

(No Model.)

2 Sheets—Sheet 1.

W. P. PHILLIPS.
LUBRICATOR.

No. 249,543.

Patented Nov. 15, 1881.

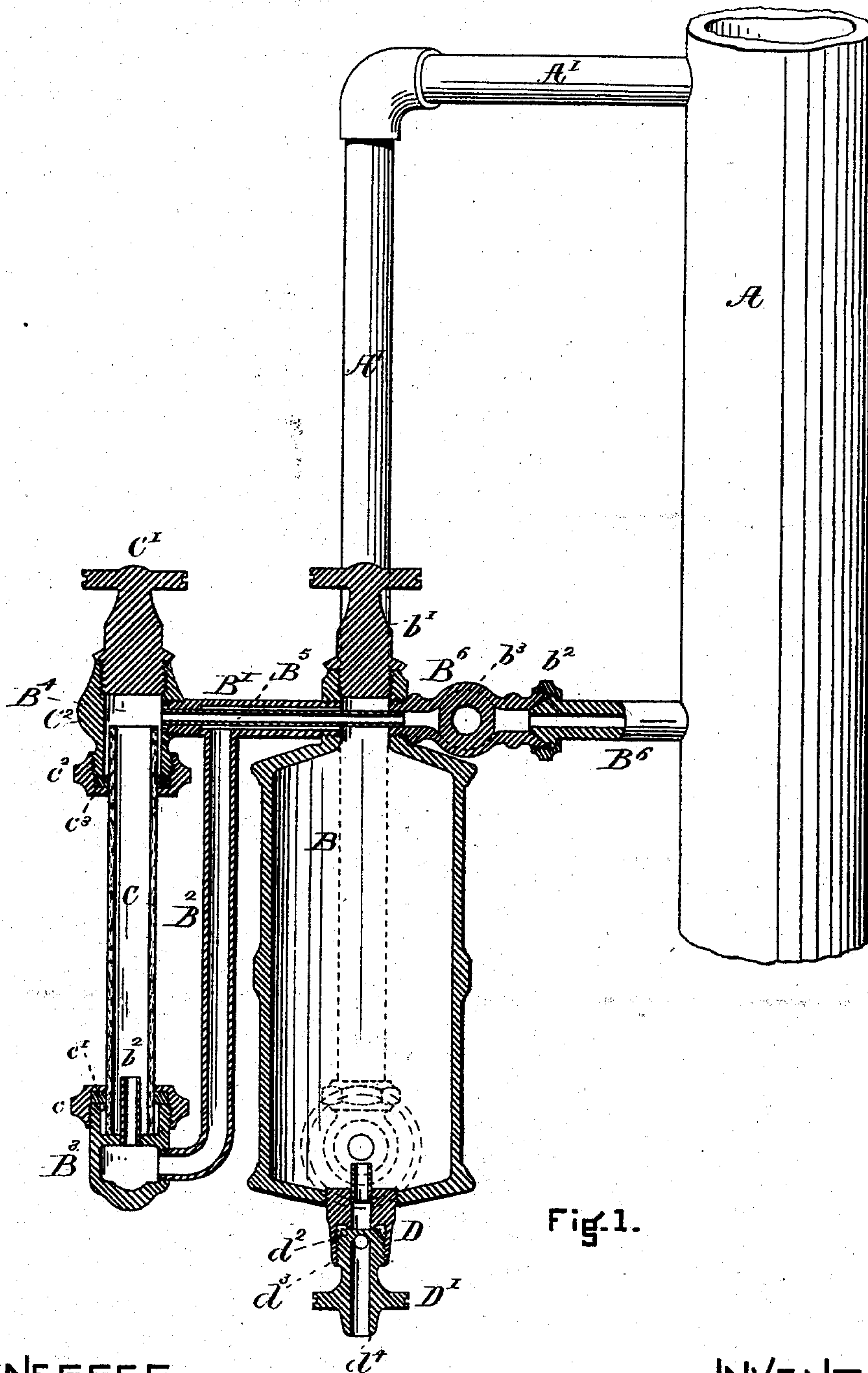


Fig. 1.

