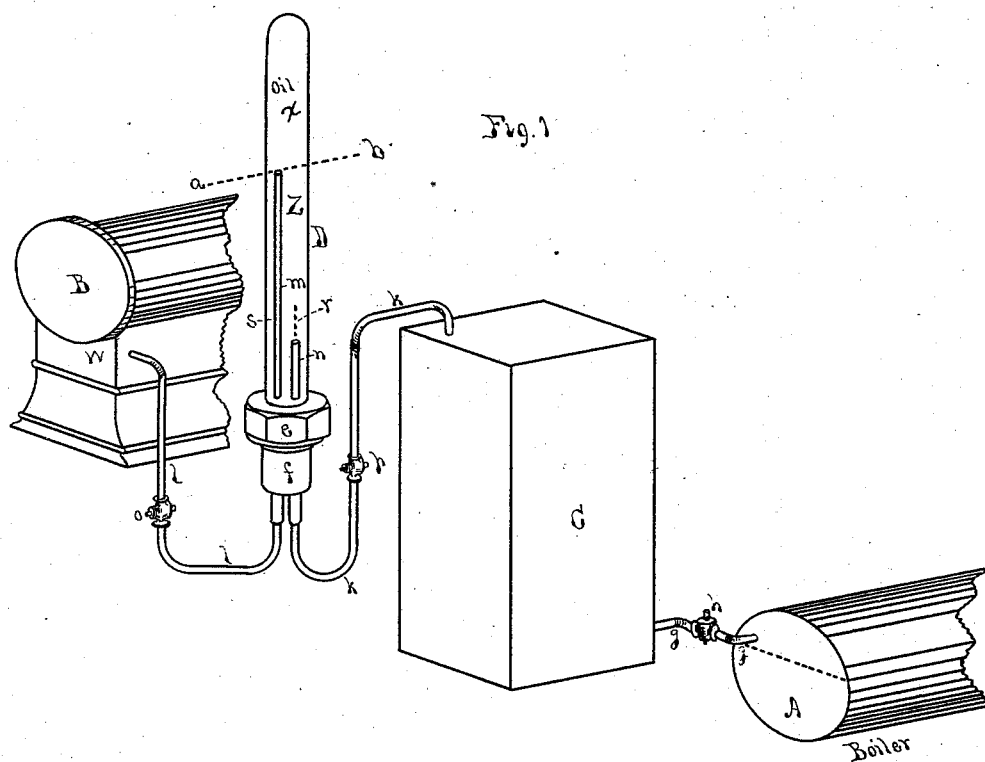


W. P. PHILLIPS.
Lubricator.

No. 216,531.

Patented June 17, 1879.



Witnesses.

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UNITED STATES PATENT OFFICE

WILLIAM P. PHILLIPS, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN LUBRICATORS.

Specification forming part of Letters Patent No. **216,531**, dated June 17, 1879; application filed September 16, 1878.

To all whom it may concern:

Be it known that I, WILLIAM P. PHILLIPS, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Lubricators, of which the following is a specification.

This invention relates to mechanism for lubricating the valves and pistons of steam-engines; and its object is to supply a constant, efficient, and regulated quantity of oil to the parts required to be lubricated in a method and by a device which differs from those now in use, and is superior to them in the following particulars: It is simpler and less expensive in construction; is capable of more convenient location in reference to the engine; regulates more perfectly, and so economizes the amount of oil used; enables the operator to observe at any moment the actual rate of delivery and correct any improper variation; takes the pressure necessary for the feed directly from the boiler instead of from the steam-pipe, and obviates the necessity of using the weight of a column of water in addition to the steam-pressure for the feed.

