No. 776,188. PATENTED NOV. 29, 1904.

M. LA QUAY.

LUBRICATOR.

APPLICATION FILED DEC. 14, 1903.

NO MODEL.

Fig. 1.

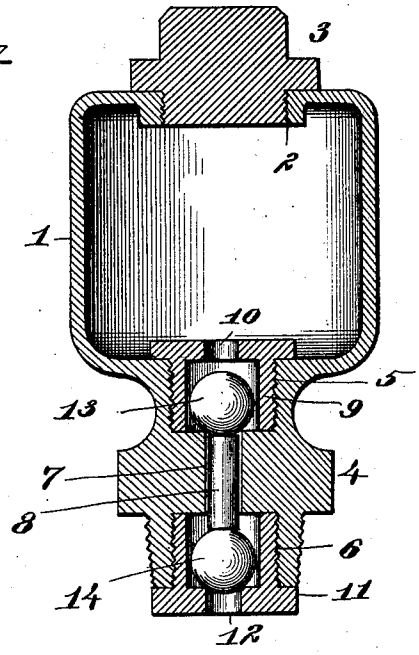
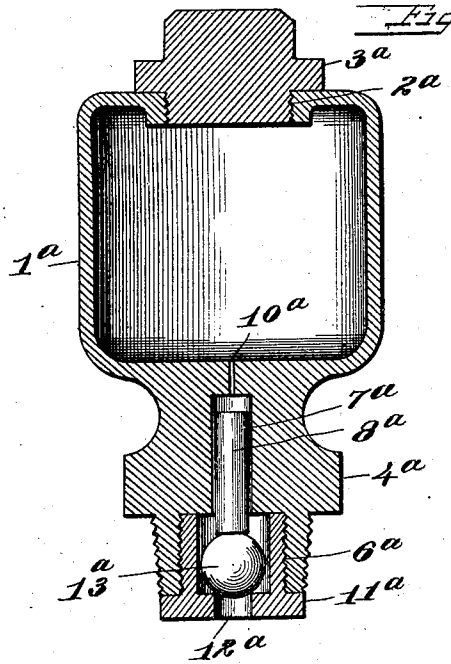


Fig. 2.



Witnesses.

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No. 776,188. Patented November 29, 1904.

UNITED STATES PATENT OFFICE.

MALON LA QUAY, OF CHICAGO, ILLINOIS.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 776,188, dated November 29, 1904.

Application filed December 14, 1903. Serial No. 185,157. (No model.)

To all whom it may concern:

Be it known that I, MALON LA QUAY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lubricators, of which the following is a specification.

This invention refers to lubricators, and has for its object the production of a lubricator embodying the several improvements hereinafter pointed out.

The form herein shown is adapted particularly to lubricate the cylinders of air-compressors; but it is also applicable to other uses. The even application of a small quantity of oil to lubricate a cylinder is much more desirable than the application of a large quantity at intervals, and this even application is obtained by the use of the device hereinafter described.

In the accompanying drawings, Figure 1 is a vertical central section of a lubricator embodying the features of this invention. Fig. 2 is a similar view showing a modified form of said invention.

In the construction of this improved lubricator I provide an oil-container 1, having a filling-opening 2 at its upper end, adapted to be closed by the screw-threaded closure 3, and provided at its lower end with a stem 4, externally screw-threaded for a portion of its length for purposes of attachment to a cylinder. (Not shown.) In the upper end of the stem 4 I provide a recess 5, opening directly into the interior of the oil-container 1, the side walls of which recess 5 are screw-threaded, and in the lower end of the stem I form a similar recess 6, opening outwardly, the side walls of said last-mentioned recess being also screw-threaded. The recesses 5 and 6 are connected by an opening 7, within which opening lies a sliding oil-feeding plunger 8, fitting loosely within said opening. A ball-cup 9, externally screw-threaded, is adapted to be secured within the recess 5, said ball-cup being provided with an axial opening 10 in its upper wall. A similar ball-cup 11 is adapted to be secured within the recess 6 and is provided with a central opening 12 in its lower side. A closure-ball 13 is placed within the ball-cup 9 and a similar closure-ball 14 within the ball-cup 11. The ball 13 is adapted to close the upper end of the opening 7 and the opening 10, and the ball 14 is adapted to close the lower end of the opening 7 and the opening 12.

