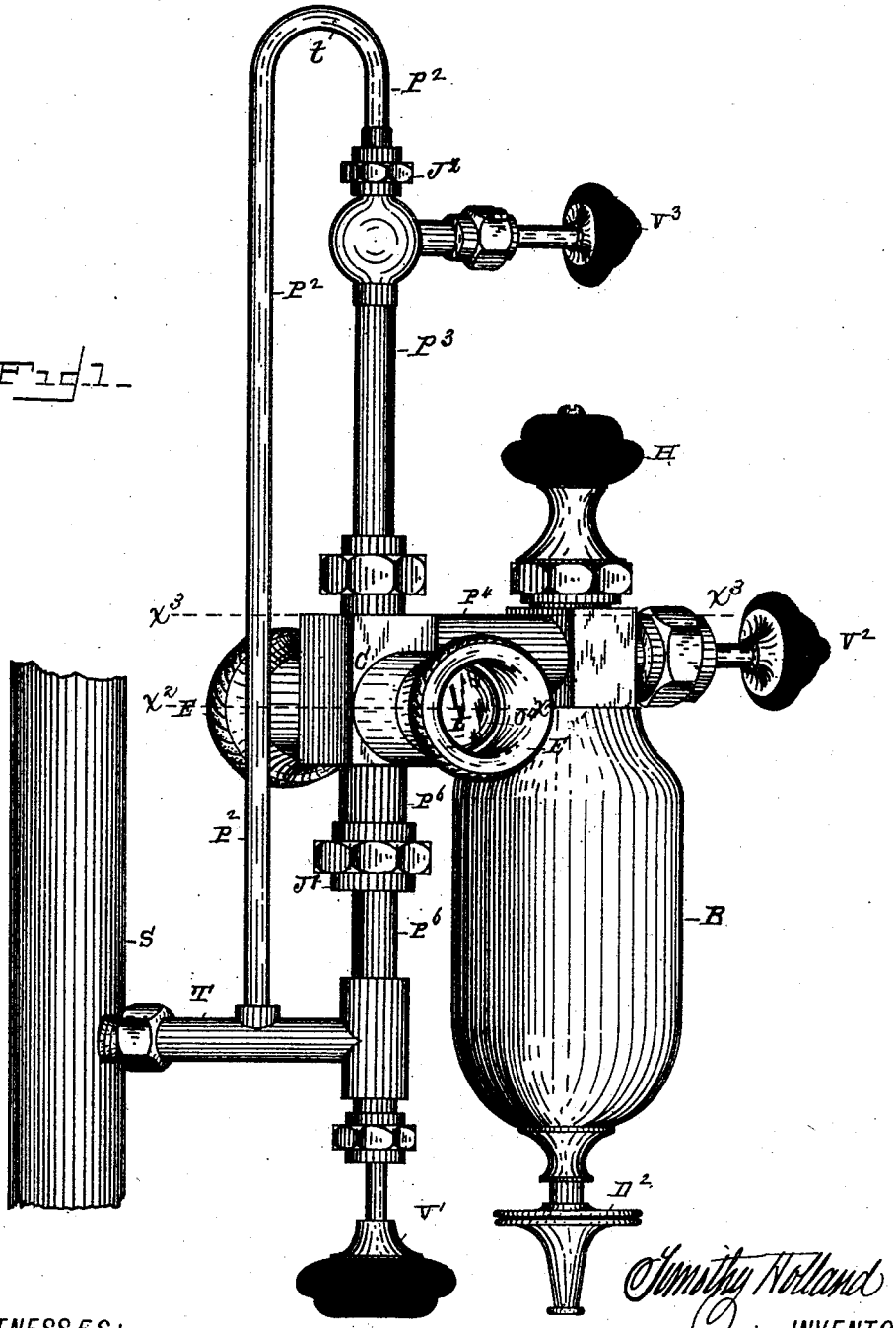
(No Model.) 3 Sheets—Sheet 1.

T. HOLLAND.

LUBRICATOR.

No. 342,358. Patented May 25, 1886.

Fig 1.



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(No Model.) 3 Sheets—Sheet 2.

