J. WHEELOCK.

Lubricator for Steam-Engines.

No. 165,901. Patented July 20, 1875.

Fig. 1

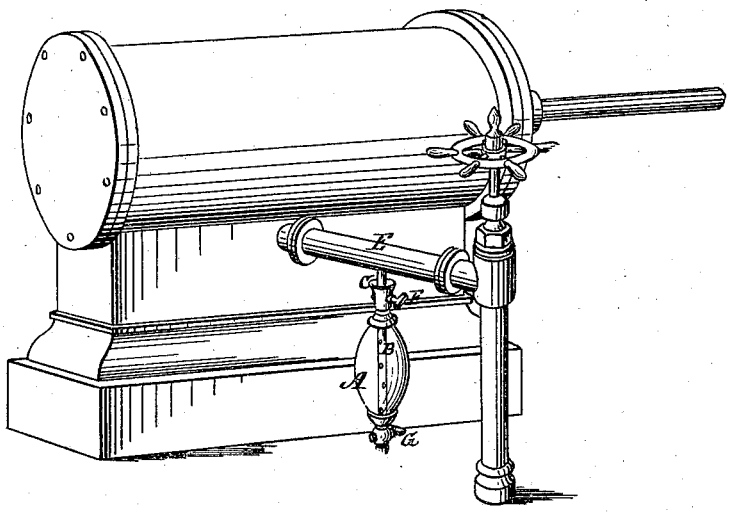


Fig. 2.

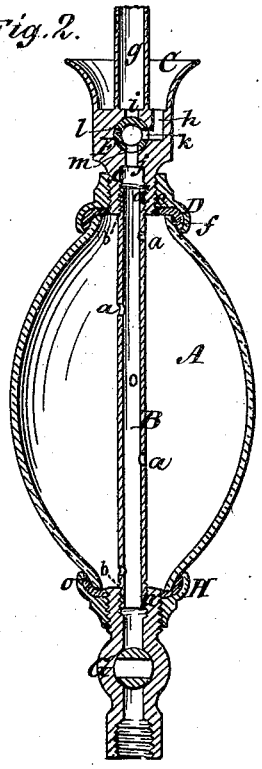
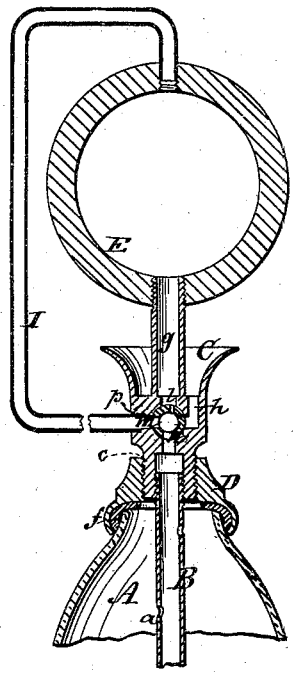


Fig. 3.



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UNITED STATES PATENT OFFICE.

JEROME WHEELOCK, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN LUBRICATORS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **165,901**, dated July 20, 1875; application filed April 23, 1875.

To all whom it may concern:

Be it known that I, JEROME WHEELOCK, of the city and county of Worcester, in the State of Massachusetts, have invented certain new and useful Improvements in Lubricators for Steam-Engines; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear and complete description of my invention.

This invention relates to certain improvements in the construction of that class of steam-engine lubricators which operate upon what is known as the "displacement" principle, and are attached to the steam-pipes, chests, or other parts of steam-engines, at which it may be desired to introduce the lubricating material to be mixed with the steam.

The object sought by this invention is the production of a lubricator which shall be simple in construction, effective in its operation, feeding the oil at a proper rate of speed, and without the possibility of waste.

My said invention consists, mainly, in the combination, with an oil-reservoir, of a perforated tube, through which the condensed steam and oil flow, said tube extending through the reservoir, and having at its upper end an oil-supply cup, and a three-way cock, by means of which the passage of the oil and steam may be controlled, said tube being also provided at its lower end with a cock for drawing the water from the reservoir when the supply of oil has been displaced. My invention also consists in the combination, with the oil cup, the perforated tube, and the reservoir, of a steam-condensing tube, as hereafter more fully described.

Referring to the drawings, Figure 1 represents a view in perspective of a steam-engine cylinder, steam-pipe, throttle-valve, and one of my improved lubricators, showing its mode of attachment to the steam-pipe. Fig. 2 represents the lubricator in central vertical section. Fig. 3 represents a modification of my invention.