When the parts are in the position indicated in Fig. 1, oil may be placed within the container 1, and its escape will be prevented by the balls 13 and 14 seating upon the upper edges of the openings 7 and 12. When air or other pressure is exerted upward through the opening 12, the ball 14 is raised to the upper end of the ball-cup 11, which movement also raises the feeding-plunger 8 and the ball 13. In this raised position the ball 14 rests against the lower end of the opening 7 and the ball 13 against the opening 10. When pressure is removed from the opening 12, the balls 13 and 14, with the feeding-plunger 8, fall, carrying downward into the ball-cup 11 a very small quantity of oil. At the next upward movement of the balls 13 and 14 and the plunger 8 the oil within the ball-cup 11 flows downward through the opening 12 into the air-compression cylinder, (not shown,) and with the next downward movement of the plunger 8 another minute quantity of oil is introduced, into the ball-cup 11. As will be understood, the quantity of oil fed downward from the ball-cup 9 to the ball-cup 11 at each downward movement of the plunger 8 is very small, being governed by the amount of space between the walls of the opening 7 and the plunger 8.

In the modification shown in Fig. 2, 1^a refers to the oil-container, 2^a to the filling-opening at its upper end, 3^a to the screw-threaded closure for said opening, 4^a to the stem, externally screw-threaded at its lower end to provide an attaching means for the cup, and 6^a to an internally-threaded recess formed in the lower end of the stem 4^a. An opening 7^a, containing a feeding-plunger 8^a, loosely slidable in said opening, is connected with the interior of the oil-container 1^a by means of the duct 10^a. A ball-cup 11^a, externally screw-threaded, is adapted to lie within the recess

6ª, said ball-cup being provided at its lower end with an opening 12ª and containing a ball 13ª. The ball 13ª is adapted to be seated upon the upper edges of the opening 12ª, and the plunger 8ª is adapted to contact the upper end of the opening 7ª, and thus close the duct 10ª.

In operation the movable parts of said modified form of lubricator normally lie in the position shown in Fig. 2, the escape of oil from the container 1ª being prevented by the ball-closure 13ª. When pressure is introduced into the opening 12ª, the ball 13ª and the plunger 8ª are raised. The opening 12ª being uncovered, a quantity of oil will flow from the interior of the ball-cup 11ª into the compression-cylinder. (Not shown.) Upon the reverse movement of the piston within said cylinder the ball 13ª will be seated upon the opening 12ª and the plunger 8ª will fall, bringing downward with it into the ball-cup 11ª a small quantity of oil. At each upward movement of the ball 13ª oil thus escapes into the compression-cylinder, and at each downward movement of the plunger A the ball-cup 11ª is supplied with oil.

It is apparent that the embodiments herein shown of this invention are susceptible of various modifications without departing from the spirit and scope of my invention, wherefore I desire to have it understood that I do not limit myself to the precise details herein set forth.

I claim as my invention—

1. In a lubricator, in combination, an oil-container having a discharge-passage; a ball-closure for the lower end of said passage; and a feeding-plunger lying within said passage and adapted to rest upon said ball.

2. In a lubricator, in combination, an oil-container having a discharge-passage; a ball-cup at the lower end of said passage; a ball within said cup for closing the lower end of said passage; and a feeding-plunger lying within said discharge-passage and adapted to rest upon said ball-closure.

3. In a lubricator, in combination, an oil-container having a discharge-passage; two ball-cups forming a portion of said passage and located at opposite ends thereof; a ball-closure for said passage within each of said ball-cups; and a feeding-plunger adapted to lie loosely within said passage intermediate said closure-balls.

4. In a lubricator, in combination, an oil-container; a securing-stem for said container, said stem having a recess in each of its ends; a ball-cup in each of said recesses, said stem having a discharge-passage extending through said ball-cups and the stem; a closure-ball for each of said ball-cups; and a plunger adapted to lie in said discharge-passage between said closure-balls and to feed oil through said passage.

5. In a lubricator, in combination, an oil-container having a discharge-passage; a closure freely supported within said passage for closing one end thereof; and a second closure also freely supported within said passage for closing the opposite end thereof.

6. In a lubricator, in combination, an oil-container having a discharge-passage; a closure freely supported within said passage for closing one end thereof; and a second closure also freely supported within said passage for closing the opposite end thereof, said closures being arranged and adapted to move together.

7. In a lubricator, in combination, an oil-container having a discharge-passage; a closure-ball at the opposite ends of said passage for closing said ends; and a plunger within said passage adapted to rest upon one of said balls and to move the other ball.

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Witnesses:
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