May 5, 1931. E. F. TERRY, JR 1,804,186

LUBRICATOR

Filed June 13, 1927

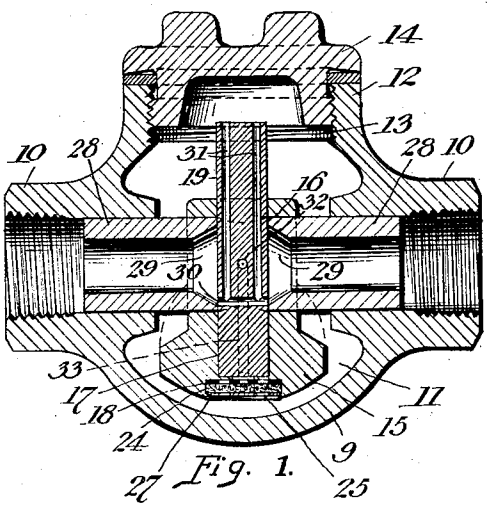


Fig. 1.

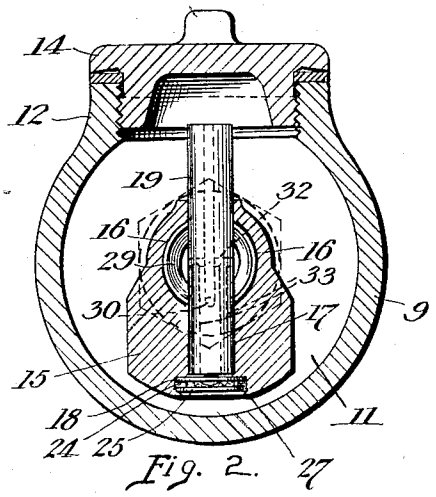


Fig. 2.

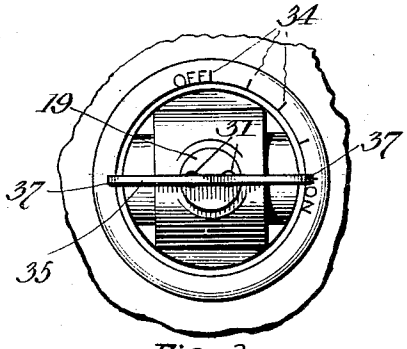


Fig. 3.

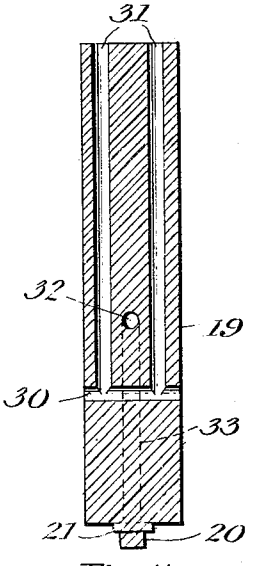


Fig. 4.

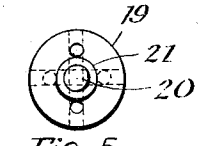


Fig. 5.

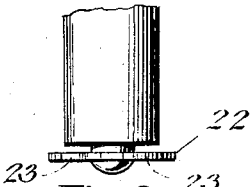


Fig. 6.

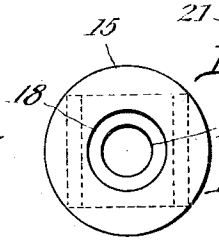


Fig. 9.

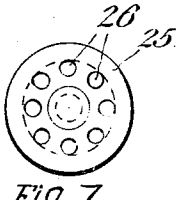


Fig. 7.

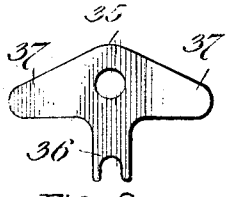


Fig. 8.

Inventor,

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By

Attorney

Patented May 5, 1931 1,804,186

UNITED STATES PATENT OFFICE

EDWARD F. TERRY, JR., OF DENVER, COLORADO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE GARDNER-DENVER COMPANY, OF QUINCY, ILLINOIS, A CORPORATION OF DELAWARE

LUBRICATOR

Application filed June 13, 1927. Serial No. 198,577.

