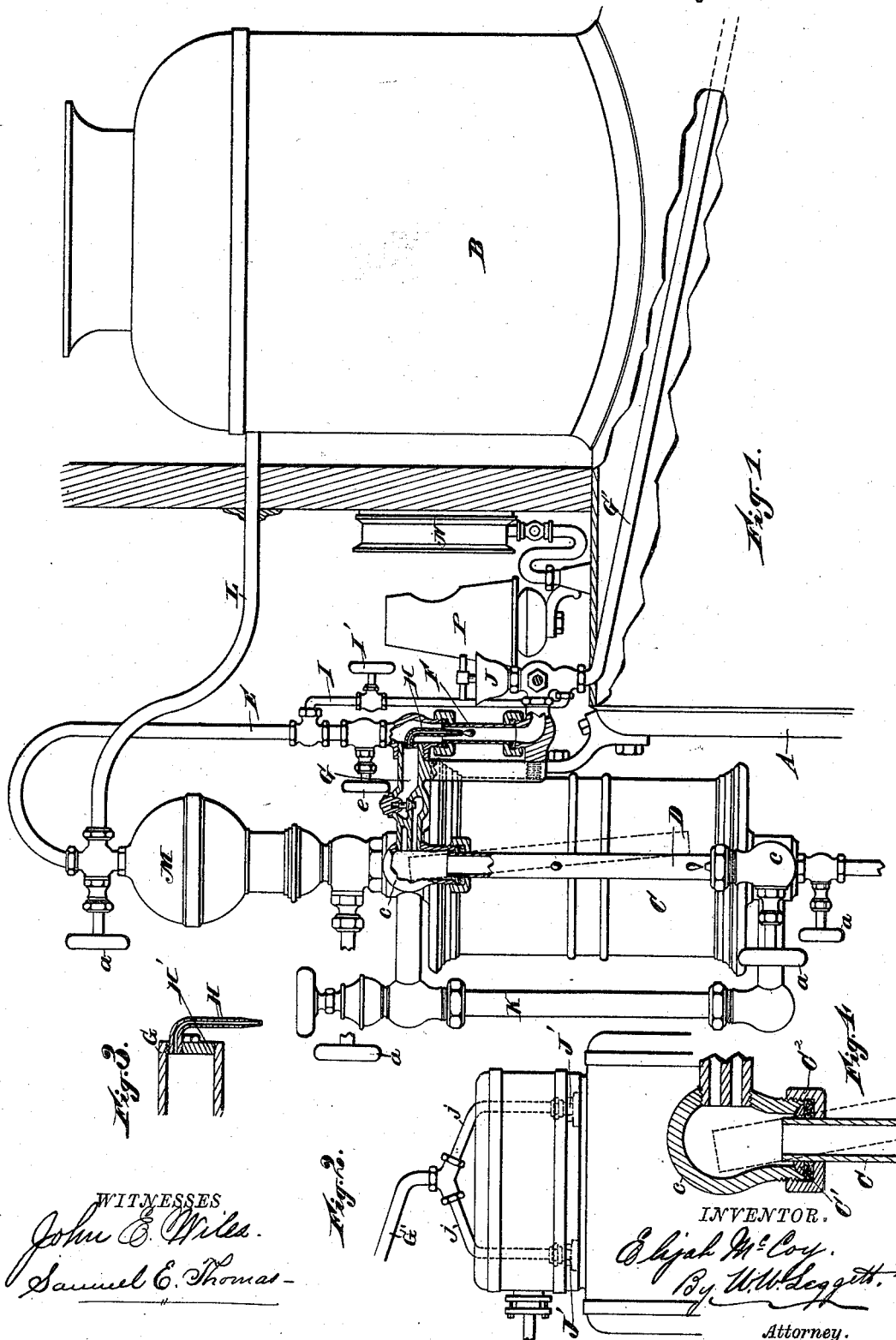


(No Model.)

E. McCOY.
LUBRICATOR.

No. 383,745.

Patented May 29, 1888.



WITNESSES
John E. Miles.
Samuel C. Thomas.

INVENTOR.
Elijah McCoy.
By W. W. Leggett.

Attorney.

UNITED STATES PATENT OFFICE.

ELIJAH MCCOY, OF DETROIT, MICHIGAN, ASSIGNOR TO HENRY C. HODGES
AND CHARLES C. HODGES, OF SAME PLACE.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 383,745, dated May 29, 1888.

Application filed July 16, 1887. Serial No. 244,517. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH MCCOY, of Detroit, county of Wayne, State of Michigan, have invented a new and useful Improvement in Lubricators; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists of the combinations of devices and appliances hereinafter specified, and more particularly pointed out in the claims.

The invention relates to improvements in lubricating apparatus, such as secured to me by Letters Patent No. 357,491, dated February 8, 1887, and No. 363,529, dated May 24, 1887.

