(No Model.)

# W. H. CRAIG.

## LUBRICATOR.

No. 305,744. Patented Sept. 30, 1884.

Fig. 1.

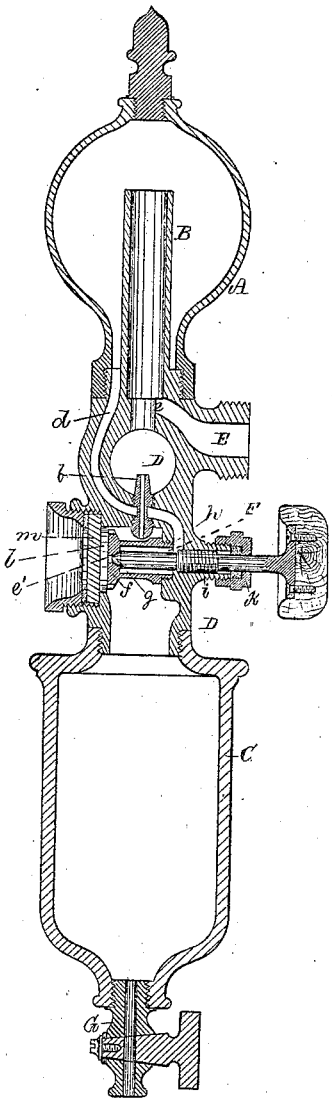
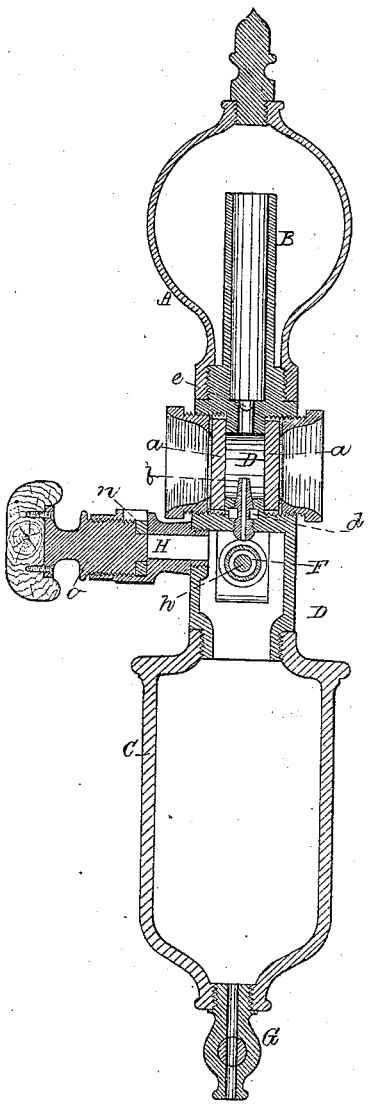



Fig. 2.




Witnesses.

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# UNITED STATES PATENT OFFICE.

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## LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 305,744, dated September 30, 1884.

Application filed February 21, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, WARREN HILLIARD CRAIG, of Lawrence, in the county of Essex, of the Commonwealth of Massachusetts, have invented a new and useful Improvement in Steam-Engine Lubricators; and I do hereby declare the same to be described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a vertical and transverse section of a lubricator provided with my invention, the nature of which is defined in the claims hereinafter presented. Fig. 2 is a similar section, but taken in a plane at right angles to the plane of section of Fig. 1.

The lubricator hereinafter described is provided not only with means by or through which a person can see the drops of water as they pass from the condenser into the oil-reservoir, but with means by or through which he can also see the drops of oil as they may be discharged from the oil-reservoir and pass therefrom to the duct by which they are conveyed into the steam-engine cylinder or valve-chamber thereof.

In the drawings, A denotes the condenser, having extending upward within it nearly to its top a pipe, B, which at its lower part is to communicate with the pipe for supplying the engine with steam.

Below the condenser A is the oil-reservoir C, between which and the condenser is an oil-observation-chamber, D, having a pane, *a*, of glass inserted in either or each of its opposite sides. A tube, *b*, leads from the neck of the oil-reservoir into the observation-chamber D in order to open communication between said neck and chamber. Fig. 2 of the drawings represents the said observation-chamber D as provided with two glass panes arranged to cover openings in two opposite sides of such chamber, there being around each of such openings a recess to receive the pane, and there is screwed into such recess an annulus or annular nut to hold the pane in place and admit of it being seen through. The panes are arranged in close proximity, so that a person looking through either of them toward the other can easily see the drops of oil as they go through the chamber in their passage from it to the part or parts to be lubricated. By having the two panes arranged close to each other and in opposite parts of the chamber, the drops can be seen through either pane, and much better or with more certainty than when the chamber has but one pane.