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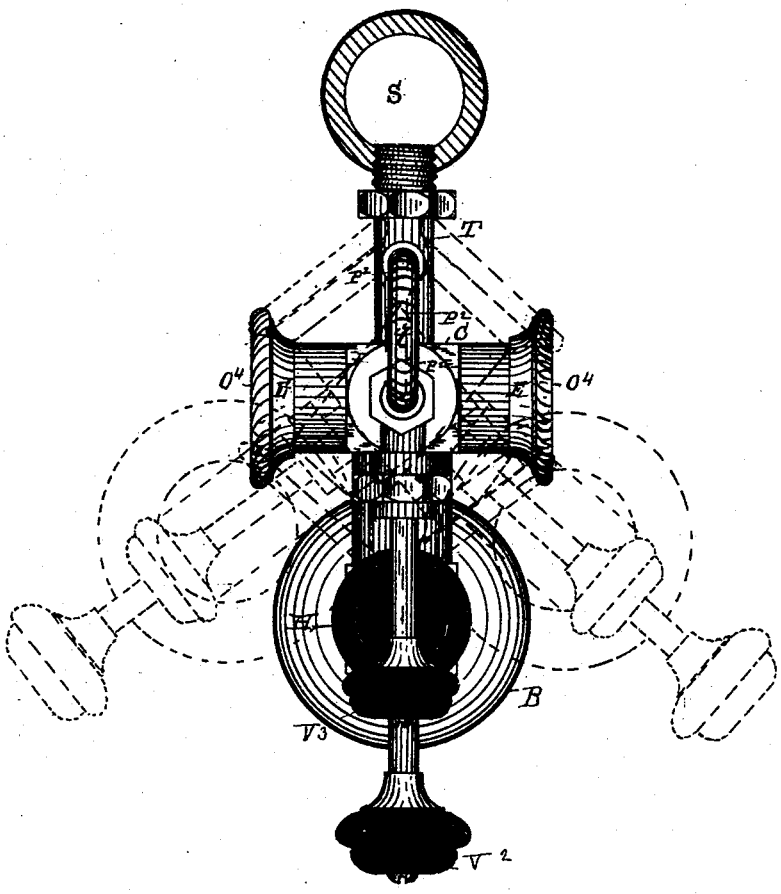
Fig. 2.



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(No Model.) 3 Sheets—Sheet 3.

