F. LUNKENHEIMER & J. MEEHAN.

Lubricators.

No. 138,169. Patented April 22, 1873.

Fig. 1.

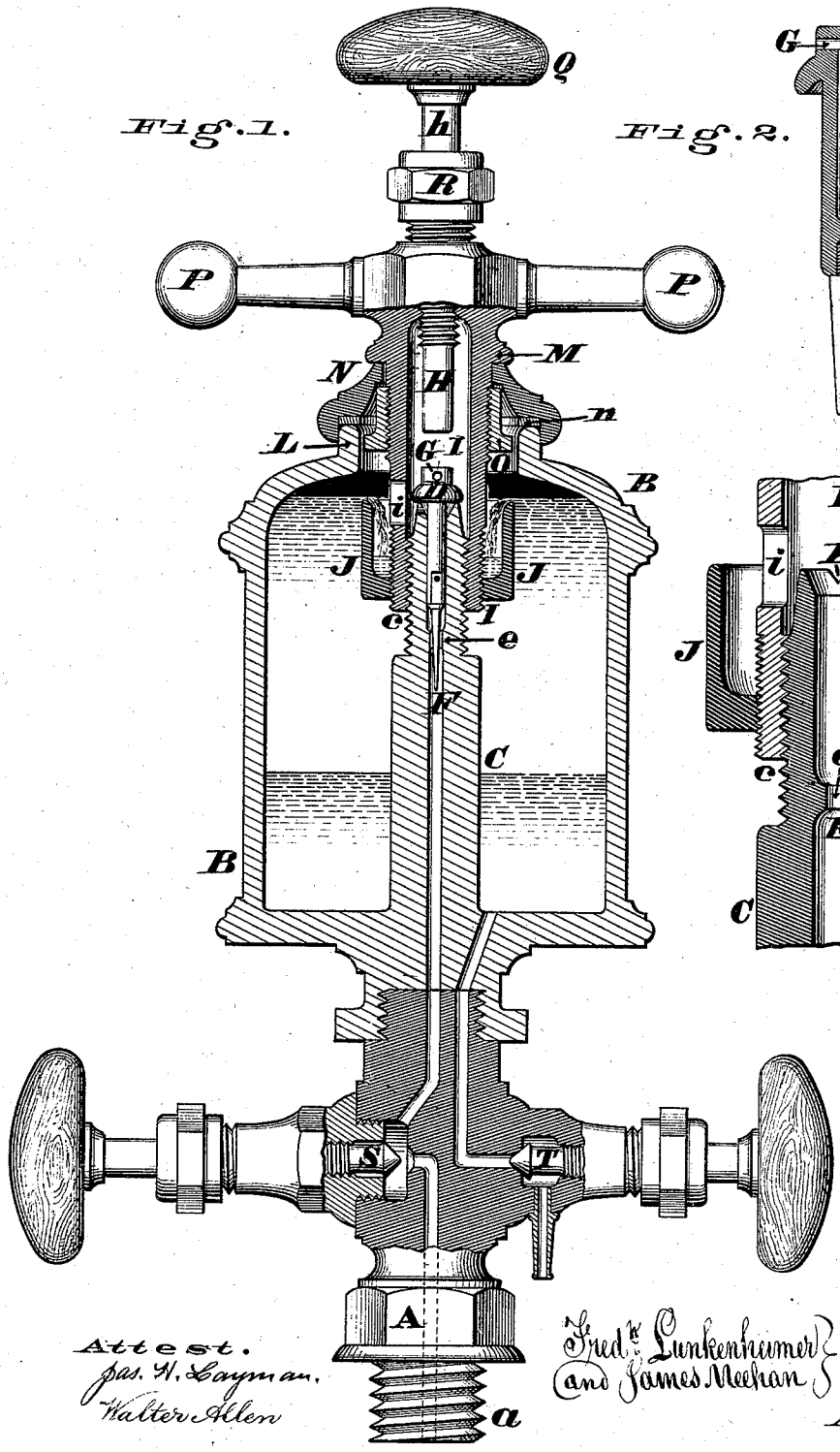
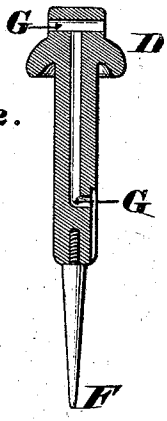
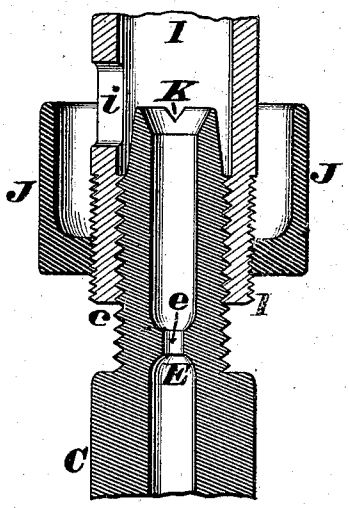


