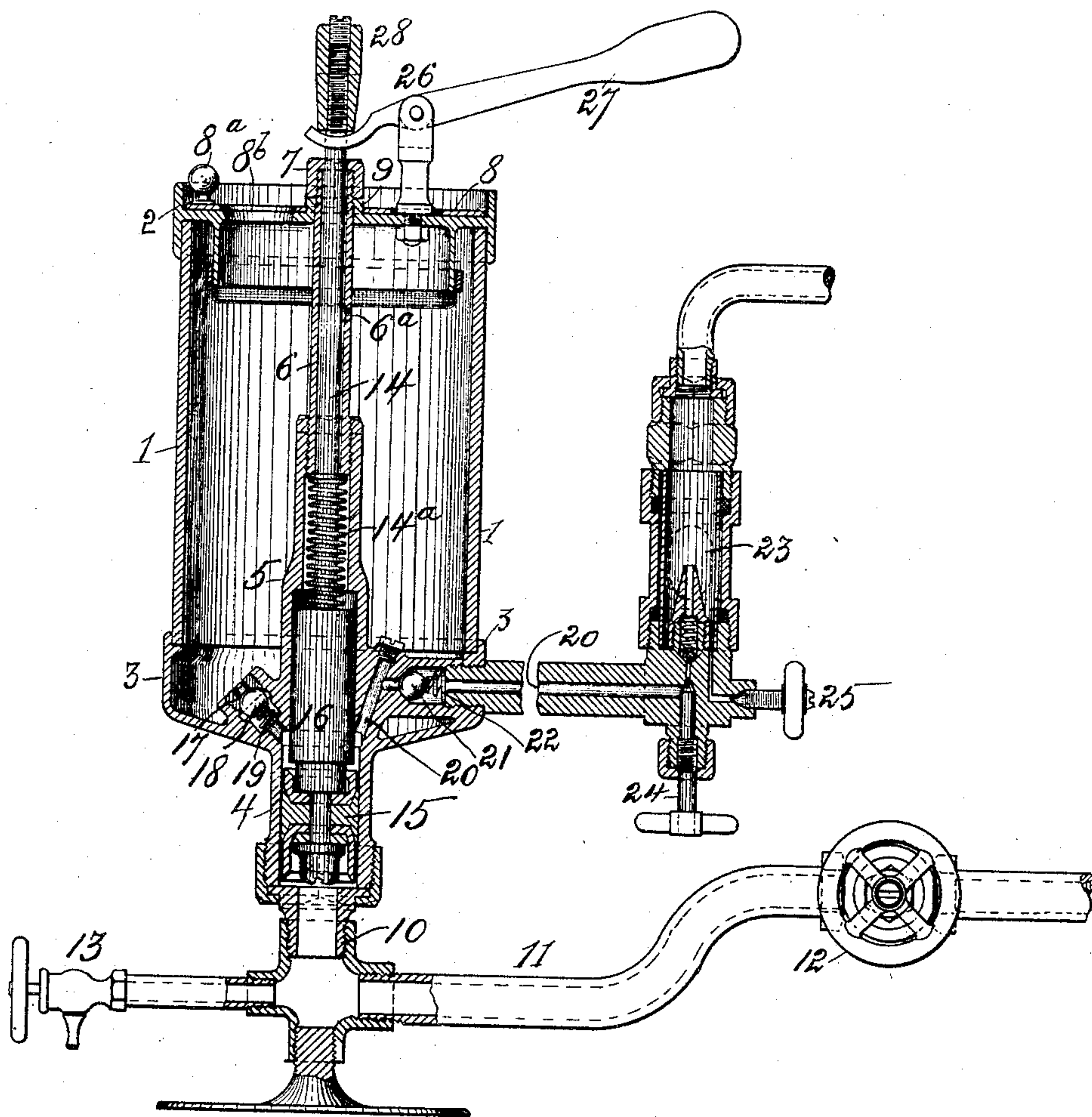


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 LUBRICATOR.  
 APPLICATION FILED SEPT. 19, 1905.

940,339.

Patented Nov. 16, 1909.



WITNESSES

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# UNITED STATES PATENT OFFICE.

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## LUBRICATOR.

940,339.

Specification of Letters Patent. Patented Nov. 16, 1909.

Application filed September 19, 1905. Serial No. 279,113.

*To all whom it may concern:*

Be it known that I, JAMES A. MARTIN, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Lubricators; and I 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 characters of reference marked thereon, which form a part of this specification.

My invention relates to that class of lubricators for steam engine cylinders in which the oil is forced from the lubricator-cup to the cylinder of the engine by means of a plunger actuated by the varying pressure of the steam in the steam-cylinder.

The object of my invention is to provide a cheap, simple and durable device which shall dispense with a number of parts heretofore employed in devices of this class, especially outside packing and stuffing-boxes; which may, if desired, be operated by hand, thus dispensing with the ordinary hand-pump heretofore employed preliminary to starting the engine; in which the leakage past the plunger shall be automatically returned into the oil-cup, and in which steam is excluded from the operating portions of the lubricator by means of an interposed water cushion, thus preventing the undue heating of the lubricator-parts and the lubricant.

I attain these objects by means of the devices and arrangement of parts hereinafter described and shown, and illustrated in the accompanying drawing in which the single figure illustrates my lubricator in central vertical sectional elevation.

