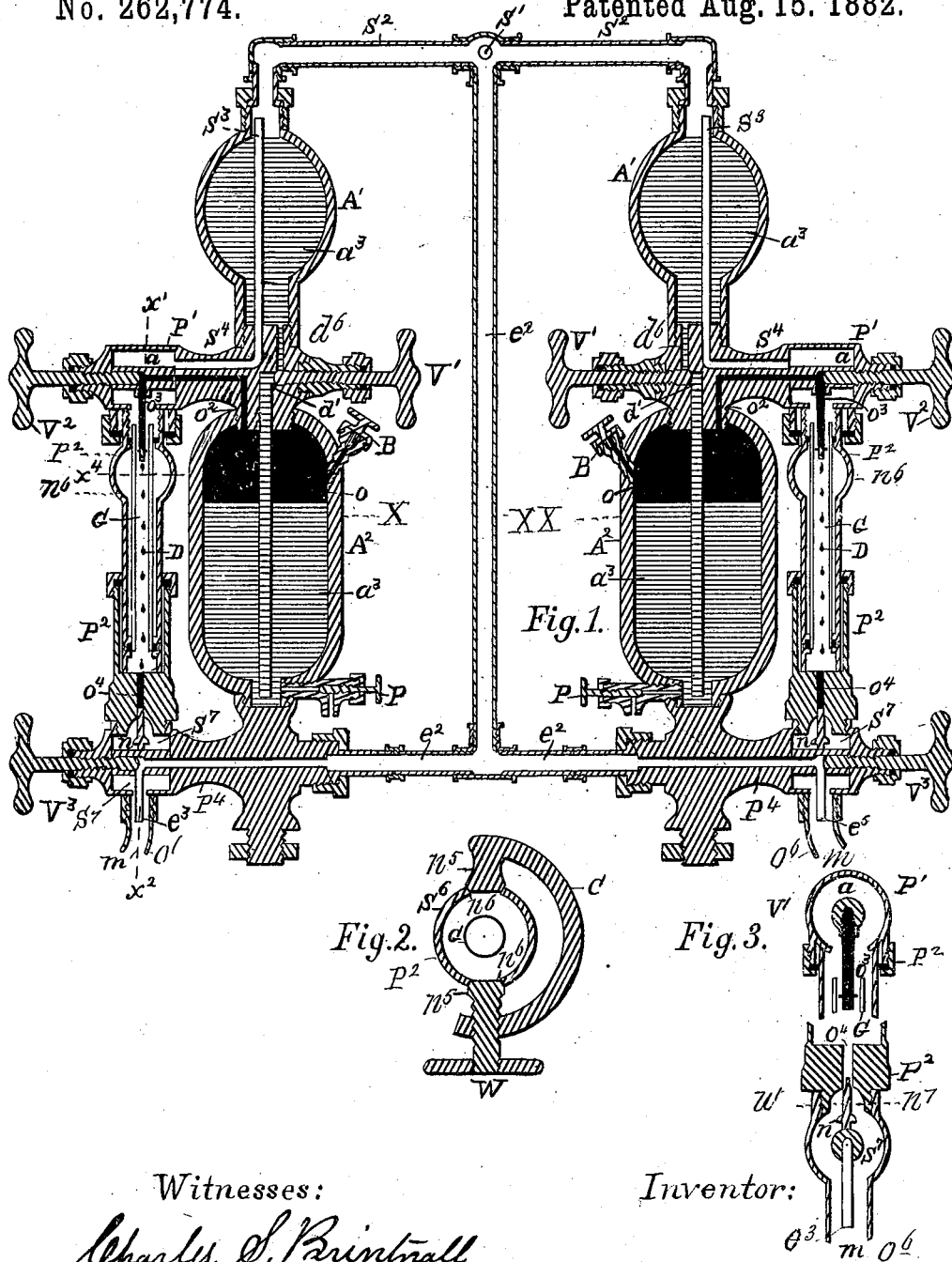


(No Model.)

T. HOLLAND.
LUBRICATOR.

No. 262,774.

Patented Aug. 15. 1882.



Witnesses:

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UNITED STATES PATENT OFFICE.

TIMOTHY HOLLAND, OF TROY, NEW YORK.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 262,774, dated August 15, 1882.

Application filed June 26, 1882. (No model.)

To all whom it may concern:

Be it known that I, TIMOTHY HOLLAND, of the city of Troy, county of Rensselaer, and State of New York, have invented a new and useful Improvement in Lubricating Devices, of which the following is a specification.

My invention relates to that class of devices termed "lubricators," which are used to contain and supply material for lubricating the working parts of machinery, and the object of my improvements being to better adapt such devices for use upon locomotives.

The invention consists of certain improvements upon the method of constructing lubricators patented by John Absterdam, November 21, 1854, and in which the pressure of water beneath the oil in a closed vessel caused the oil to rise and flow therefrom, so as to descend in a visible form to the point of application.

