

(No Model.)

I. T. HARDY.

LUBRICATOR.

No. 248,459.

Patented Oct. 18, 1881.

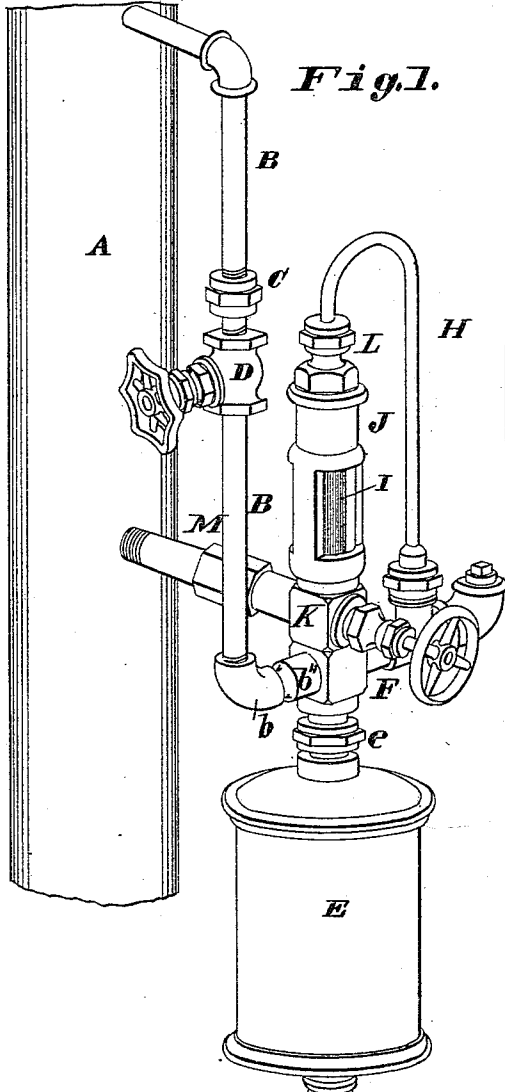


Fig. 1.

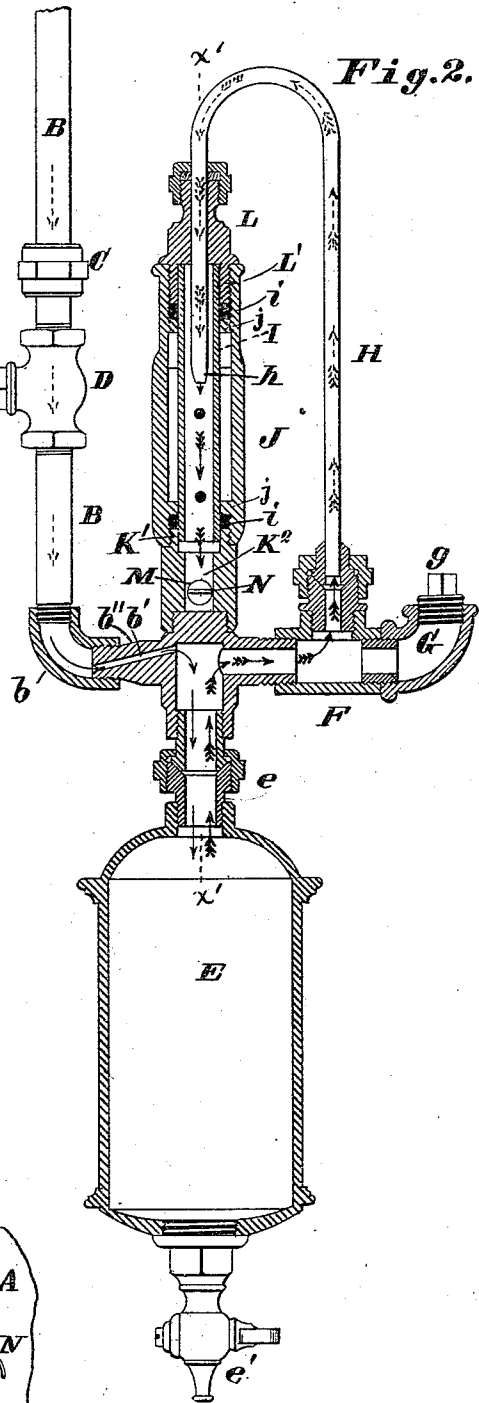


Fig. 2.

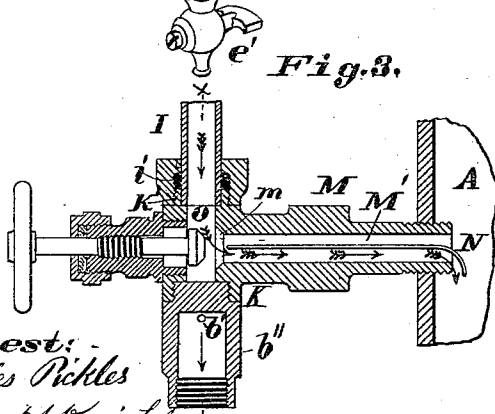


Fig. 3.

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UNITED STATES PATENT OFFICE.

ISHAM T. HARDY, OF ST. LOUIS, MISSOURI.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 248,459, dated October 18, 1881.