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Fig. 4

Fig. 3

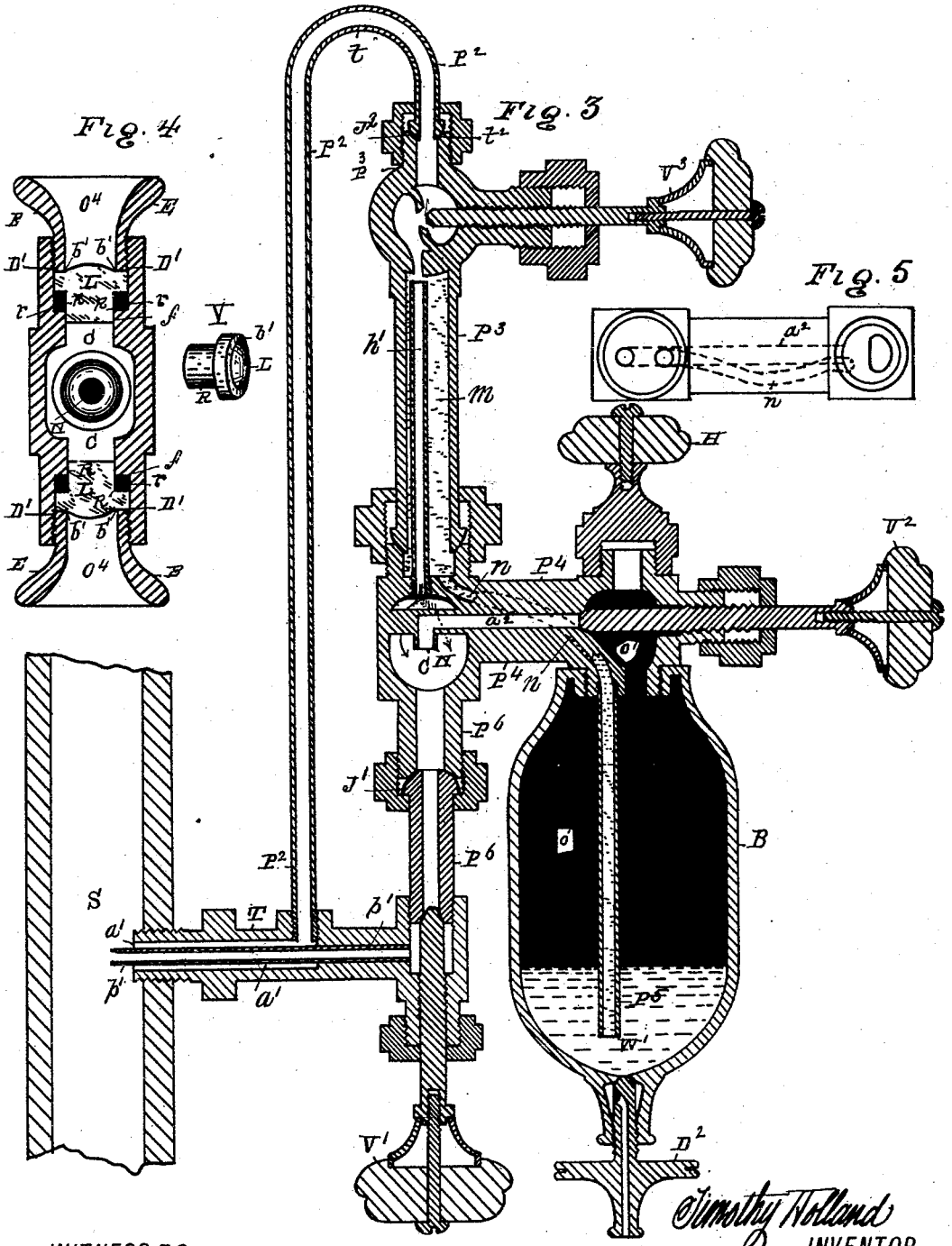

Fig. 5

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UNITED STATES PATENT OFFICE.

TIMOTHY HOLLAND, OF TROY, NEW YORK.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 342,358, dated May 25, 1886.

Application filed February 2, 1885. Serial No. 154,695. (No model.)

To all whom it may concern:

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

My invention relates to that class of lubricators wherein the oil in passing on its way to the point of application from the lubricator which contains it is seen through a glass as it moves in the form of drops, the object and purpose of my invention, in the main, being to facilitate the observation of the oil-drops by using magnifying glasses or lenses through which to observe them, and to so construct and arrange the lubricator that it can be moved around a pivotal connection in such a manner as to make available the varying conditions of the light for seeing the passing drops of oil.

Accompanying this specification, to form a part of it, there are three plates of drawings, containing five figures, illustrating my invention with the same designation of its parts by letter reference used in all of them. Of these illustrations, Figure 1 shows a perspective of a lubricator containing my invention, the lubricator being illustrated as attached to a steam-pipe adapted to connect with a steam-cylinder and with the lubricator shown as turned around in part on its pivotal connection. Fig. 2 illustrates a top view of the attached lubricator with dotted lines indicating its position when moved on its pivotal connection in opposite directions. Fig. 3 is a vertical sectional view taken centrally through Fig. 1. Fig. 4 is a cross-section taken horizontally on the line x^2 x^2 of Fig. 1. Fig. 5 is a plan view of a section taken on the line x^3 x^3 of Fig. 1.

The several parts of the mechanism thus illustrated are designated by letters of reference, and the function of the parts is described as follows:

The letter B designates the body or bulb of the lubricator, arranged to contain oil O′ and water W′, and this bulb or body is constructed and connected with means to supply steam, and the water produced by the condensation of the latter for the purpose of floating the oil to the point of delivery in drops as passing therefrom.

The letter T designates a pipe that is adapted to tap into the steam-pipe connecting with a steam-cylinder for the attachment and support of the lubricator and its adjacent mechanism and for the passage of steam to the bulb as well as to the oil-delivery pipe. The pipe T contains an interior pipe, p', that passes through the closed end of the latter to receive the oil and deliver it to the pipe S, leading to the steam-cylinder.

Within the pipe T, between it and the interior pipe, p', there is an annular steam-passage, a', which also receives steam from the boiler, and this annular steam-passage connects with a pipe, P^2, the latter having a siphon-form top, t, and which at a short distance below its curved top, by means of a ball-joint at J^2, connects with the stand-pipe P^3. This pipe P^3 is attached to the top of the observation-chamber C, but does not open into it.

The letter h' indicates an interior pipe, arranged within the pipe P^3, which delivers steam to the observation-chamber, and the letter m designates an annularly-inclosed space or chamber between the interior of the pipe P^3 and the exterior of the pipe h', placed within the latter. This annular chamber m acts as a condensing chamber, and at its bottom connects with a horizontally-curved and cored-out passage-way, n, formed in the horizontal pipe P^4, and said passage-way n connects at its other end with a pendent pipe, P^5, that is within the bulb B, so that its open lower end is a little above the bottom of said bulb. As the oil is raised by the water thus delivered to the bulb by the pipe P^5, it floats from the top of the bulb into and through a horizontally cored-out passage-way, a^2, produced in the said horizontal pipe P^4, and from out a pendent nozzle, N, arranged in the top of the chamber C, to fall therein in the form of drops. From the observation-chamber C the oil descends through a pipe, P^6, to connect with the interior pipe, p', leading through the pipe T, to deliver the oil to the pipe S, leading to the steam-cylinder. This construction of the pipe P^4 with a horizontally cored-out passage-way, a^2, for the escape of the oil from the bulb B, and a cored-out passage, n, arranged to curve horizontally around the passage a^2, for the condensation to reach the bulb, constitutes a leading feature of my invention.

The letter V′ designates a valve on the bottom of the pipe P^6, to shut off the flow of oil; D^2, a drip-cock for drawing off the surplus condensation within the bulb B; V^2, a valve for shutting off the supply of oil passing from the bulb through the cored-out passage-way a^2, and V^3 a valve for shutting off the steam from the pipes P^3 and h'; and H, a threaded plug in the top of the bulb B, that is screwed out when oil is supplied to the latter.