In the drawings, Figure 1 shows a side elevation of a lubricator attached to the head of a locomotive-boiler and embodying my invention, the lubricator shown being a double lubricator, the parts on the opposite side (not shown) being the exact duplicate of the parts shown, there being on the farther side a similar equalizing-pipe and supplemental sight-feed glass. Fig. 2 shows how the tallow-pipes are connected with and the oil discharged into the two branches of the steam-pipe which admits steam to the two ends of the steam-chest. Figs. 3 and 4 are enlarged views.

Heretofore in locomotive-lubricators having visible-feed tubes and provided with equalizing-pipes, whereby the connection is made between the steam and admission end of the lubricator, or the steam-pipe leading thereto and the oil-discharge conduit, difficulty has been experienced, by reason of oil under certain circumstances passing over from one sight-feed tube through the equalizing-passage and off therefrom to the other cylinder, thus discharging all of the oil from both sight-feed glasses into one cylinder and robbing the other cylinder of its proper lubricant. This difficulty has arisen as follows: Suppose we have what is known as a "double sight-feed locomotive-lubricator," in which one of the oil-conduits leads off to one cylinder and the other conduit leads to the opposite cylinder. The engineer seeing the drops of oil passing through the transparent water-cham-

bers naturally presumes that the oil is passing directly to the respective cylinders corresponding with the sight-feed tubes; but suppose, again, that sediment or other foreign substance should clog up one of the oil-exit passages, either at its throttling-valve or at some other point, the consequence will be that steam condensing within the adjacent equalizing-pipe will cause condense water to back up therein, so that oil which would otherwise pass off to its proper cylinder would under this condition of affairs rise up through the water in the said equalizing-pipe and discharge into the condenser and pass thence off through the other equalizing-pipe into the other oil-exit conduit, and thence on its way to the wrong cylinder. Therefore, while the drops are passing through both sight-feed glasses with apparent regularity the engineer is being deceived and the oil is being fed all to one cylinder.

It is one of the purposes of this invention to overcome this difficulty, and it is accomplished as follows: A supplemental sight-feed glass is located in the oil-exit passage at a point beyond the locality where the equalizing-pipe enters the said passage, so that should any oil be seen to pass in drops through this supplemental sight-feed glass the engineer can be absolutely sure that it is passing to the right cylinder, for there is no other outlet for it beyond this point.

Referring to the drawings, A is the boiler-head of a locomotive; B, its steam-dome.

C is one of my lubricators. This lubricator is presumed to be a double lubricator presenting a precisely similar construction upon the opposite side as that shown in Fig. 1.

D represents the sight-feed glass corresponding to one of the cylinders, and there is upon the opposite side of the lubricator a similar sight-feed glass corresponding with the other cylinder, as shown in the first of my above-mentioned patents.

E is a corresponding equalizing-pipe, whereby the pressure within the condenser or steam-pipe leading thereto is conveyed over and brought into communication with the exit end of the lubricator or oil-exit conduit. Said equalizing-pipe is provided with a stop-cock, e. F is the supplemental sight-feed tube, which

constitutes one of the essential features of my invention. *a a a a* represent the usual stop-cocks for regulating the supply of oil, steam, and water of condensation. It will be observed that it is located in the oil-exit conduit G G' between the top of the sight-feed glass D and the part to be lubricated. It will also be observed that it is located beyond the point at which the equalizing pipe or conduit E enters the said oil-exit passage—that is to say, it is between the point where the equalizing-pipe E enters the oil-exit passage and the part to be lubricated.

H is a nozzle through which oil from the portion G of the oil-exit passage is obliged to pass, and it issues therefrom in visible drops at the extremity of the nozzle.

The following parts, although forming no part of the invention sought to be covered, are described for the better elucidation of the drawings.

K is an ordinary gage-glass to indicate the relative amount of oil and water in the reservoir.

L is the pipe which leads free steam to the condenser M.

N is a steam-gage, and P a lamp for throwing light upon the gage.

The operation of the device thus far described will now be understood. Oil passing upwardly through the visible sight-feed glass D will pass onward through the nozzle H, and will be observed to fall in visible drops through the supplemental sight-feed glass F, and after having passed this point there is no opportunity afforded for it to go otherwise than directly to the cylinder. On the other hand, should a stoppage occur at any point before reaching the nozzle H it would be indicated by the fact that the drops would cease to flow downward through the supplemental sight-feed glass F, while they might, under the circumstances above related, continue to rise through the sight-feed glass D, and thence up through the equalizing-pipe E, and off to the other cylinder. The supplemental sight-feed glass, therefore, under these circumstances proves an unfailing monitor to show the engineer that oil is not passing to his cylinder. On the other hand, should a stoppage occur in the portion G' of the oil-exit passage, or at any point beyond the supplemental sight-feed glass, this difficulty would at once become apparent, because the oil would back up and fill the supplemental sight-feed tube F, and the engineer could at once remedy the difficulty. So, also, should the portion G of the oil-exit passage become partially though not completely obstructed this difficulty would be at once apparent, from the fact that there would be a less number of drops passing off through the supplemental sight-feed glass than are observed passing up through the sight-feed glass D, which would at once put the engineer upon his inquiry to determine and correct the trouble.