WITNESSES

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INVENTOR

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By Charles E. Pratt,
Att'y

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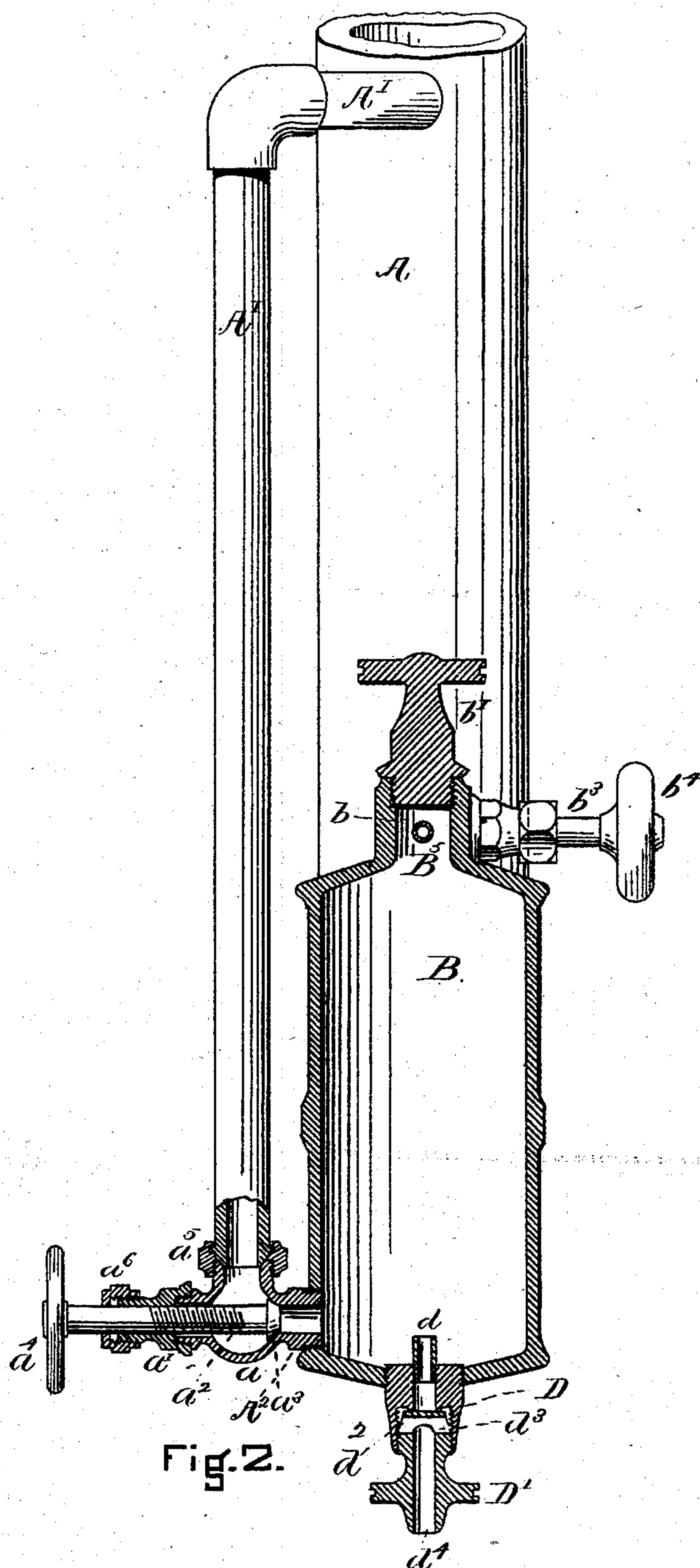
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UNITED STATES PATENT OFFICE.

WILLIAM P. PHILLIPS, OF BOSTON, MASSACHUSETTS.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 249,543, dated November 15, 1881.