In the upper part of the observation-chamber is an opening, *e*, by which communication between the pipe B at its lower part, or with the induct E, by which such pipe is to receive its steam, is secured.

From the foot of the condenser a passage, *d*, leads down partly around the observation-chamber D into a valve-chamber, F, arranged horizontally within the neck of the oil-reservoir, such chamber being closed at its inner end, except in having an opening, *e'*, at and through the closure *f*. To this opening there is a valve, *g*, whose stem *h* screws into a tubular projection, *i*, of the neck, a stuffing-box, *k*, being applied to the stem and projection.

Directly in front of the closure *f* there is an opening, *l*, in the neck of the oil-reservoir, such opening having fitted into it a glass pane, *m*, which is arranged so close to the closure that a drop of water, after escaping from the valve-chamber F through the closure, shall touch both the pane and the closure in passing down between them. This insures the drop being seen in case the pane may be clouded with steam or vapor or oil. The glass pane is also arranged so that each drop of water may freely escape from it into the reservoir. At the lower end the oil-reservoir is furnished a waste-cock, G, while at the upper part of its neck, the oil-reservoir has an induct, H, for supplying it with oil, such induct not only having a lateral mouth, *n*, leading down into it, but being provided with a screw, *o*, arranged, as shown, to effect the closing of such mouth at its lower part, as occasion may require. The pipe B may be dispensed with, and a pipe may lead from the upper part of the condenser A directly into the steam-pipe; but in this case the observation-chamber must have communication with the said steam-pipe. From this it will be seen that with the pipe B opening at its foot into the steam-induct but one such induct becomes necessary.

In the operation of this lubricator the steam flows from the steam-pipe into the pipe B; thence upward through and out of such pipe

into the condenser, where it becomes condensed, and in the form of water passes down into the valve-chamber, and from thence into the oil-reservoir, and, descending through the oil therein by its specific gravity, it will elevate the oil and cause it to flow into and through the observation-chamber, which will be filled with water by condensation of the steam.

Owing to the water in the condenser standing higher than in the observation-chamber, the water of the latter cannot pass down therefrom into the oil-reservoir. As each drop of oil may pass upward through the observation-chamber such drop may be seen through its pane or panes of glass.

I am aware that a "displacement-lubricator" having an "observing-port" in front of the discharging-educt of the water-trap below the condenser is not new, and therefore I do not claim, broadly, a lubricator of such class provided with an observing-port arranged to enable a person to see the water in its discharge from the water-trap.

My lubricator, besides such a port, has an observation-chamber arranged as described, whereby a person, through a different port, may see the oil in its discharge into the duct by which it is led to the steam-pipe.

I do not herein claim what is claimed by me in Letters Patent No. 281,241, dated July 17, 1883, the specification and drawings of which illustrate in connection therewith what is herein claimed by me; nor do I herein claim "a steam-engine lubricator consisting of a condenser and oil-reservoir, communicating with each other and having an oil-observation chamber arranged between them, and means of communicating with the oil-reservoir and the induct of the condenser."

I claim—

1. A steam-engine lubricator provided with a condenser and an oil-reservoir, to communicate with each other, as described, and also having an oil-observation chamber arranged between them, and provided with one or more panes of glass in it, and means of communication with the oil-reservoir and the induct of the condenser, and having a regulating-valve to control the feeding of the oil from the reservoir to the parts of the engine to be lubricated, all being substantially as set forth.

2. In a lubricator, an observation-chamber provided with recessed and open opposite sides, and with glass panes covering their openings, and arranged in close proximity to each other in recesses about such openings, and confined therein by rings secured into such recesses, the said chamber communicating with the oil reservoir and condenser, and being adapted to receive a fluid through which the rapidity of the feed can be readily observed.

3. In a lubricator, an observation-chamber containing fluid, and provided with openings in its opposite sides, and glass panes covering such openings, and set in close proximity to each other within recesses, and held in place by rings screwed into the said recesses, in combination with a dry tube, all being substantially as set forth.

WARREN HILLIARD CRAIG.

Witnesses:
R. H. EDDY,
E. B. PRATT.