This portion of my invention—that is to say,

the employment, as described, of a supplemental sight-feed glass—is applicable to any of the various forms of sight-feed lubricators for locomotive or analogous uses that employ equalizing-pipes which tap the oil-exit passage between the sight-feed glass and the part to be lubricated; and I do not limit myself, therefore, in its use to the particular form of my lubricator shown in the drawings, nor to any other particular style of device.

I will now proceed to describe other features of improvement.

I is an auxiliary steam-pipe connecting the equalizing-pipe above the supplemental sight-feed glass and leading down below or beyond the said supplemental sight-feed glass, at which point it leads into the oil-exit conduit. This is provided with a globe-valve or stop-cock, I'. The purpose of this auxiliary pipe is as follows: Suppose the supplemental sight-feed glass F should become broken, or that an accident should happen to the visible-feed tube D, or that the passage G should become impeded, so as to necessitate the feeding of oil through the slush-cup J. In this event the oil-exit passage G' might become impeded by the oil becoming congealed, or by sediment or otherwise, in which case the stop-cock I' could be opened and free steam would pass through the equalizing-pipe and the auxiliary pipe I, and so form a blast or current of steam through the pipe G' and cleanse the same. Moreover, it would enable the engineer to use this jet of steam for the purpose of propelling the charge of oil forward through the pipe G' to the cylinder. Again, the slush-cup J, which in my former patent was located at a high and inconvenient altitude, is in my present device brought down to a point substantially on a level with the lower or discharge end of the supplemental sight-feed glass, so as to be within easy access.

In my former patent, No. 363,529, the oil-exit conduit discharged its oil into the steam-pipe which leads steam from the dome to the steam-chest, but in such locality adjacent to the valve-surfaces to be lubricated that the oil was not wasted in the lubrication of surfaces upon which there was no wear. I show in Fig. 2 the arrangement of the steam and oil pipes, with branches *j j* leading to opposite ends of the steam-chest or valve-chamber, and in such a construction I would usually locate an oil-jet in each branch, as indicated at J' in said Fig. 2.

In the construction shown the equalizing-pipe leads into the oil-exit passage at a point immediately over the supplemental sight-feed glass. This, while convenient and effectual, is not absolutely essential, for it may tap the exit-pipe at any point between the supplemental sight-feed tube and the reservoir. By bringing the equalizing-pipe in at the point shown the steam serves as a jet to impel the mixture of steam and oil forward through the exit-passage G'.

This invention comprehends a construction

in which the equalizing pipes or conduits are located outside of the lubricator proper, as shown, or located partly within and partly without, or wholly within, the body of the lubricator, all of which forms are well known in the market. This supplemental sight-feed may be arranged to permit the oil to rise through the water or to drop through an air or vapor space. The latter I prefer, because the location of the equalizing-conduit between it and the oil-reservoir might otherwise seriously impair its proper action.

At C' (shown more in detail in Fig. 4) is a bushing seated in the end of one of the fittings c c, into which the glass tube projects, so that when the packing-nut C' is loosened the packing and this bushing may be slipped down along the glass tube, and the glass tube may be lifted out of the lower section and tilted to one side, so as to be removed from the lubricator, as shown in dotted lines in Fig. 1, and without the necessity of the usual openings opposite the end or ends of the glass tube, whereby it is ordinarily introduced into place. The nozzle H is connected to a removable plug or dam, H', so that access can readily be had to the interior of the conduit G, and this construction also facilitates the coring and casting of the piece. The bushing C' is clearly applicable in gage-glasses and other localities where glass tubes are employed.

The bushing is adapted to fit down upon the interposed packing, and the orifice through the bushing is considerably smaller than the orifice against which the bushing is seated, so as to leave greater space about the glass when the bushing is slipped down over the glass.

What I claim is—

1. The combination, with a sight-feed lubricator having an equalizing-conduit which taps

the oil-exit passage between the sight-feed glass and the part to be lubricated, of a supplemental sight-feed tube located on the oil-exit pipe between the part to be lubricated and the said equalizing-conduit, substantially as and for the purposes described.

2. The combination, with a double locomotive-lubricator having sight-feed tubes and equalizing-conduits corresponding with each cylinder, and which each taps its corresponding oil-exit passage between the sight-feed glass and the part to be lubricated, of supplemental sight-feed tubes located on each oil-exit passage between the point tapped by the equalizing-conduits and the said cylinders, substantially as described.

3. A sight-feed lubricator having an equalizing-conduit and a supplemental sight-feed tube, said equalizing-conduit opening into the oil-exit pipe adjacent to the entrance end of the said supplemental tube, substantially as described.

4. The combination, with a sight-feed lubricator having a supplemental sight-feed tube and an equalizing-conduit tapping the oil-exit passage between the reservoir and said supplemental sight-feed tube, of a slush-cup and cut-off valve located at the discharge end of said last-named tube, substantially as described.

5. The combination, with a sight-feed lubricator having an equalizing-conduit, of a supplemental sight-feed tube, through which oil led to its top is caused to drop, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

ELIJAH MCCOY.

Witnesses:

M. B. O'DOHERTY,
SAMUEL E. THOMAS.