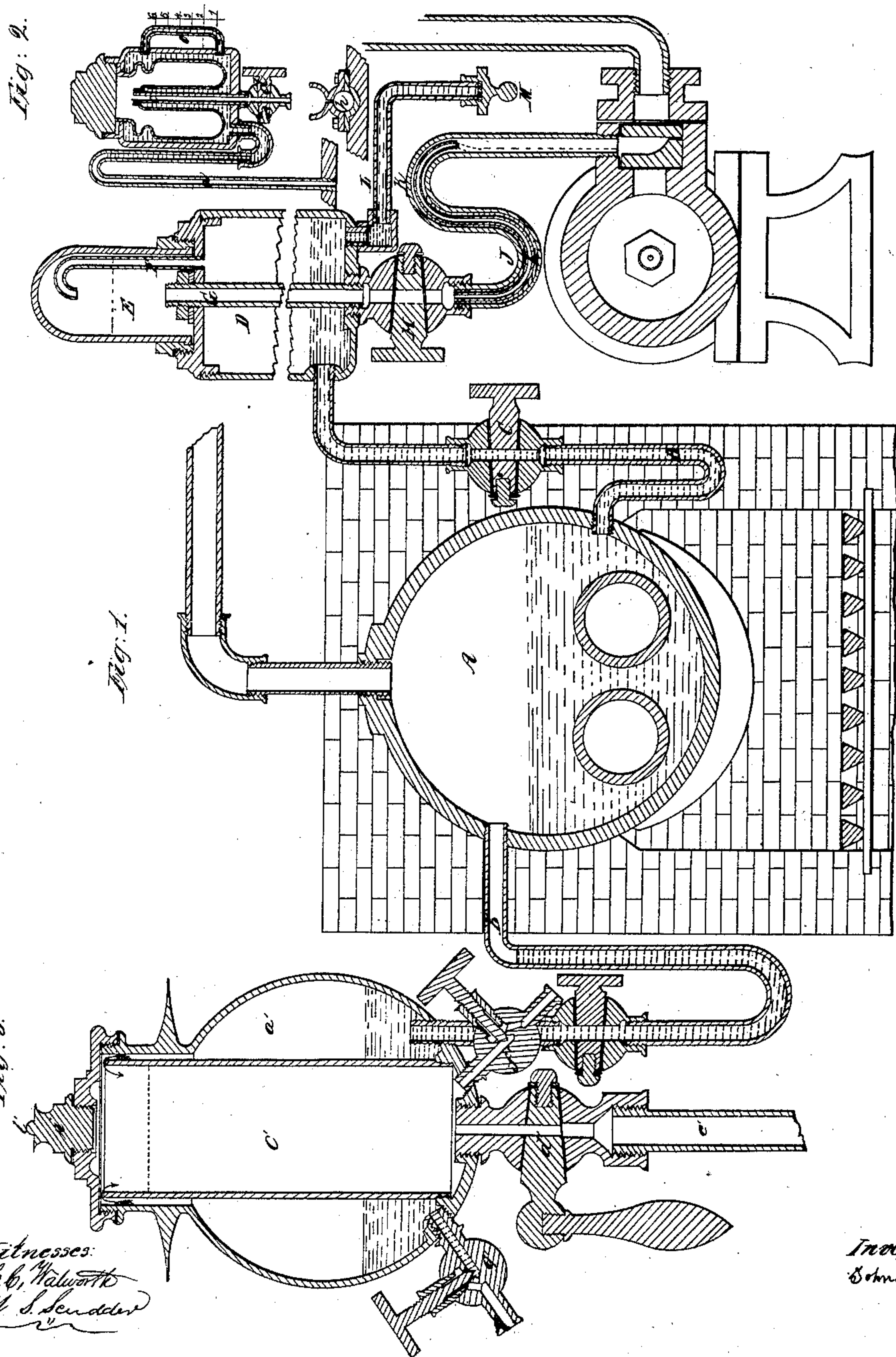


J. ABSTERDAM.

Lubricator.

No. 11,958.

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Witnesses:
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IMPROVED ARRANGEMENT OF MEANS FOR LUBRICATING THE CYLINDERS OF STEAM-ENGINES.

Specification forming part of Letters Patent No. **11,958**, dated November 21, 1854.

To all whom it may concern:

Be it known that I, JOHN ABSTERDAM, of Boston, in the county of Suffolk, the State of Massachusetts, have invented a new and Improved Mode of Lubricating the Cylinders and Bearings of Steam-Engines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a transverse section of my improvements arranged to lubricate the valve-seats and cylinder of a steam-engine. Fig. 2 is a transverse section of a modification of my improvement applied to the lubrication of the bearing of the shaft, and Fig. 3 is a transverse section of another modification of my improvement, to be more fully described hereinafter.