Application filed May 10, 1881. (No model.)

To all whom it may concern:

Be it known that I, ISHAM T. HARDY, of the city of St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Automatic Lubricators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

This lubricator belongs to that class in which the water of condensation from a pipe or vessel, in connection with the steam-pipe, descends into the oil-vessel and displaces the oil therefrom, which then flows into the steam-pipe, and is carried with the steam into the steam-chest. My improvement consists in a preferred mode of constructing such a device, as hereinafter described, and pointed out in the claims.

In the drawings, Figure 1 is a perspective view of the apparatus. Fig. 2 is an axial section at $x x$, Fig. 3. Fig. 3 is a detail section at $x' x'$, Fig. 2.

A is part of a steam-pipe to which the apparatus is applied.

B is a pipe connected with the steam-pipe A, and having in it preferably a union-coupling, C, and a valve, D, the coupling to allow of the disconnection of the apparatus at that point, and the valve to limit the descent of condensed water into the oil-vessel, and also to stop the communication when removing water from the oil-receptacle and refilling it with oil. The lower part, b , of the pipe B extends horizontally, and connects with a T-coupling, b'' , which connects with the neck e of the oil-vessel E and with the oil-pipe. The communication between the pipe B and the neck e is by a passage, b' , that inclines upward toward the inner end, so as to form a water-trap in the pipe B.

e' is a waste-cock to allow the escape of water from vessel E.

F is a pipe extending horizontally from the coupling b'' , and having an upturned end, G, closed by a screw plug or cap, g , to prevent the escape of oil with which the pipe is filled. The upturned end G is used in filling the oil-vessel, the oil being poured into it when the apparatus is not in communication with the steam-pipe.

H is a goose-neck pipe in communication with the pipe F at the one end, and the other end discharging into the upper end of the transparent (glass) tube I. This glass tube is sup-

ported in a frame, J. The frame J has rings j , through which the glass I passes, and in which it fits with proper freedom to allow the introduction of the glass. The frame screws at the lower end upon a hollow plug, K' , which forms part of the coupling K. Into the upper end of the frame J screws a hollow plug, L' , forming part of the stuffing-box casting L, through which the downturned end or nozzle h of the pipe H extends axially into the glass tube I. Packing is shown at $i i$, making steam-tight joints with the glass tube. The coupling K has an interior chamber, K^2 , in communication with the steam-pipe A by a pipe, M. With in the pipe M, I prefer to fix a horizontal diaphragm, N, to separate the steam above from the oil below. Through the pipe M the steam enters and fills the glass tube I. The drops of oil from the nozzle h fall through the pipe I, and are easily seen in the transparent steam.

O is a valve closing against a seat, m , at the inner end of the steam and oil passage M' . This valve is only used when it is desired to close communication between the oil-vessel and the steam-pipe for the purpose of filling the latter with oil.

The operation of the parts is described in the body of the specification. I will only say in addition, in this connection, that the water of condensation collects in the pipe B until it balances the column of oil in the pipe H. On any increment of water taking place in the pipe B it causes the oil to overflow into the descending part or nozzle h of the pipe H. The top of the pipe B must be sufficiently elevated to hold a column of water sufficient to cause the overflow of the oil. As the water enters the neck e of the oil-vessel E it sinks to the bottom of the oil-vessel and displaces a like quantity of oil, which ascends in the pipe H, drops through the transparent pipe I, and passes through the pipe M to the steam-pipe.

To limit the downward flow of water in the pipe B, the valve D is used, and thus the amount of oil which is used is regulated.

I am aware that I am not the first to use a transparent steam-pipe through which the oil falls in drops, and I do not therefore claim such a device, broadly.

I claim as my invention—

1. The goose-neck pipe H, having nozzle h , in combination with the oil-reservoir E, T-coup-

ling b'' , horizontal pipe F, glass tube I, coupling K, and pipes connecting from and to the steam-pipe, as set forth.

2. The oil-reservoir E and coupling b'' above the reservoir, having horizontal pipe F, in combination with the coupling K, plug K', frame J, tube I, casting L, plug L', and goose-neck pipe H, as set forth.

3. The combination of pipe B b , T-coupling $b'' b'$, oil-reservoir E, oil-pipe F, having upturned end G and plug g , and the union-coupling and valve C D, as set forth.

4. The combination of water-pipe B, T-coupling $b'' b'$, oil-reservoir E, horizontal pipe F, goose-neck pipe H, tube I, coupling K, and pipe M, as set forth.

5. The combination, in a lubricator, of an oil

reservoir or vessel adapted to receive water of condensation, a transparent tube, I, connecting with a steam-pipe coupling, K, above the reservoir, and goose-neck pipe H h , and horizontal pipe F, connecting the reservoir with the tube, as set forth.

6. The combination, in a lubricator, of the oil-reservoir E, pipe B, conducting the water of condensation, T-coupling $b'' b'$, pipe F, oil-pipe H, having downturned nozzle, transparent tube I, coupling K, and steam and oil pipe, having horizontal partition N, as set forth.

ISHAM T. HARDY.

Witnesses:

SAML. KNIGHT,
GEO. H. KNIGHT.