(No Model.)

J. E. TOTMAN & M. ERICKSEN.

LUBRICATING DEVICE.

No. 461,002. Patented Oct. 13, 1891.

Fig. 1.

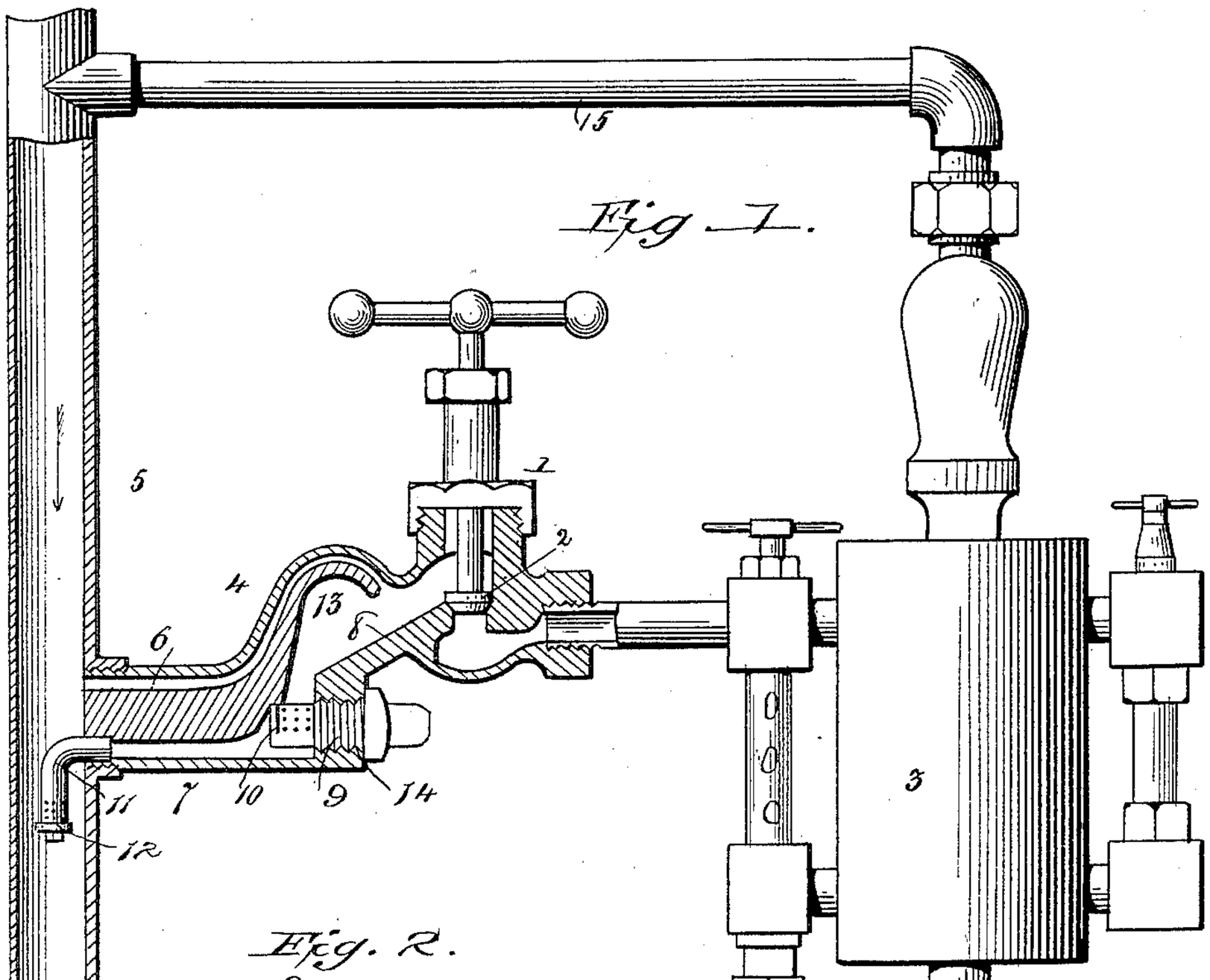
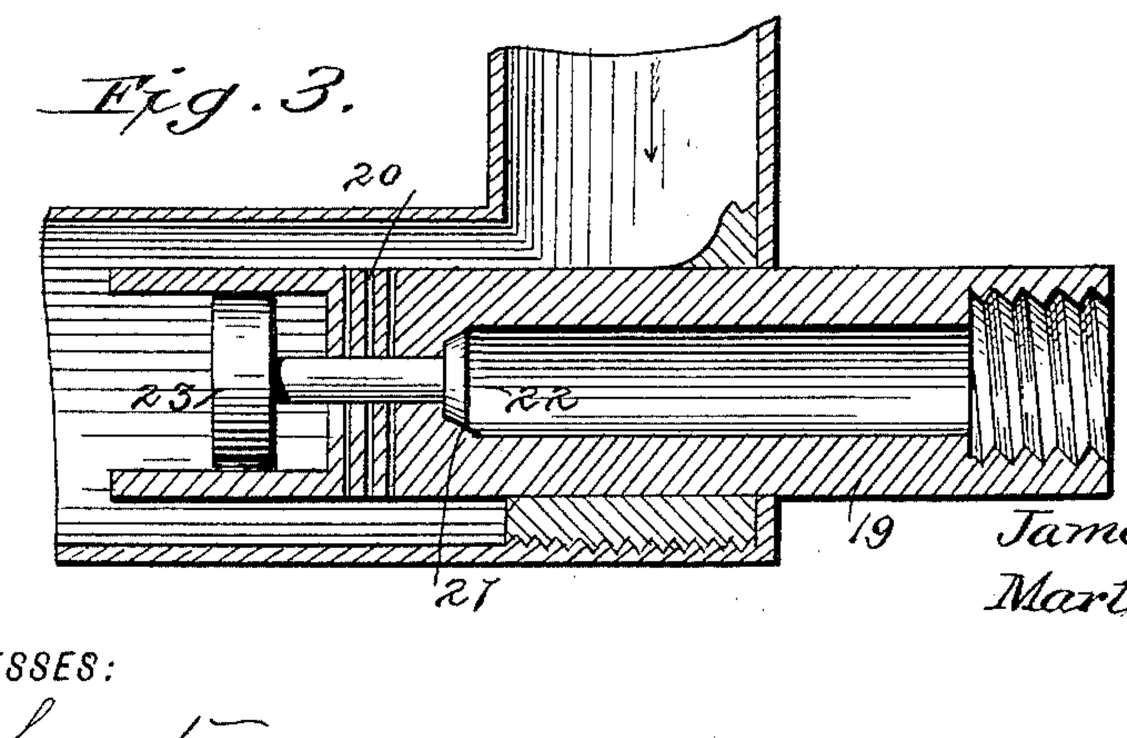