My invention consists, also, as will hereinafter be more fully described, in the combination, with a lubricating device in which a current of oil and steam is forced through a conduit-pipe to the point of application, of an auxiliary current of steam, and steam-pipe connected with the before-named pipe, after the oil and steam have mingled therein, for the purpose of preventing the vacuum tendency of the cylinders from drawing the oil out of the lubricators when the steam has been shut off from the steam-cylinders and the locomotive is running on a downgrade.

My invention also consists, as will hereinafter be more fully described, in the combination of two lubricating-vessels of the same construction, having a united steam-pipe connection with the boiler, and each of the two lubricators constructed with a branch steam-pipe connection, one of which is made with the interior of the lubricators and the other connected with the conduit-pipe, which conveys a current of mingled oil and steam from the lubricators to the steam-cylinders, the object being to relieve the vacuum tendency produced in the steam-cylinders when the steam is shut off from them while the locomotive is running on a downgrade, and to prevent this vacuum tendency from drawing the oil from the lubricators.

My invention further consists, as will here-

inafter be more fully described, in the combination, with the pipe containing the glass tube through which the oil passes in visible drops to the point of application, of an attachable and detachable clamp and hand-screw constructed to close up the sight-openings in the pipe surrounding the glass tube temporarily in case the tube should be broken, so that the action of the lubricator can continue until an opportunity occurs to replace the tube.

My invention embraces other features, which will be fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, forming a part of this specification, there are three figures illustrating my invention, and in all of them the same designation of parts by letter-reference is used.

Figure 1 shows in vertical section two lubricators constructed alike, each of which, and both as connected, contains my invention. Fig. 2 is a horizontal section taken transversely on the line x^4 of Fig. 1. This illustration also shows the clamping device constructed to close up the sight-openings in the pipe containing the glass tube through which the oil descends in drops. Fig. 3 illustrates a vertical section taken on the line $x'x^2$ of Fig. 1, and at right angles to the latter, the transversely-central parts between the ends being omitted.

The two lubricating devices are constructed alike. They are designated at X and X X, and their duplicated parts in each are indicated by the same reference-letters, and as follows:

The letter A designates a condensing-chamber connected with the steam-pipe S^2 , which at the branch S' connects with the steam-boiler.

The letter A^2 indicates an oil and water chamber, which connects with the upper condensing-chamber, A' , by means of the connecting-pipes d' and d^2 , there being arranged between these pipes the valve V' .

The letter B indicates an opening and plug in the chamber A^2 for supplying oil to the same, and P designates a small cock for drawing off the water from this chamber A^2 . From this latter chamber, at its top, is connected the oil-pipe O^2 , on which is placed the valve V^2 , and at O^3 this pipe leads downwardly into a

glass tube, G, the latter being placed within the pipe P², which has constructed on opposite sides, at n⁶, sight-openings, through which the descending oil may be seen. The oil-pipe O³ terminates in a pendent nozzle having a button upon the pipe above the pendent discharge end.

Within the chamber A' there is shown the steam-pipe S³, opening into this chamber, so as to receive steam under pressure therefrom. This steam-pipe S³ passes downwardly through the condensing-chamber A' into the cored arm-pipe P' at S⁴, where it connects with the annular chamber a, formed in said pipe, and from which the steam under pressure is forced through the glass tube G, being deflected to the sides of the latter by the flat deflecting-ring on the oil-pipe O³ above the discharge pendent nozzle end of the latter. From this point the dropping oil and the steam pass downwardly and around the three-sided stem of the puppet-valve n within the oil-conduit pipe O⁴, and from thence into the annular space S⁷ in the horizontal pipe P⁴, from which they pass into and through the conduit-pipe O⁶, which connects with the steam-cylinder. This manner of constructing an oil-delivery pipe, a connecting glass tube, and an impelling steam-pressure is substantially the same as that shown in Patent No. 243,900, which was granted to me July 5, 1881, with the exception that in the patent named the steam-current used to impel on the dropping oil to the point of its application was taken directly from the boiler, while in the application herein shown the steam is taken from the interior of the condensing-chamber.

To protect the glass-tubes of lubricators, through which the oil and steam move, I surround them with the protecting-pipe P², which has oppositely-arranged sight-openings n⁶ n⁶, Fig. 2, and combine with the latter a clamp constructed with the stopper-plugs n⁵ n⁵ and the screw and thumb piece W, so that in case the glass tube becomes broken the lubricator may be temporarily used without the tube, and until the latter is replaced.

To prevent any unusual back-pressure from the steam-cylinder, and the consequent churning up of the oil and water, so as to interfere with the uniform flow and delivery of the oil from the lubricator-vessel, I construct within the oil-delivery pipe O⁴ the puppet-valve n, the stem of which is three-sided, so as to allow a passage along the stem and between it and the sides of the pipe of the oil being supplied to the conduit-pipe leading to the steam-cylinders L, the button of this valve n seating to close the pipe O⁴ in the rounded top n⁷ of the annular chamber S', which forms the outlet of the latter pipe, when any unusual pressure from the cylinder causes the valve to rise and thus close.

