-valve G and the piston F, I prefer to form the valve G' on the lower end of the piston-rod F', as indicated in Figs. 2 and 3, and the stem G^3 is provided at its upper end with a pin G^5, extending through the piston and its piston-rod, to receive a nut G^6, abutting against the top of the piston, to fasten the latter and the carrier-valve together. I do not limit myself to this particular construction of the piston and carrier-valve, as it is evident that the same may be varied; and I also do not limit myself to the application of the arrangement for the particular purpose mentioned, as the device may be used for various other purposes.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A device of the class described, comprising a cylinder, a piston controlled by a fluid under pressure and moving in said cylinder, a chamber connected with said cylinder for receiving oil and steam, a delivery-chamber connected by a bore with said receiving-chamber, and a carrier-valve moving with the said piston and extending in the said bore, and arranged to receive the oil from the receiving-chamber and to carry and deliver the same to said delivery-chamber, substantially as shown and described.

2. A device of the class described, comprising a cylinder connected with a fluid-receiving chamber and having a port for connecting the ends of the cylinder with each other, a piston in the said cylinder and alternately opening and closing opposite ends of the port, and a carrier-valve moving with said piston and arranged to receive, carry and deliver a measured quantity of the fluid, substantially as shown and described.

3. A device of the class described, comprising a cylinder connected with a fluid-receiving chamber and having a port for connecting the ends of the cylinder with each other, a piston in the said cylinder and alternately opening and closing opposite ends of the port, and a carrier-valve moving with said piston and arranged to receive, carry and deliver a measured quantity of the fluid, the said carrier-valve having two valves, and a valve-stem formed with chambers for receiving and containing the fluid, substantially as shown and described.

4. A device of the class described, comprising a cylinder connected with a fluid-receiving chamber and having a port for connecting the ends of the cylinder with each other, a piston in the said cylinder and alternately opening and closing opposite ends of the port, and a carrier-valve moving with said piston and arranged to receive, carry and deliver a measured quantity of the fluid, the said carrier-valve having two valves, and a valve-stem formed with chambers for receiving and containing the fluid, the carrier-valve operating in a bore connecting the receiving-chamber with the delivery-chamber, substantially as shown and described.

HARRY ROBERT WHITE.

Witnesses:
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