The nature of my invention consists in placing the lubricating-reservoir remote from the boiler and interposing between the oil and the boiler water, air, or other substances, which will communicate the pressure from the boiler to the oil, or to some other substance which may be used for lubrication, and thus keep the oil or lubricating substance from being heated, and yet feeding it to the surface to be lubricated by the pressure from the boiler.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A, Fig. 1, is a common steam-boiler, from which proceeds the siphon-tube B, filled with cool water, provided with a stop-cock C, and terminating in the oil-reservoir D. On the top of this reservoir I place a glass dome or receiver E and make a communication therewith from the oil-reservoir by means of a bent tube F, terminating near the top. Near the bottom of this receiver and opening therein is a tube G, passing downward through the oil-reservoir into a stop-cock H. The communication from the stop-cock H is continued by a small bent tube I, inserted therein and inclosed by a larger tube J. The space between the inner and outer tube is filled with water as high as admissible by the bend of the pipes at K. The inner tube may terminate where the oil would flow freely therefrom, while the outer tube is continued and inserted in the valve-chest, cylinder, or bearing at the most advantageous points for lu-

brication. L is a tube provided with a cap M to draw off the water from the oil-reservoir.

The operation of the lubrication is as follows: The tube B is filled with water and the reservoir D with oil. The cock C being open, the pressure of the steam on the water in the boiler, thence to that in the tube, forces a quantity into the oil-receiver, which displaces a similar quantity of oil, causing it to rise up the tube F and empty into the glass dome, partially filling it and compressing the air therein, so that a pressure of air is obtained, due to the pressure of steam, less the difference in height of the columns of water in the siphon-tube B. If now the stop-cock H be opened, the oil from the receiver will flow therefrom and be conducted to its destination by the tubes I and J, which I would recommend in lubricating-valves to be between the expansion and steam valve, in order that the resistance to the flow may be less than the pressure to produce it. This effect is more obvious when communicating direct with the cylinder, as when the steam is exhausted but little resistance is offered. The dome I make of glass, that the quantity of oil supplied for lubrication may be observed. The tubes leading from the stop-cock H to the valve-chest are bent to a siphon form to prevent the steam rising into the oil-receiver and to contain water to protect the oil-tube from the heat of the steam. It is obvious that the steam-pressure in the tube may be obtained by attaching it to a steam-pipe as well as to the boiler, in which case the water therein may be supplied by the condensation of the steam admitted into the tube and would be free from sediment.

Fig. 2 is a modification of my invention, which I will proceed to describe. *a* is the siphon-tube, through which the steam-pressure is communicated. *b* is a reservoir answering to the oil-reservoir of Fig. 1; but in this figure the oil is represented as contained in a bag of india-rubber or other flexible material, which is secured at one end to the tube *c*, communicating therewith, and descending through the stop-cock *d* is directed so as to discharge upon the bearing of the shaft *k*. *f* is a screw plug or cap, which serves to fasten the bag to the reservoir, and by removing offers the facility for replenishing the bag with oil. *o* is a glass tube, both ends com-

municating with the reservoir, and furnishes the means of observing the height of the water in the reservoir, when the yielding bag is dispensed with and the water comes into immediate contact with the oil, as shown in Fig. 1.

The operation of this is as follows: The sack or bag is filled with oil and the unoccupied portion of the reservoir and the leg of the siphon-tube communicating therewith with water. If now steam be admitted to press on the water in the siphon-tube, it will cause it to descend therein and a portion to enter the reservoir, and there exerting a pressure on the bag displaces a corresponding quantity, which flows off through the tube *c* to the bearing *h*.

Fig. 3 is another form of my invention, described as follows: *a'* is a globular vessel, from which a communication to steam-pressure is obtained by means of a siphon-tube *b'*, filled with water in the same manner as described for Figs. 1 and 2. This vessel incloses an oil-reservoir *c'*, open at the top, but fixed to the vessel *a'* by its lower end. A stop-cock *d'* is inserted in the bottom of the globular vessel, which communicates with the oil-reservoir, and to its opposite end is attached the tube *e'* for conducting the oil to its destination. *g'* is a stop-cock, through which any water or sediment collecting in the oil-reservoir may be drawn off. *f'* is a stop-cock for drawing off the water in the vessel *c'*. *h'* is a cap made to cover the aperture made to introduce the oil-reservoir into its place. *i'* is a plug filling the aperture through which the oil-reservoir is replenished. In this form of my invention water is forced into the vessel *a'* by steam-pressure in the siphon-tube, as described for Figs. 1 and 2, the effect of which is to compress the air contained in the vessels

a' and *c'* and cause it to exert a pressure on the oil, forcing it down through the stop-cock *d'*, thence through the tube *e'* to its destination.

It will appear that in the forms of the invention last described and represented in Figs. 2 and 3 the oil is preserved from contact with the water or liquid used as a medium through which the steam-pressure is transmitted. The amount of oil discharged is regulated by the stop-cocks placed in the delivering-tubes.

The advantages of my invention are that a constant supply of oil or lubricating substance is maintained by the pressure of steam and by the intervention of the water or other liquid between the steam and oil. The latter is prevented from deterioration from the effect of heat, and in its application to the cylinders of steam-engines the supply is intermittent in consequence of the reduction of the resisting-pressure during the exhausting of the steam from the cylinder, which serves to prevent the tubes from becoming clogged.

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

Placing the lubricating-reservoir remote from the boiler and interposing between the oil and the boiler water, air, or other substances, which will communicate the pressure from the boiler to the oil, and thus keep the oil from being heated, and yet feeding it to the surface to be lubricated by the pressure from the boiler, as herein set forth.

In testimony that the above is a correct specification I have hereto set my signature this 23d day of May, 1854.

JOHN ABSTERDAM.

Witnesses:

J. B. CROSBY,
EBEN HOYT, Jr.