S. REID.

Lubricator for Steam-Engines.

No. 199,745. Patented Jan. 29, 1878.

Fig. 1.

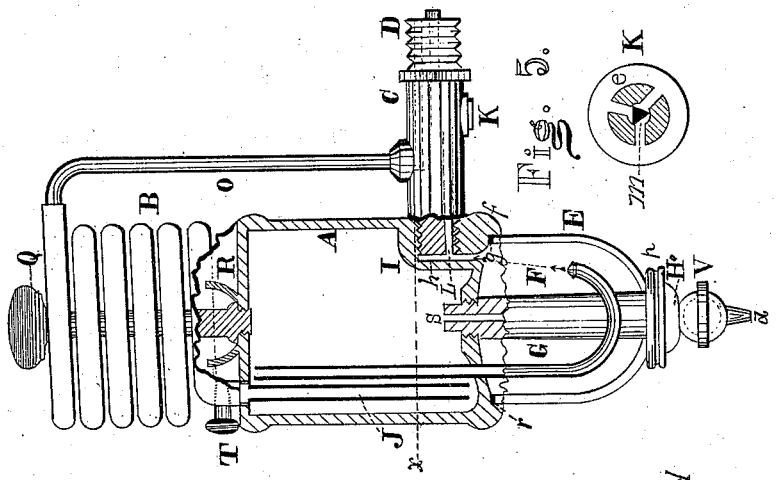


Fig. 5.

Fig. 2.

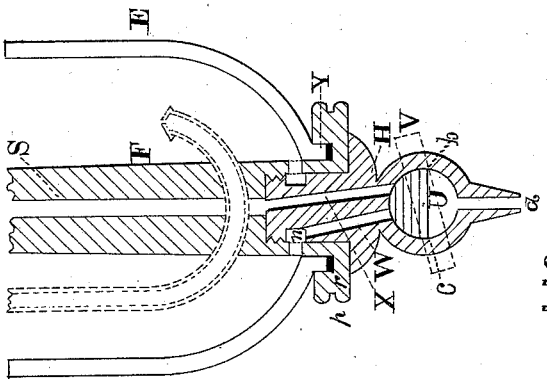


Fig. 4.

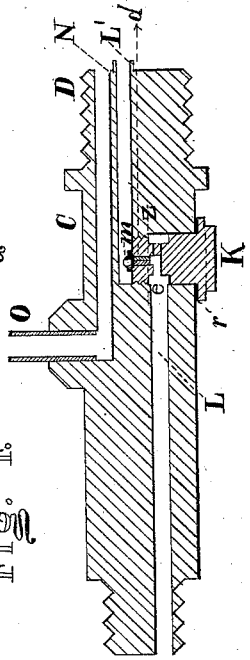
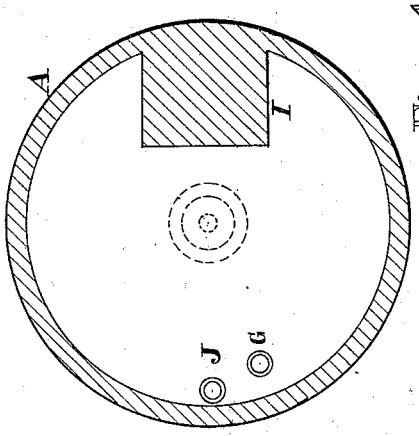


Fig. 3.



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SAMUEL REID, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN LUBRICATORS FOR STEAM-ENGINES.

Specification forming part of Letters Patent No. **199,745**, dated January 29, 1878; application filed September 22, 1877.

To all whom it may concern:

Be it known that I, SAMUEL REID, of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Lubricators for Steam-Engines, of which the following is a specification, reference being had to the accompanying drawings, illustrating the improvement.

The nature of invention consists, first, in a transparent liquid-chamber placed below an oil-chamber, and combined with a water-pipe for filling the oil-chamber as the oil therein exhausts, and an oil-pipe for bringing oil from the upper chamber into the transparent chamber, from which pipe it rises by its levity in drops through the liquid in said chamber, whereby the constant oiling process can be observed; second, the combination of said transparent chamber, oil-chamber, and oil and water pipes with a condensing-coil, whereby the oil-chamber is suitably supplied with water to float the oil, and the oil therefrom carried into the transparent chamber; third, in a flat-sided cock for filling the transparent chamber from water in the oil-chamber, for drawing off water from the upper chamber and discharging it from the lubricator after the oil in its upper chamber has been exhausted, also for discharging the contents of the transparent chamber; fourth, in a novel construction of check-valve combined with horizontal oil-discharge pipes placed at different heights, for conducting oil to a cylinder to be lubricated from the transparent chamber, and to prevent steam from blowing back into the lubricator, as the whole is to be hereinafter fully described and shown.