Application filed March 18, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. PHILLIPS, of Boston, in the county of Suffolk, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Lubricators, of which the following is a specification.

My improvements relate to that class of lubricators constructed for use with steam-engines in the lubrication of cylinders, piston-rods, and valves thereof, and especially to the class known as "indicating-lubricators," consisting of an oil-reservoir and a water-chamber with transparent walls, through which the oil passes drop by drop in the course of its passage from the reservoir to the steam pipe or chest with the connections thereof; and the objects of my improvements are to so arrange and construct the apparatus as to give it a secure and convenient position by means of its attachment to the steam-pipe without the use of brackets or other supports, and to make it more compact and to enable it to be constructed at less expense than the nearest related forms now in use; and the nature of my invention will appear from the following description, taken in connection with the drawings, in which—

Figure 1 shows a segment of steam-pipe and connections with a contrivance embodying my improvements in vertical section; and Fig. 2 shows the same with the vertical section at right angles to the plane of that in Fig. 1.

A is a steam-pipe leading to the steam-chest. A' A' is a smaller pipe opening into the pipe A at one end and extending downward to the hollow elbow A², to which it is connected by means of the coupling a⁵. The joint or elbow A² contains a valve-stem, a², with its handle a⁴, its valve a³ fitted inside the joint A² and held therein by means of the screw-caps a' a⁶, and so constructed with its internal cavity, a, that when the handle a⁴ is turned the valve a³ is withdrawn from its seat by means of the thread on the stem a², and a continuous passage is allowed from the pipe A' to and through the elbow A².

B is an oil-reservoir, having an opening at the top b, which is fitted and covered by means of the plug b'. To one side of it is connected a pipe, B', the cavity in which forms a channel from the reservoir B, through it, and into the tube B², which continues the channel into the

point or elbow B³, having an internal cavity, the channel being continued, as before, through this joint B³ only by means of the small tube or nipple b², which extends within the water-chamber C. The water-chamber C is in a glass tube or transparent cylindrical wall held at the bottom to the joint B³ by means of a coupling, c, and packing c', and held at its upper end by means of the coupling c² c³ to the joint C², which latter contains a cavity, B⁴, for oil, and has an opening in its upper end fitted and closed by means of the cock C'. The glass tube is so held by means of the couplings and packings referred to in the joints as to allow expansion by heat, to prevent its cracking. From the joint C² extends a small tube, B⁵, within a larger tube, B', and through the length of the latter and across the opening in the top of the reservoir B into the pipe B⁶ on the opposite side of the reservoir-neck, and by its internal bore forms a continuous channel from the cavity B⁴ to the pipe B⁶.

The construction and adaptation of the pipes B' and B⁵ are such as to form one channel through the middle of another channel, the end of the tube B', which is connected with the joint C², being entirely closed so far as its own channel is concerned, as shown in the drawings, Fig. 1.

The pipe B⁶, for convenience of making and adjusting, may be constructed in two parts, as shown, united by the coupling b², connected at one end with the oil-reservoir B and at the other end with the steam-pipe A; and it contains between the reservoir and the steam-pipe a valve, b³, operated by the handle b⁴, by which the channel through it may be opened and closed.

D is a hollow plug inserted in the bottom of the reservoir B, or it may be made as a part thereof. d is a nipple or opening from the reservoir B, the inner end of which is somewhat above the bottom of the reservoir, in order to prevent the falling of sediment which will unavoidably collect in such a reservoir and through it upon the valve-seat below.

D' is a hollow valve-stem, having a handle operating by a thread in the plug D, having a valve, d², and cavities d³ d⁴, and so constructed that when it is turned home it forces the valve to its seat and entirely closes the opening ex-

tending through it to the reservoir B, and when it is turned so as to withdraw the valve from its seat it allows a continuous passage from the reservoir B to and through it by means of its
5 cavities.