The letters L designate two lenses having a moderate magnifying-power, that are placed oppositely in the sides of the chamber C, so as to focus on the descending drops, that one of the lenses nearest the observer, and, facing the view, being arranged to magnify the passing drops, and the one upon the opposite side of the chamber serving as a condenser for concentrating the light upon the passing drops to make them distinctly visible. Placed in either position, that of being used to magnify the drops or to condense the light, either lens, as the view is changed from one to the other, answering alternatingly the same purpose of a condenser or magnifying-lens, the object to be observed being between them. These lenses, for attachment, are constructed to have on their outer faces, and surrounding the convexity of the latter, a flat surface-rim, (indicated at b',) and at their inner perimetral edges a recess, R, that is formed in revolution thereat, as indicated in the annex figure Y of Fig. 4, said recess being for the reception of a packing-ring, r.

The letters D′ indicate threaded and tubular-form openings, that are arranged oppositely in two sides of the chamber C, the inner ends of these openings, where connecting with the latter, being constructed with a ring-flange, f, against the outer face of which the packing-ring r rests when the lens is in place.

The letters E indicate threaded ring form caps having an observation-opening, O^1. The inner edges of these caps, when screwed in, press against the flat rim-surfaces b' on the outer faces of the lenses, forcing the latter in against the packing-ring r, and the latter against the flange f, to make steam-joint thereat.

The letter J^2 indicates a ball-joint made between the pipes P^2 and P^3, and which is produced in the usual manner by a concavely-rounded out seat, t^2, made in the end of the pipe P^3, a convexly-rounded surface on the end of the pipe P^2, a coupling-nut embracing the latter and threaded to be screwed onto the end of the pipe P^2, so as to securely bring together the two rounded surfaces. This method of making the ball-joint designated at J^2 is also employed at J′ to connect the two parts of the pipe P^6.

I am aware that it is not new to place observation-glasses in a chamber so that the oil dripping from a nozzle placed therein may be observed through said glasses, such a construction being made a part of Letters Patent No. 290,685, granted to me December 25, 1883. As the lubricator is thus made and attached by the pipe T, it can be moved around on its pivotal connection made by the ball-joints J′ and J^2, so as to meet the varying conditions of light, and at all times to make the descending drops visible. By means of the lenses L L, one of them acting as a condenser of light and the other to magnify the appearance of the drops as they fall or move, the flow of the latter can be carefully and correctly observed and the amount of passing oil regulated.

For the pivotal connection between the lubricator proper and the construction or pipe by which it is attached to a support any well-known means may be employed that will form a similar pivotal attachment to that shown, and by which the lubricator can be turned around to make available the varying conditions of light in substantially the same manner.

As the pivotal connection made between the lubricator and the pipe or means by which it is constructed to attach for a support will permit the lubricator to be moved around so as to make available the varying conditions of light in connection with any translucent passage for the oil, hence I do not limit my invention as relating to this pivotal feature of the lubricator attachment to its combination with magnifying-lenses or the particular form of observation-chamber that I illustrate and describe.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a lubricator the combination of a pipe constructed to attach for a support and a pivotal connection made between the lubricator and said attachment-pipe, substantially in the manner as and for the purposes set forth.

2. In a lubricator, the combination of a pipe constructed to attach to a support, a pivotal connection between said pipe and the lubricator, and a translucent passage-way for the oil passing from the lubricator, constructed and attached to move with the latter on its pivotal connection, substantially in the manner as and for the purposes set forth.

3. In a lubricator made to have a steam connection with a boiler, a condensing-chamber connected with the lubricator-bulb, an oil-conduit leading from the latter to a pendent nozzle arranged in an observation-chamber, and magnifying-lenses arranged oppositely to each other in the sides of said chamber, substantially as shown and described.

4. In a lubricator, the combination of an observation-chamber through which the oil descends in drops, a magnifying-lens in each side of the said chamber, arranged to focus on the descending drops and adapted to be oppositely used for magnifying the drops and for concentrating light thereupon, as shown and described.

5. In a lubricator, the combination of the

observation-chamber C, the tubular-form openings D′ D′, arranged in the sides of the latter and constructed with the flanges *f*, the lenses L L, each made with the flat rim *b′* on the outer surface, and the ring-form recess R on their inner edges, the packing-ring *r*, and the ring-form caps E, made with the openings O^4, said parts being constructed and arranged to operate substantially in the manner as and for the purposes set forth.

Signed at Troy, New York, this 10th day of January, 1885, and in the presence of the two witnesses whose names were by them hereto written.

TIMOTHY HOLLAND.

Witnesses:
CHARLES S. BRINTNALL,
STANLEY M. HOLDEN.