The invention consists, first, in a glass tube connected with a base or coupling, through which enter an induction-pipe and an eduction-pipe, and containing a chamber, one part of which is an oil-chamber and the other part a chamber for alcohol, (or other fluid heavier than oil,) the latter chamber being below the former, and the whole constructed so as to form an indicator of the flow of oil; second, in an oil-gage consisting of such an indicator combined with an induction-pipe leading from an oil-reservoir, containing a cock or valve to regulate the flow of oil, and with an eduction-pipe leading to the steam-pipe or chest of the engine, containing a check-valve to prevent the backward pressure of the steam; and, third, in the arrangement and combination of an oil-reservoir and a gage having transparent chambers, so constructed as to take the feed-pressure from the boiler, give a regulated flow of oil to the engine, which may be readily seen and counted by drops, and be operated by the difference in pressure between that of the boiler and that of the steam chest or pipe without the intervention of a standing column of water or other added force.

In the drawings, Figure 1 shows, in perspective, a simple form of device embodying my invention.

A is a boiler, and C is an oil-tank, connected therewith by a pipe, *g*, having a regulating-cock, *h*. From the oil-reservoir C leads a pipe, *k*, in which is the regulating-valve *p*, and which conducts the oil to and through the base part *f* of the indicator and into the induction-pipe *n*, which pipes *k* and *n* may be one continuous pipe or in sections, together constituting an oil-conductor or induction-pipe into the tube or reservoir D. The reservoir D is of glass, closed at the upper end and held at the lower end to the base *f* by the clamp or nut *e*, making a tight bottom, and is divided by the dotted line *a b* into two chambers, this line *a b* being a variable line, but properly shown in the drawings. Below the line *a b* is a chamber, Z, for alcohol or water or any transparent fluid of greater specific gravity than the oil used. I prefer alcohol, as this may be used in a colder room or remoter from the steam-pipes than water, and I consider this arrangement and use of alcohol as new; and above the line *a b* is an oil-chamber, *x*, over and upon the chamber Z. From the chamber *x* leads the eduction tube or pipe *s*, which may lead, as shown, back through the base *f*, and conducts the oil from the chamber *x* to the steam-chest *w*, or to the steam-pipe near the chest, if preferred, by the pipe *l*. This pipe *l* may be one continuous piece with the pipe *s* or in sections; but either way the pipe *s l* forms an eduction-pipe, and has in the part *l* outside the indicator and toward the engine a check-valve, *o*, to prevent the steam from pressing or working back through the tube *l*, but so arranged as to allow the oil to flow past it into the steam-chest *w* of the engine B.

When in operation, the chamber Z is filled with alcohol or water and the reservoir C with oil, and the pressure from the boiler is let on by turning the cock *h* to a sufficient amount. This cock *h* may be left entirely open, however, as the valve or cock *p* is turned so as to regulate the delivery of oil as it is forced by the pressure referred to through the tube *k n* into the chamber Z. Here the oil rises drop by drop, as shown at *r*, through the fluid in the

chamber Z into the chamber *x*, and fills it, and through it fills the pipe *s l* to the check-valve *o*. The pressure of the boiler continuing forces the oil by the check-valve *o* into the chest *w*, and so to the piston and valves in the engine B.

Now, the rate of delivery of the oil is plainly seen by the number of drops passing up at *r* into the oil-reservoir in a given time, and can be regulated to a drop by turning the valve *p*. The different parts are shown in the drawings as very near together and in definite positions relatively; but it is evident that they may be in any convenient relative position and at other distances apart, as may be necessary in different cases, the pressure of the boiler being enough greater than that of the chest to cause the oil to flow in the tubes through any convenient distance, this difference in pressure varying from three pounds upward.

I claim as my invention—

1. In a lubricator having an oil-reservoir, C, with its water and oil chambers and connecting

steam and oil pipes, an indicator consisting of a glass tube, D, closed at its upper end and held in a coupling or base, *e f*, at its lower end with the chambers *x* and Z, the short induction-tube *n*, and the long eduction-tube *s*, connecting through said base with the pipes *k* and *l*, respectively, constructed and combined to operate essentially as described.

2. An indicating-gage lubricator consisting of the oil-reservoir C, the steam-pipe *g*, connecting at or near the boiler, the glass tube D, closed at its upper end, containing the oil-chamber *x* above and the water-chamber Z below the base *e f*, the induction and eduction tubes *k n* and *s l*, connecting through said base and outside the oil-reservoir, and the check-valves *o* and *p*, combined and operating substantially as described.

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Witnesses:

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