M. L. WARING.

Steam-Engine Lubricator.

No. 165,770. Patented July 20, 1875.

Fig. 1.

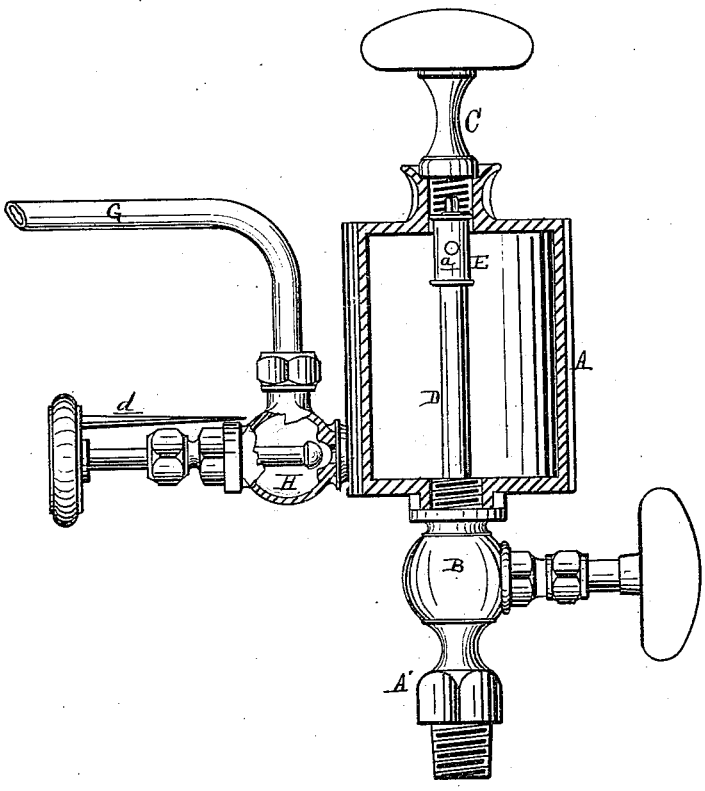


Fig. 2.

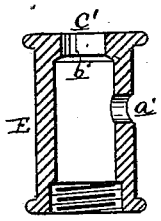
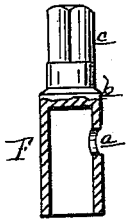


Fig. 3.



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MICHAEL L. WARING, OF DETROIT, MICHIGAN, ASSIGNOR TO HIMSELF AND CORYDON B. PALMER, OF SAME PLACE.

IMPROVEMENT IN STEAM-ENGINE LUBRICATORS.

Specification forming part of Letters Patent No. **165,770**, dated July 20, 1875; application filed February 24, 1874.

To all whom it may concern:

Be it known that I, MICHAEL L. WARING, of Detroit, in the county of Wayne and State of Michigan, have invented an Improvement in Steam-Engine Lubricators, of which the following is a specification:

The nature of this invention relates to an improvement in that class of lubricating-cups wherein the oil or melted tallow is caused to feed by overflowing the top of an internal stem by the introduction of water under the oil. Heretofore it has been the practice to introduce water resulting from the condensation of steam in an external pipe or condenser under steam-pressure; but the cups operated in this manner have not proved reliable or certain and uniform in action on locomotives and other engines working at high velocities.

The object of this invention is to so construct the cup and arrange the water-supply as to enable the delivery of a continuous supply of oil to the steam-chest of the engine to which it is attached, in a uniform volume, which can be regulated to the requirements of the engine; and it consists, first, in a peculiar valve and case at the top of the internal stem, for adjusting the flow of oil to the steam-chest; also, in the general arrangement of the various parts, as more fully hereinafter set forth.

Figure 1 is a sectional elevation of the lubricator. Fig. 2 is an enlarged vertical section of the valve-case at the top of the stem. Fig. 3 is a similar view of the valve.

In the drawing, A represents a cylindrical cup mounted on a hollow stem, A′, which is designed to be tapped into the top of the steam-chest, and is provided with a stop-valve, B. C is a screw-plug in the top of the cup, which is removed to fill the cup with oil. D is a tubular stem, tapped into the cup-stem A′, extending up nearly to the top of the cup-body. On its top is secured a case, E, inclosing a cylindrical cup-valve, F, which rests upon the top end of the stem D, on which it is ground to a steam-tight joint. *a* is an aperture in the valve, and *a′* is a similar one in the case, on the same horizontal plane when in position. The shell F has an angular valve-face, *b*, formed at its upper end, against which the seat *b′*, in the top of the case E, is in contact when the latter is screwed on the stem D. The valve terminates at the top in a square head, *c*, which projects through an opening, *c′*, in the top of the case. When the plug C is removed from the cup the valve may be rotated in its case by a socket-wrench, so as to bring the apertures *a a′* coincident with each other, and thus allow the escape of oil into the stem D A′ with a full opening; or the valve may be turned to partially close the passage and reduce the flow to single drops of oil at long intervals apart. G is a flow-pipe leading from the boiler which supplies steam to the engine, being tapped into the boiler far below the water-line, so as to take solid water, which it delivers into the lower part of the cup, passing, however, through a valve, H, which may be adjusted to regulate the influx of water to the cup, and for this purpose is provided with a pointer or index, *d*, reaching over a scale on the valve-shell. The flow of oil out of the cup is limited by the openings *a a′* in the case E and valve F, but is governed by regulating the influx of water by the valve H, which generally needs no change in position while the cup contains oil, the stop-valve B being closed when the engine is not at work, so as to prevent waste of oil. As the pressure in the boiler always exceeds that in the steam-chest in a greater or lesser degree, the oil must be forced out of the cup against the steam-chest pressure.

In the application of lubricating-cups to the steam-chests of locomotives, where an external siphon is used to condense steam to supply water to the cup, it has been found in practice that the water would not be condensed as fast as required, and that, in consequence, the oil would either be blown out of the cup, or the flow would stop entirely. On quick-running portable and stationary engines such cups, owing to the vibration caused by the great variations in the pressure of the steam in the steam-chest, have been found to feed the oil with such irregularity in volume as to preclude their use.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with the valve-case E,

having aperture a' and opening c', the cup-valve F, fitting inside the valve E and having the aperture a and angular head c, the latter being adapted to be turned by means of its square head from the outside of the cup A, to regulate the size of the opening, and, consequently, the flow of the oil, as and for the purpose set forth.

2. The combination, with the cup A, valve B, plug C, and stem D, of the case E, cup-valve F, pipe G, and valve H, as and for the purpose set forth.

MICHAEL L. WARING.

Witnesses:

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H. S. SPRAGUE.