Fig. 2.

Fig. 3.



James E. Totman
Martin Ericksen
INVENTORS.

WITNESSES:

A. J. Schwartz

Andrew J. Schwartz Sr

BY

J. Fred. Reily.
ATTORNEY.

UNITED STATES PATENT OFFICE.

JAMES E. TOTMAN AND MARTIN ERICKSEN, OF LA CROSSE, WISCONSIN.

LUBRICATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 461,002, dated October 13, 1891.

Application filed April 4, 1891. Serial No. 387,594. (No model.)

To all whom it may concern:

Be it known that we, JAMES E. TOTMAN and MARTIN ERICKSEN, citizens of the United States, residing at La Crosse, in the county of La Crosse and State of Wisconsin, have invented certain new and useful Improvements in Lubricating Devices; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to lubricators, and more particularly to those adapted for lubricating steam-cylinders, and has for its object to atomize the oil and distribute it to the cylinder equally over all its parts, whereby a superior effect is accomplished and the oil is used economically.

To this end the invention consists in the improved construction and arrangements of parts, as will be hereinafter more particularly set forth.

In the accompanying drawings, in which the same reference-numerals indicate similar parts, Figure 1 is a vertical sectional view of our improved device and so much of a steam-engine as is necessary to show its application and use. Fig. 2 is a detail perspective view of one portion of it, and Fig. 3 is a vertical sectional view of another form.

Referring more particularly to the drawings, 1 indicates a cock, which is provided with the usual valve 2, which regulates the flow of oil from the reservoir 3, to which the cock is connected in any convenient manner. The cock is provided at the exit or discharge with an extension 4, which leads into or connects with the steam-pipe 5, leading to the cylinder. The extension is provided with two channels or passages 6 and 7, one of which 6 is preferably made round and is for the passage of the steam from the steam-pipe into the interior of the other channel near the valve 2. The other channel 7 is a continuation of the channel through the cock and is of irregular cross-section and is provided with an inclined surface 8, leading from the valve 2 or inlet into the channel 7, and is located directly under the inlet of the channel 6. At the foot of the incline is placed a plug 9, the inner end of which is made hollow and provided with small perforations upon its upper surface and projects into the channel 7, which at this point is preferably made perpendicular. A thin plate 10, provided with small perforations, is placed at or near the end of the hollow portion of the plug, which will assist in breaking up or vaporizing the oil, as will be hereinafter more fully explained. From the end of the plug the channel 7 extends in a straight line to the inner end of the extension and terminates in a downwardly-extending pipe 11 in the steam-pipe. The lower end of this pipe is closed by a plug 12 and is provided with small perforations just above the plug.