In the drawing, 1 is a glass cylinder closed at top by a flanged metal top 2 and at bottom by a flanged metal base 3. The base is provided with an axial downwardly projecting tubular extension 4 and an internal upwardly projecting tubular extension 5. The latter extension is threaded at its top and is connected with a correspondingly threaded tube 6 which projects through the top 2 and which is threaded at its upper end to receive a nut 7. By means of the nut 7 the top and base may be drawn together upon the upper and lower margins of the

glass cylinder 1, upon thin gaskets, and thus tight joints are obtained. Resting upon the top 2 is a disk 8, journaled at its center upon a boss 9 surrounding the central opening through the top. The disk 8 is provided with a knob or handle 8<sup>a</sup> by means of which it may be turned upon its central bearing. Through the disk and through the top are openings 8<sup>b</sup> which may be thrown into coincidence and through these openings oil is supplied to the reservoir 1. The disk 8 has also a curved slot through which extends the support upon which the hand-lever 27 is fulcrumed. Other means for pivotally supporting the handle 27 will, however, be obvious.

The downwardly projecting tubular extension 4 is threaded at its lower end, as at 10, and is suitably connected with a supporting base.

11 is a steam pipe leading from and connecting with the interior of the steam cylinder to be lubricated and with the tubular extension 4. In this steam pipe is a hand-valve 12 between the steam cylinder and the lubricator, also a drip-cock 13.

The tubular extensions of the base 3 are bored to two diameters, the diameter of the part 4 being larger than the diameter of the part next above the part 4. Within the tubes 4, 5, and 6 is a piston-rod 14 which passes through the nut 7 and extends above the top of the lubricator, as shown. Secured to the bottom of the rod 14 is a plunger 15 having, preferably, reversed leather cups, and which reciprocates in the bore of the tubular part 4. Immediately above the plunger 15 is a piston 16, formed preferably integral with the rod 14. The piston 16 is of less area than the plunger 15 and fits operatively within the reduced bore of the tubular portion of the base. The lower end of the piston 16 is arranged to move partly into the chamber of the plunger 15. Interposed between the top of the piston 16 and the lower end of the tube 6 is a spring 14<sup>a</sup> coiled around the rod 14 and adapted to hold the piston and plunger normally depressed. Leading into the chamber of the tubular part 4 from the interior of the oil-reservoir is an oil-duct 17 in which is a ball-valve 18 which opens toward the plunger 15 and which is held normally closed by coiled spring 19.

20 is a duct leading from the upper part



of the plunger chamber to the steam cylinder to be lubricated. (Not shown in the drawings.) In this duct is a ball-valve 21 opening outwardly and held normally closed by coiled spring 22. Connected with the duct 20 is the usual sight-feed 23, regulating valve 24, and drip-cock 25.

Fulcrumed upon the top 3, as at 26, is a hand-lever 27, the inner forked end of which engages a nut 28 on the top of the piston-rod 14. By means of this lever the plunger and piston, 15 and 16, may be operated by hand independently of steam power. Such part of the lubricant as escapes around the piston 16 into the tube 6 finds its way back to the oil-reservoir through opening 6<sup>a</sup> in the pipe 6.

That part of the steam-pipe 11 which is connected with the lubricator is, as shown, disposed in a lower level than the remainder of the pipe. The lower part of this pipe, where it is connected with the lubricator, is filled with water, so that the steam pressure from the steam-cylinder, with which pipe 11 is connected, is upon the water which transmits the pressure to the plunger 15. The interposed body of water prevents steam from reaching the lubricator and obviates the undue heating of the lubricant.

The operation of my device is as follows: The oil-reservoir being supplied with oil through the opening 8<sup>b</sup>, and the valves 12 and 24 being opened, now, when steam is admitted to the steam cylinder, pressure is communicated to the under side of the plunger 15, raising the piston 16, closing valve 17, and opening valve 21, causing oil to flow into the chamber of the steam cylinder through the duct 20. When steam is exhausted from the steam cylinder pressure on the under side of the plunger 15 is relieved and spring 14<sup>a</sup> causes piston 16 to move downwardly, closing valve 21, opening valve 17 and drawing the oil from the oil-reservoir into the chamber of the plunger 15. Thus it will be seen that the varying pressure of steam upon the liquid beneath the plunger 15 produces a constant, slight vibration of the plunger 15 and piston 16, causing the two ball-valves to work in opposite directions and sending a constant sup-

ply of oil from the reservoir through the duct 20.

It will be understood that the duct 20 may be divided into two or more passages leading to as many points as it may be desirable to lubricate.

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

1. In a device of the described character, an oil reservoir, having a downwardly projecting central extension and an upwardly projecting central extension said two extensions having a common axial bore, the bore of the downward extension being larger than the bore of the upward extension, a tube connected with the upper extension and leading to the top of the reservoir, a piston rod in said tube, a piston in the bore of smaller diameter connected with said piston rod, a plunger in the bore of larger diameter connected with said smaller plunger, there being a duct leading from the reservoir to the chamber of said pistons, an inwardly opening valve in said duct, there being also a duct leading from said piston chamber, an outwardly opening valve in said latter duct, and means for operatively connecting the latter duct with the steam-space of an engine cylinder.

2. In a lubricator, an oil-reservoir including a member forming a bottom closure for the reservoir, there being a downwardly projecting central extension upon said member having an axial bore adapted for connection with the steam-space of an engine-cylinder, there being also an upwardly projecting central extension upon said member having an axial bore of less diameter than the bore first mentioned, a tube connected with the bore of the upper extension and extending upwardly through the oil-reservoir, a piston in each of said two bores, and a piston rod in said tube connected with said two pistons.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES A. MARTIN.

Witnesses:

CLEM V. WAGNER,  
ADA LAW.