The operation of this contrivance is as follows: First, making two threaded taps in the steam-pipe A, I insert in the upper tap the threaded end of the pipe A' A', and in the lower
10 tap the threaded end of the pipe B⁶, the remainder of the apparatus being rigidly secured together, as shown and described. I couple the remainder of the apparatus on by connecting the two parts of the pipe B⁶ by means of the
15 coupling b², and connect the lower end of the pipe A' with the joint A² by the coupling a⁵. I then, by withdrawing the cock b', the cock D' being closed and the valve a³ being closed, fill the reservoir B with oil, and return the cock b'
20 to its place. I then, the valve b³ being closed, remove the cock C' and fill the reservoir with water nearly to the top, replacing the cock C'. Having attached the apparatus properly and prepared it for operation, the steam being on
25 in the pipe A, I open the valves a³ and b³, and the steam, entering the pipe A' A', condenses therein and enters the oil-reservoir B at the bottom, pressing the oil into and through the tube B' B², cavity in B³, and nipple b², from
30 which oil escapes drop by drop and passes upward through the water in the chamber C into the cavity B⁴ at the top. Thence the oil passes through the tubes B⁵ B⁶ into the steam-pipe A and is carried along with the steam into the
35 chest and cylinders, lubricating all the parts, as desired. The rate of feed of the oil is indicated by the number of drops a minute passing from the smaller nipple b² through the water in the chamber C, and may be lessened
40 or increased by regulating the valve a³ so as to increase or diminish the access of water to the reservoir B. This arrangement of the smaller tube B⁵ within the tube B' and across the top of the oil-reservoir, with the connections
45 and adaptations made accordingly, saves considerable outside tubing and strengthens the attachment of the apparatus to the steam-pipe; and when the whole is properly constructed in this way no bracket or other support is neces-
50 sary for the reservoir or indicator other than the attachment to the steam-pipe.

It is obvious that by carrying the pipe A' to the top of the lubricator only, and attaching it there with an extension by means of a small
55 tube inside, to or near the bottom of the reservoir, with the valve a³ located by adaptation

accordingly, a modification could be made by which part of the outside tube, A', might be dispensed with, and I consider it an equivalent of the form shown; but the form shown
60 is preferable, both for the sake of economy in construction and for better cooling and condensing of the steam in the pipe A'.

I am aware of Letters Patent Nos. 140,270, 214,311, and 229,242, and I do not claim any-
65 thing described or shown therein.

I claim as new and of my invention—

1. A lubricator consisting of an oil-reservoir and a water-reservoir, with pipes and connections so constructed and arranged, as described,
70 that the circuit of oil from the former through the latter is conducted by means of one external connection between them, substantially as described.

2. In a lubricator, the combination of the oil-
75 reservoir B, water-chamber C, and tubes B', B², B⁵, and B⁶, constructed and arranged substantially as set forth.

3. In an indicating-lubricator, the feeding-
80 pipe B⁵, passing through the oil-pipe B', reservoir B, and connecting with the steam-pipe through the tube B⁶, essentially as set forth.

4. The described indicating-lubricator, consisting of an oil-reservoir and a tube having a valve within it to be connected with the steam
85 pipe or chest of an engine, and a water-reservoir outside of the oil-reservoir, and connected therewith by an oil-approach pipe and an oil-return pipe, one within the other, a tube connecting said oil-approach pipe with the bottom
90 of the water-reservoir, and a connection between the top of the water-reservoir and the oil-return pipe, the oil-return pipe being continued through and across the upper part of the oil-reservoir, and with an extension on the oppo-
95 site side of the oil-reservoir containing a valve and tube to be connected with the steam pipe or chest of the engine for the delivery of oil and as a support of the lubricator, all constructed and adapted essentially in the manner and for
100 the purposes set forth.

5. An indicator for a lubricator, consisting of a glass chamber, C, and couplings and connections, constructed and arranged to be out-
105 side of the oil-reservoir and with a single connection for reception and delivery of oil and support thereon, substantially as set forth.

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Witnesses:

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