The extension can be made separate and be attached to the cock in any suitable manner, or it can be cast integral therewith, and the channels through it formed in the most convenient way, an enlarged oil-chamber 13 being formed above the inclined surface 8, and the opening 14 for the insertion of the plug 9 being preferably provided with screw-threads for the insertion or removal of the plug.

In operation the channel through the cock is opened by raising the valve 2, which will permit the passage of the oil from the reservoir, which may be connected with the steam-pipe by a small pipe 15, which will force the oil through the cock. As the oil enters the extension it is cold and sluggish and flows down the inclined surface 8; but it hardly starts down the incline until it passes under the inlet or opening of the channel 6, which is curved, so as to cause the steam to strike the incline almost perpendicularly. The hot steam entering through the channel 6 heats the oil to nearly steam heat and vaporizes it within the oil-chamber 13. From here the oil and steam pass through the small perforations 16 into the interior of the plug 9, and from whence they pass through the perforated plate 10 into the straight portion of the channel. In the passage through the perforations in the plug and the plate the oil is very considerably broken up and mixed with the steam, which also heats it to a great extent. From the channel 7 the steam and oil pass through the fine perforations in the end of the pipe or tube 11 out into the steam-pipe

5, and is thoroughly commingled with the steam that is passing to the piston, and thereby carried directly into the cylinder. By this time the oil is completely broken up or atomized and is evenly distributed to every part to which the steam is admitted. In this manner we find that a very small quantity of oil is needed, and that it is applied in such a manner that the most satisfactory results are obtained.

Although we have shown the plug 9 provided with screw-threads for securing it in the extensions and having a head or shoulders for the reception of a wrench, it could be made without them and any other ordinary means adapted for securing it in the extension, and the hollow in the inner end may be dispensed with and the perforations be passed entirely through it, or if the hollow is retained the perforations might be extended entirely around the plug, as the object of the perforations is to break up the oil, and they can be arranged in any manner which will best accomplish that object without obstructing the passage of the oil, and the plate 10 may be provided with shoulders 17 and be fitted into a slot 18, cut near the end of the plug, so that it may be easily removed for cleaning or for repairs.

Another form of our atomizer is shown in Fig. 3, and consists of a plug 19, which is connected with the oil-reservoir in any suitable manner, and is provided with small perforations 20 near its inner end. At any convenient point within the tube a valve-seat 21 is formed, upon which rests a valve 22, the stem of which passes beyond the perforations 20, and is provided with a head or piston 23, which fits the chamber or bore of the tube at that point. Now it is evident that when the engine is in operation the pressure of the steam upon the head 23, which is of a larger area than the valve 22, will force the valve off its seat against the pressure of the oil from the reservoir and let the oil flow through the tube and be driven out through the perforations 20 and commingled with the steam that is passing to the engine. As soon as the steam-pressure is shut off, as in stopping the engine, the pressure of the oil upon the valve will force it upon its seat, and thus automatically shut off the flow of oil and prevent any waste which would occur if it continued to flow after the steam had been shut off.

Having thus described our invention, we claim—

1. In an attachment for lubricators for steam-cylinders, the combination, with a body provided with an enlarged oil-conduit and having an inclined surface a portion of its length, of a perforated plug in the conduit beyond the inclined surface, and a steam-conduit leading from the steam-pipe and communicating with the oil-conduit opposite to and discharging upon the inclined surface, substantially as described.

2. In an attachment for lubricators for steam-cylinders, the combination, with a body having two channels, each communicating with the steam-supply pipe and one of them with the oil-supply, of a perforated plug across one of the channels, said channel being formed with an inclined surface, and an oil-chamber above the plug, substantially as described.

3. In an attachment for lubricators for steam-cylinders, the combination, with a body provided with a channel for the passage of the oil and a second passage for the entrance of steam thereto from the steam-pipe, of a plug in the passage, the inner end of which is hollow and provided with perforations, and a perforated plate in the end of the plug, substantially as described.

4. In an attachment for lubricators for steam-cylinders, the combination, with a body provided with two passages, each communicating with the steam-supply pipe and one of them with the oil-supply, of a perforated plug across the oil-passage beyond the entrance of the steam-passage, a perforated tube at the end of the oil-passage, projecting into the steam-supply pipe in the direction of the passage of the steam to the cylinder, and a removable plug in the end of the tube, substantially as described.

In testimony whereof we affix our signatures in presence of two witnesses.

JAMES E. TOTMAN.
MARTIN ERICKSEN.

Witnesses:
S. H. RUSSELL,
CHAS. SCHOENBAUM.