Fig. 2.





Attest.
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UNITED STATES PATENT OFFICE.

FREDERICK LUNKENHEIMER, OF CINCINNATI, OHIO, AND JAMES MEEHAN, OF COVINGTON, KENTUCKY.

IMPROVEMENT IN LUBRICATORS.

Specification forming part of Letters Patent No. **138,169**, dated April 22, 1873; application filed March 21, 1873.

To all whom it may concern:

Be it known that we, FREDERICK LUNKENHEIMER, of Cincinnati, Hamilton county, Ohio, and JAMES MEEHAN, of Covington, Kenton county, Kentucky, have invented a new and useful Lubricator, of which the following is a specification:

Nature and Objects of the Invention.

Our invention is designed to facilitate the automatic, regular, and economical delivery to the valve-chests and cylinders of a locomotive, of tallow or other firm-bodied lubricant, and includes devices which insure the proper fluidity and regular delivery of such lubricant, especially in cold weather, so as to secure constant lubrication exactly proportionate to the momentary requirements of the engine, whether traveling slow or fast, and under any head of steam, or with steam temporarily shut off, thus avoiding friction on the one hand and waste of the lubricating material on the other hand.

Specific Description.

Figure 1 is an axial section of lubricator embodying our invention. Fig. 2 is an enlarged axial section of the stand-pipe and its accessories, the valve being withdrawn.

Our lubricator is attached to and communicates with the steam or valve chest by means of customary hollow stem A, whose screw-threaded neck *a* occupies, for that purpose, a corresponding orifice in the chest-cap, and whose upper portion supports and communicates with a suitable reservoir, B, for holding the lubricant. C is a stand-pipe having substantially the same form and discharging the same functions as the "tube B" described in the patent No. 106,712, granted to said James Meehan on the 23d of August, 1870, and said stand-pipe is provided with a valve, D, which may, except as hereinafter explained, be similar to the valve "A H" described in said patent; said stand-pipe, however, differs from the "tube" described in said patent in the possession of a diaphragm, E, having a minute orifice, *e*, through which all of the lubricant and its displacing steam is compelled to pass, and said valve D differs from the said valve A H in the following particulars, namely: Said valve D has a downward-tapering stem, F, which occupies the orifice *e*, and in the depressed condition of the valve nearly closes said orifice. The said valve D and its stem F are traversed by a minute duct, G, through which a small column of steam may continually ascend, even when the valve is closed, and thereby prevent the congelation of the lubricant in cold weather, while the engine is temporarily at rest. The said duct, also, by having a separate outlet for the steam, permits the lubricant to descend uninterruptedly into that part of the stand-pipe above the diaphragm E. The lubricant is thus, during ordinary short stoppages, maintained in proper condition for prompt and efficient action, however low may be the temperature of the atmosphere, while at the same time the tapering stem F in the diaphragm E prevents a too rapid delivery. The automatic opening and closing of the valve D is caused, as in said previous patent, by the sudden alternations of pressure incident to the opening and closure of the steam and exhaust ports in the steam-chest. The degree of opening of the valve D is controlled by an adjustable stop or gage, H, substantially as in said patent. To enable the engineer to regulate the capacity of the steam space and thereby the heating-action of the steam upon the lubricant, and also the amount of condensation, the plug I, which closes the mouth of the reservoir, is made hollow, and screwed fast upon the stand-pipe at *c*, in the manner shown, and has a slot or orifice, *i*. Said plug is also, for said purpose, externally screw-threaded for an adjustable bowl, *j*, over whose upper edge the lubricant is compelled to flow, and which, consequently, by being screwed up or down, becomes effective to decrease or to increase the steam-space, and by so doing to decrease or to increase both the heating-action and the amount of condensation of the steam. The said bowl is also useful in connection with a small gut or channel, K, in the margin of the valve-seat, in maintaining a small reserve of the lubricant and water of condensation, which seeps slowly down through said channel and into the steam-chest, even after steam has been temporarily