When steam is shut off from the steam-cylinders of a locomotive, as is the case when the latter is running on a downgrade, the vacuum tendency produced in the steam-cylinders

draws the oil out from the lubricating-vessels, so as to sometimes empty them. To avoid this difficulty I connect the oil-conduit pipe leading to the steam-cylinders directly with the boiler, and by which this tendency is relieved. This auxiliary pipe is designated at e², which at its upper end connects with the steam-pipe S', and its lower end, e³, opens into the oil-conduit pipe O⁶, part of the arm P⁴ being cored out to form a continuation of the pipe e². While I have shown this improved feature of an auxiliary steam-pipe connecting the oil-conduit pipe that leads to the cylinder as applied to a duplicated lubricator, each of which two connects separately with one of the steam-cylinders, it may be applied in the same manner and so as to perform the same useful office to each of the branch cylinder connections made with a single lubricator.

The condensing-chamber A' serves to collect water and receive pressure from the steam-boiler by means of the pipe S², and this received pressure and accumulated condensation it transmits to the cylinder A² through the pipes d' and d⁶, the amount of water delivered and steam-pressure transmitted to the lower chamber, A², being regulated by the intermediately-placed valve V'.

By thus constructing the lubricating device, so as to take steam from the interior of the steam-supplied chamber A' through the pipe S³, with which to force the delivery of the oil toward the point of its use, and thus connecting this chamber A' with the chamber A² to utilize this same steam-pressure to supply water to and to force the overflow of oil from the chamber A², a single steam-connection with the lubricator is made to perform several important uses within the lubricator in a manner and by a means of construction that insures uniformity of pressure within the lubricator and a regular delivery of the oil from it.

The two lubricating-vessels X and X X have a branch connection at S², which at S' connects them with the boiler, and each of them is a duplicate of the other, and has a conduit-pipe to connect it separately with one of the steam-cylinders. This branch connection to supply the interior of each lubricator with steam, for the purposes hereinbefore named and described, is also branched to supply an auxiliary steam-pipe connection with the conduit-pipes of each lubricator, so that a single boiler-connection made at S' operates both of them.

I am well aware that water and pressure from the steam-boiler have been used to float the oil within and to accelerate its delivery from an inclosed vessel in a direction toward its point of application, as shown and described in the patent of Absterdam, before alluded to. I am also aware that all the features of my improvement and invention herein specifically relating to this older method are limited to my improved construction and the means which I employ to make this older method better adapted to specific uses.

Having thus described my invention, what

I claim, and desire to secure by Letters Patent, is—

1. The combination of a lubricating-vessel containing an oil and water chamber that is connected with a steam-boiler so as to receive steam-pressure therefrom, and constructed to deliver oil to a conduit-pipe, a conduit-pipe to connect said lubricator with one of the steam-cylinders of a locomotive, and a steam-pipe connecting said conduit-pipe with the steam-boiler, as and for the purposes herein set forth.

2. In a lubricating device constructed to supply oil from a pendent nozzle in descending drops within a glass tube that is larger than the oil-pipe and its nozzle, and which glass tube connects, so as to be steam-tight, with a conduit-pipe at the lower end of the tube, the combination of a steam-pipe connecting with said glass tube to force the descending drops through the latter and the connected conduit-pipe, and a steam-pipe connecting said conduit-pipe with the boiler, as and for the purposes set forth herein.

3. In a lubricating device, the combination of an upper chamber connected with the steam-boiler, a lower oil and water chamber connected with the upper chamber by a pipe, and provided with an oil-overflow outlet near its top, having a pendent discharge-nozzle, and an intermediate valve on the pipe connecting the two chambers to regulate the steam-pressure upon the oil and water in the lower chamber and the flow of condensation from the upper chamber thereto, as and for the purposes herein described and set forth.

4. In a lubricating device connected with the steam-boiler so as to receive pressure therefrom, the interiorly-arranged pipe S^3 , open at its upper end, and its horizontal connection S^4 , made with the annular space a in the pipe P' , as and for the purposes herein described.

5. In combination with the glass tube of a lubricating device, an exteriorly-placed protecting-pipe constructed with oppositely-arranged sight-openings through which to observe the flow of oil through the pipe, and a clamp constructed with oppositely-arranged plugs, and a thumb-screw to secure the plugs within the sight-openings of the exterior protecting-pipe, as shown and described.

6. The combination, with the exterior transparent tube which receives the oil from the lubricating-vessel and delivers it in visible drops to a conduit-pipe leading to the cylinder of an engine, of a puppet-valve, n , and a chamber, S^7 , provided with a valve-seat, n^7 , arranged intermediate the said tube and the pipe, substantially as described.

7. A lubricating device in combination, consisting of two lubricating-vessels, X and $X X$, connected with the boiler at S' by the branch steam-pipes $S^2 S^2$, and each having a conduit-pipe for attachment to a locomotive steam-cylinder, and each conduit-pipe connected with the boiler, as shown and described.

Signed at Troy this 24th day of June, 1882.

TIMOTHY HOLLAND.

Witnesses:

CHARLES S. BRINTNALL,
JUSTIN KELLOGG.