(No Model.)

E. D. BANGS.

LUBRICATOR.

No. 456,714. Patented July 28, 1891.

Fig. 2.

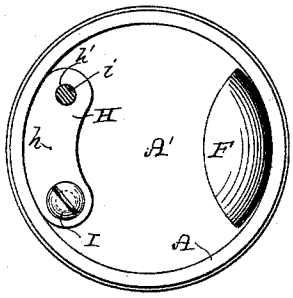


Fig. 4.

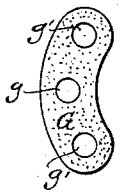
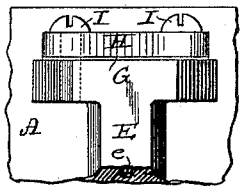


Fig. 1.

Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

EDWIN D. BANGS, OF MILWAUKEE, WISCONSIN.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 456,714, dated July 28, 1891.

Application filed February 16, 1891. Serial No. 381,690. (No model.)

To all whom it may concern:

Be it known that I, EDWIN D. BANGS, a citizen of the United States, and a resident of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain new and useful Improvements in Lubricators; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to oil-cups for lubricating locomotive and other engines; and it consists in certain peculiarities of construction, as will be fully set forth hereinafter and subsequently claimed.

In the drawings, Figure 1 is a vertical central section through one of my improved devices, the oil-cup being shown in position to lubricate one of the drive-wheel pins. Fig. 2 is a plan view of the said oil-cup with the top removed. Figs. 3 and 4 are details of construction.

My present invention is an improvement on the device for which Letters Patent of the United States No. 414,278 were granted to me on November 5, 1889.

A represents the cylinder of the cup, the upper part of which is exteriorly screw-threaded, as shown at *a*, for the reception of the corresponding screw-threaded depending circular flange *b* of the cap B, which latter has an upwardly-extending central neck C, having interior screw-threads for the reception of a corresponding screw-threaded plug D, having an internal recess *d* on the under side, but, unlike my previous patent, without any vertical or other air-opening through said plug, and below said neck C the cap R has a central hopper-shaped depression B′, with a central opening *b′*, but without the diagonal or other vent shown in my said prior patent.

E represents a vertical column, preferably integral with the inside of the cylinder A, so as to be adjacent to the wall thereof, and this column is provided with a vertical channel *e*.

E′ represents the exteriorly screw-threaded nipple, and this is here shown as projecting from beneath the center of the cylinder A. This nipple is provided with a central extension or downward projection E^2 of less diameter than that of the said nipple, the said nipple and extension being provided with a vertical channel *e′*, which is connected to the described channel *e* by means of a horizontal or other channel e^2, preferably bored from the side of the lower part of the cylinder A, the outer end of said channel e^2 being filled up by a plug e^3, as shown.

F is a curved guide rising from the tight bottom A′ of the cylinder on the inside directly opposite the column E.

G is a gasket, formed of lead or other soft metal or other suitable material, arc-shaped to correspond to the interior contour of the cylinder, and of the same outline as that of the top of the column E, upon which it rests. This gasket is provided with three openings *g′ g g′*.

H is an arc-shaped plate of the same outline as that of the gasket G and resting upon it. This plate has two end holes *h′*, corresponding to the end holes *g′* of the said gasket, through which holes *h′ g′* and into screw-threaded perforations in the top of the column E there pass the shanks *i* of screws I, whereby the plate and gasket are fixed to the top of said column. The plate H is further provided with a central hole *h* only as large as a pin-point at the top, and thence gradually increasing slightly in diameter downward, where it is in line with the center of the hole *g* in the gasket G and the center of the vertical channel *e* in the column E; but unlike my prior patent this top plate is not adjustable, nor is there any wall or funnel around the central hole of the plate, as formerly.

K represents a pin on one of the drive-wheels of a locomotive; L L, the brasses or boxes therefor; M, the strap surrounding and holding said brasses, and N one of the rods of the drive-wheels, the same being shown without any particularity of detail more than enough to show the application of my device thereto. The strap is provided with a screw-threaded bore *m* to receive the correspondingly screw-threaded nipple E′, and the brasses L L are bored out on top at their meeting edges above the pin K, as shown at *k*, to receive the nipple-extension E^2.

The operation of my improved device is substantially the same as that of the form of oil-cup shown in my said prior patent, except that there is no adjustment of the top plate over the column E. When my oil-cup is at-

tached to the described part of the engine, or any other part thereof having a reciprocating motion, then with each forward or upward motion of said part the oil inside the cup is directed by the curved guide F and injected up over and onto the plate H, above the described minute opening *h*, and then as the said part of the engine to which the cup is attached moves downward or backward the whole body of oil in the bottom of the cup is thrown upward suddenly, thereby compressing the air above the oil and forming a compressed air-cushion in the top of the cylinder and in the recesses or openings *d b'* above the oil in the cup, which forces the oil down through the opening *h* into the channel *e e² e'* directly to the part to be lubricated. This hole *h* is made so minute as to exclude all particles of dust, dirt, or other foreign matter, the pressure of the air above this hole sufficing to force down the oil even if said hole does not exceed the hundredth part of an inch in diameter at the top, and by reason of the described extension E² of the nipple the oil is conveyed directly to the part to be lubricated, thereby avoiding all danger of its being scattered to the right and left on leaving the nipple E', as might otherwise happen from the rapid reciprocation of the part to which the oil cup is attached. By the use of the soft-gasket G all necessity for the careful grinding of the top of the column E is obviated, and at the same time this gasket forms such a tight packing that no oil can ooze out or escape from between the adjacent surfaces of said column and the top plate H thereon.

According to the kind or quality of lubricating-oil used, the amount of space in the air-cushion may be varied, as required, by screwing the plug D up or down.

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

1. In an oil-cup, the combination of the cylinder with a vertical column having an oil-channel therethrough, a perforated gasket resting on top of said column, a plate with an opening of less diameter than that of the oil-channel and in line therewith secured to the gasket and column, and a curved guide for directing the course of the oil to said minute opening in the top plate, substantially as set forth.

2. In an oil-cup, the combination of the cylinder with a vertical column having a channel therethrough, a plate having an opening of less diameter than that of the said channel and in line therewith secured to and above said column, a curved guide for directing the course of the oil to said plate-opening, a closed cap having an interior opening therein forming an air-chamber above said cylinder, and a solid recessed plug closing the upper part of said cap, substantially as set forth.

3. In an oil-cup, the combination of the cylinder with a vertical column having an oil-channel therethrough, a plate having an opening of less diameter than that of said channel and in line therewith, a curved guide for directing the course of the oil to said plate-opening, a closed top having recesses or interior openings therein forming an air-chamber above said cylinder, a nipple beneath said cylinder having an oil-channel communicating with that in said column, and a downward projection or extension of less diameter than that of said nipple and having an oil-channel in communication with that in said nipple, substantially as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee and State of Wisconsin, in the presence of two witnesses.

EDWIN D. BANGS.

Witnesses:
H. G. UNDERWOOD,
WM. KLUG.