shut off, as, for example, in descending grades. The plug I, instead of bearing directly upon the neck L of the reservoir, presses by its collar, M, upon a loose collar, N, having a soft-metal gasket, *n*, which is seated upon the rim of the neck. A gland, O, screwed upon the plug I, prevents the said loose collar dropping off when the plug is removed from the reservoir, as, for example, in filling the same with fresh lubricant. The plug I is provided with a suitable handle, P, and has screwed within it the stem *h* of the gage H above referred to, and of which Q is a knob or handle for operating said gage, and R is a suitable stuffing-box. The loose collar N not being fastened to the neck of the reservoir, but simply resting upon it, is brought to a uniform and even bearing by the action of the fastening screw-plug I. Except as to the loose collar N and the provisions for passage of steam and lubricating material in the lower portion of the plug, said closing device is substantially identical with that patented to said Frederick Lunkenheimer on the 25th June, 1867, and numbered 66,157.

The following parts may be of any customary or approved construction: S is a valve for regulating the ascent of the steam and descent of lubricant, or for closing the passage at will. T is a valve for discharging water of condensation when necessary.

Operation.

The plug I having been removed and reservoir B supplied with tallow or other suitable lubricant, the bowl J is, when necessary, adjusted up or down upon the plug-stem I, so as to decrease or to increase the steam-space, as above explained. The plug is then screwed to its place again so as to close the reservoir. The gage H is then, if necessary, adjusted up or down so as to permit greater or less vibration of the valve. The engine being now started the vicissitudes of pressure within the steam-chest instantly throws the valve into a rapid vibration, and at each opening thus made a portion of steam ascends, and of mingled lubricant and water of condensation descends, the ascent of the tapering stem operating to open more and more the passage for the steam, and the descent of said stem within the diaphragm operating to narrow the passage and to crowd down the proper modicum of lubricating material.

It is desirable that the lubricant should be maintained in just such fluidity as will permit the sinking through its body of the major part of the water of condensation, a condition which at the same time favors the slow descent of the lubricant through the appropriate passages, so as to adequately supply without at the same time flooding the engine.

Apart from the above-described specific combinations, we do not claim the self-acting valve and stand-pipe, such being found in the patent of said James Meehan before alluded to; nor do we claim the attachment of the cap by means of a screw engaging within the reservoir, such a device being the subject of a patent to said Lunkenheimer, as before stated.

Claims.

We claim as new and of our invention—

1. The provision, in a steam-engine lubricator-reservoir, of stand-pipe C, valve D, gage H, and closing screw-plug I, in the described combination, for the purpose set forth.

2. In the described combination, the plug I, gland O, loose collar N, and elevated neck L of the reservoir.

3. The described arrangement of valve D, having the tapering-stem F occupying the diaphragm E in the stand-pipe C.

4. The provision in the valve D, of the duct G, for the purpose designed.

5. In the described combination with hollow screw-plug I, valve D, and channeled stand-pipe C, the adjustable bowl *j*, for the purpose set forth.

In testimony of which invention we hereunto set our hands.

F. LUNKENHEIMER.
JAMES MEEHAN.

Attest:
GEO. H. KNIGHT,
H. SCHOONMAKER.