In the drawings, Figure 1 is a vertical sectional elevation of a lubricating device embodying my improvement; Fig. 2, an enlarged section of the lower part of Fig. 1; Fig. 3, a double-sized horizontal section of Fig. 1 on line *x;* Fig. 4, a double-sized section of corresponding parts in Fig. 1; Fig. 5, a horizontal section of stud K on line *d*, Fig. 4.

A represents a substantial case of metal, and of suitable strength to sustain a required pressure of steam. Tapped into the enlarged part I of this case is a cylinder, C, which, by means of a screw-thread, D, is connected with a steam-chest or steam-pipe of an engine. To this cylinder is attached a pipe, O, which connects with a steam-condensing coil-pipe, B, lying above the case A, and extending down into it, as shown at J, Fig. 1. A cock, T, being tapped into the coil B, is used to regulate the flow of water into case A, and shut off water from it. The cylinder C has two ports or pipes, a port, N, leading to pipe O, and a two-part port, L L′, leading to a vertical port, *h*, which communicates with the transparent chamber E. A stud, K, carrying a valve, is tapped into the lower part of cylinder C, and is provided with an annular groove, *e*, and ports leading from the groove to a vertical hole communicating with the port in it. In this vertical hole is placed a three-cornered cap-valve, *m*, which the pressure of oil raises, so as to pass out of the pipe L′.

A transparent case, in this instance made of glass, is attached to the bottom of case A by means of a pipe, F, tapped through it and through the bottom of case A, and a shoulder or jam-nut, *p*, bearing against the lower end of case E. A stud is tapped into the pipe F, and near its top end is an annular groove, *n*, from which leads a port, W, to a cock, U, and a port, X, leads from cock U to a hole, S, of pipe F, and below valve U there is an exit-pipe, *d*. The valve U is flat on one side, and may be turned by a thumb-head, (dotted lines V,) for a purpose stated under the head of "operation."

A pipe, G, as shown, is secured to the bottom of case A, and extends into it and into chamber E, the lower end being curved up. A plug, Q, is tapped into the top of case A, and surrounding its lower end is a funnel, R, for filling the case with oil. The lower edge of the chamber E is fitted in a recess, Y, in the head of the stud H, with suitable packing *r*, and its upper end is fitted into a rabbet, *f*, in the lower part of case A.

The chamber E is first filled by hand by pouring water into funnel R when the flat side of cock U is up. The cock is then turned flat side down, and case A filled with oil. To put the device into practical operation, the lubricator having been attached, by means of the ordinary screw-thread D, to the steam-pipe or steam-chest of a steam-engine, steam will condense in the coils B, and, by opening the cock T in the coil B, water will flow

through pipe J and under column of oil in A, to displace oil by forcing it down through pipe G, and down into the chamber E. The oil, leaving the curved end of said pipe, will rise through the water in chamber E, and enter vertical pipe *h* in Fig. 1 by means of a funnel-shaped mouth, *g*, directly over the pipe, and pass through *h* L L′, and into the cylinder to be lubricated, the valve *m* preventing a reactionary movement of steam. The water in transparent chamber E, during the oiling process, is wholly independent of any action of the parts in case A, except the flow of oil into it through pipe G, and it is used for the purpose of always indicating, by the rising of drops of oil through the water, the continuous oiling of the cylinder.

The form of the chamber E is not of any consequence, only so there be confined transparent liquid between the point of discharge of pipe G and the port or pipe *h*. A cylinder will answer every purpose as well as the form shown at E, and it is not necessary that the transparent chamber should be attached to the case A, but it may connect a pipe, G, in two sections. The water may be drained from the chamber E by turning the edge *c* of the cock U up centrally between the ports X W, and the contents of the case may be drained off by turning the other edge, *b*, of cock U up, so as to let pipe *d* communicate with port X. All the joints and connections of the parts not particularly mentioned may be rendered steam-tight by suitable packings, as shown at *r*.

Floating oil on water condensed from steam is old. I therefore confine myself substantially to the foregoing construction.

I claim and desire to secure by Letters Patent—

1. The transparent liquid-chamber E, placed below the oil-chamber, and combined with the water and oil pipes J G, whereby the oil, by its head above the water, in transparent chamber passes in pipe G down into the water, and by its less specific gravity, after it is forced from the pipe G, rises through the water in drops visible, to show the constant lubricating process, as and for the purpose set forth.

2. The combination of the transparent liquid-chamber E, oil-pipe G, water-pipe J, and condensing-coil B, provided with cock T, as specified.

3. The flat-sided three-way cock, consisting of parts H U V, combined with a water-exit pipe, *d*, an induction and exit pipes, X W, annular groove *n*, and transparent chamber E, pipes G J, and hole S in pipe F, as and for the purpose set forth.

4. The valve *m*, in combination with stud K, provided with an annular groove and ports, the pipes L L′, one placed higher than the other, cylinder C, and transparent chamber E, substantially as and for the purposes set forth.

5. The combination of the case A, transparent chamber E, and pipes J G, in a lubricator, as described and shown.

SAMUEL REID.

Witnesses:
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