In the drawings, A denotes the oil-reservoir. It is constructed of glass, although metal may be employed. Glass, however, is preferable, for the reason that the condition or amount of oil within the reservoir may, at any time, be ascertained. In this instance the reservoir is shown as having an elongated or oval form. B denotes the tube through which, when in operation, the oil and water pass in opposite directions. This tube extends through the entire length of the reservoir. It is provided with a series of perforations, *a*, and has at each end a screw-thread, *b*. C denotes the oil-supply cup. It is provided at its lower end with a tubular extension, *c*, having interior and exterior screw-threads *d* and *e*. With the interior threads the upper end of pipe B engages, while upon the threads *e* is held an inverted cup-shaped clamp, D, which embraces the upper end of the reservoir A. Between the edge of the reservoir and the clamp D is placed a soft-metal ring, *f*, forming a tight joint between the clamp and the reservoir. From the center of the cup C a tube, *g*, extends upward, engaging, by means of a screw-thread, with an opening in the under side of the steam-pipe E. The base or body of the cup is cored out to receive a cock, F, which controls the flow of the oil and water into the tube B. Leading to the cock from the cup is an oil-duct, *h*, while above the cock is a duct, *i*, through which the water of condensation passes from the tube *g*. A duct, *j*, forms a connection with the tube B. The cock F is preferably made hollow, and has three ways or ports, *k l m*, communicating with the ducts in the base of the cup. The port *l* is made much smaller than the other ports in the cock, having in practice a width of about one-sixteenth of an inch in order that the flow of the water and displaced oil through the cock may not be too great. G denotes the cock, by means of which the water may be drawn from the reservoir through the tube B after the oil has been displaced. The cock G is attached to the lower end of the tube B by means of a screw-thread, *n*, which connects with the thread upon tube.

H denotes a cup-shaped clamp corresponding to the clamp D. The clamp H engages with a screw-thread upon the cock G, and is so arranged as to embrace the lower end of the reservoir A, between which and the clamp a soft-metal packing-ring, *o*, is placed. If desired, the clamps D and H may be attached directly to the ends of the perforated tube B

in an obvious manner. These clamps, while sustaining the reservoir A in proper position, also form shields for the ends of the reservoir, and if desired they may each be extended so as to embrace the reservoir to its center, a portion of one being removed to admit of inspection of the interior of the reservoir.

In practice the lubricator, constructed as above described, is attached to the under side of the steam-pipe of the engine by means of the tube *g*, which engages with a threaded opening in the pipe, as shown in the drawing. When thus attached, and it is desired to operate the lubricator, the cock G is first closed, and the cock F is then so turned that the port *k* is brought on a line with the duct *h* leading to the oil-cup and the port *m*, and the duct *j* communicating with the perforated tube B. The lubricating material is then poured into the cup C, and, flowing through the cock, passes into the tube B, and out of the perforations *a* into the reservoir A. The reservoir having been filled with the oil, the cock F is then given a quarter turn until the port *l* is brought on a line with the duct *i*, and the port *k* communicates with the tube B. As the steam passes through the steam-pipe E, the water of condensation flows into the tube *g* of the oil-cup through the ports of the cock into the tube B, and out of the perforations therein into the reservoir A. The water, having the greatest weight, displaces the oil, and the latter rising passes through the perforations *a* into and up through the tube and cock into the steam-pipe, where it mingles with the steam, and is carried to the parts of the engine to be lubricated, in a manner well known in this class of lubricators. As the water of condensation is constantly flowing into the reservoir, a continuous supply of oil to the steam-pipe is maintained until the reservoir is filled with the water.

It will be observed that by making the port *l* in the cock of a small size, as described, I am able to secure a gradual and proper flow of the water into the reservoir, and as a consequence the feed of the oil to the steam-pipe is even and regular, thereby preventing the great waste so common in lubricators of this character. When the reservoir A becomes filled with water, the cock F is closed, and cock G opened. The water then passes through the perforations *a*, and out through the lower end of the tube B and the cock. When it is all withdrawn the cock G is closed and the lubricator is again ready for operation. I design in practice to attach a small pipe to the lower cock G, through which the water may be carried to any desired distance from the lubricator.

It will be observed that within the tube *g*, between the steam-pipe E and cock F, a chamber is formed. This chamber will be found of great service when exceedingly dry steam is employed in the engine. The steam flows into the chamber, where it is condensed, and the water runs through the cock into and through the perforated tube, as before described.

In Fig. 3 I show a modification of my invention, which consists in connecting the upper portion of the steam-pipe with the lubricator at a point adjacent to the cock by means of a small pipe or tube, I. An additional duct, *p*, leading to the pipe I is formed in the base of the oil-cup, with which the port *m* in the cock F communicates, as shown in the drawing. When this tube is employed the steam rises, and, condensing, passes down through the tube, and, entering the cock, unites with the water flowing from the lower part of the steam-pipe, thence passing into and through the perforated tube B.

I am fully aware that it is not new to provide the oil-reservoir of a steam-engine lubricator with a central tube, through which the oil and steam pass, said tube being provided with a cock, and I, therefore, do not claim, broadly, such construction. I am not aware, however, that it has ever before been proposed to combine with an oil-reservoir a perforated tube, as shown and described by me.

I claim as new, to be secured by Letters Patent—

1. In a steam-engine lubricator, the combination of an oil-reservoir, a perforated tube within and extending through the reservoir, an oil-cup, a three-way cock for controlling the flow of the oil and water, and a cock for withdrawing the water from the reservoir, substantially as described.

2. The tube *g*, in combination with the oil-cup, the perforated tube, and the reservoir, substantially as and for the purposes described.

JEROME WHEELOCK.

Witnesses:

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