The present invention relates to line lubricators of the general type disclosed in my prior applications Serial Nos. 88,866, filed February 17, 1926 and 117,118, filed June 19, 1926. The object is to provide an even more simple structure than those heretofore disclosed, making the device peculiarly useful in connection with small hose lines and the smaller types of tools. Obviously, however, its size is not particularly important, and it may be made of various capacities.

In the accompanying drawings:

Figure 1 is a longitudinal sectional view of the preferred embodiment of the invention,

Figure 2 is a cross sectional view of the same,

Figure 3 is a top plan view of a portion showing more particularly the filling opening and indicator,

Figure 4 is a vertical sectional view through the lubricant and air directing stem,

Figure 5 is a bottom plan view of the same,

Figure 6 is a side elevation of the lower portion of the stem, showing the retainer in place thereon,

Figure 7 is a bottom plan view of the screen,

Figure 8 is a view in elevation of the stem turning key,

Figure 9 is a plan view of the pendulum.

In the embodiment disclosed, a casing 9 is employed that is preferably cast of a single piece, and is provided with end extensions 10 internally threaded and constituting nipples for the couplings of a hose line. The casing encloses a lubricant reservoir 11 and is provided at one side with an outstanding nipple 12 of relatively large size, providing a filling opening 13, the walls of which are internally threaded. A screw plug 14 serves to close the opening 13.

Within the casing is a pendulum 15 having a passageway 16 in its upper portion and the weighted part of said pendulum being below the passageway. A vertically disposed bore 17 is formed centrally through the pendulum and has an enlarged counterbore 18 at its lower end, forming a recessed seat. Rotatably mounted in the bore 17 is a cylindrical stem 19 that projects well above the pendulum member and yet is sufficiently short so that it will swing freely around within the casing wall. The lower end of this stem has a central riveted element 20 terminating in a shoulder 21, and on this element is fixed a retaining washer 22 formed with peripheral recesses 23 that serve to permit the passage of the lubricant. The washer is retained in place by upsetting the end of the rivet element, as indicated in Figure 6, below said retaining washer 22. There is placed in the seat 18 porous packing material 24, and this material is held in place by a bottom washer 25 having openings 26 therethrough and held in place by upsetting the material of the pendulum member around the seat, as shown at 27.

The pendulum is mounted in place by a pair of bushing sleeves 28 pressed into the inner ends of the openings of the nipple 10 and engaged in the ends of the passageway 16, said bushing sleeves terminating substantially at the stem 19, and with the opening 16 forming a passageway between the two nipples 10. The bores of the inner ends of the bushing sleeves are flared, as shown at 29.

The stem 19 is provided with a transverse opening 30 that extends entirely therethrough and has its ends preferably located in the flared portions 29 of the bores of the bushing sleeves 28. Extending from this transverse opening through the upper end of the stem are longitudinal bores 31 that thus open into the top of the lubricant chamber and constitute means for supplying air or fluid from the passageway into the said chamber. Above the opening 30 the stem is provided with another transverse opening 32, preferably at right angles to the first opening, and from this opening 32 longitudinal bores 33 extend to and open through the lower end of the stem, the bores 33, it will be noted, being out of line with the bores 31.

The rim of the nipple 12 has marked thereon a scale 34 terminating in the words "Off" and "On." A key 35 is provided,

having a pair of prongs 36 that are adapted to engage in the upper ends of the bores 31, so that the stem can be turned. This key has outstanding finger pieces 37, one of which, as shown in Figure 3, is adapted to overlie the scale 34 and thus the position of the stem can be readily determined.

In the operation of this device, it has been found that when the stem is in the position with the transverse opening 30 longitudinally of the fluid passageway and the opening 32 at right angles thereto, the greatest flow of lubricant will take place, and as the lubricant flows out of the ends of the opening 32, it is caught in the air or fluid stream and vaporized, being thereby carried in vaporized condition to the tool that is operated by the fluid. If, however, the stem is turned to a right angular position or with the opening 32 longitudinally of the air passageway and the opening 30 at right angles thereto, the flow of lubricant is completely cut off. Of course any intermediate position will give a proportionate flow of lubricant between "zero" and the full amount and therefore the scale in connection with the turning key constitutes means by which this flow can be readily predetermined.

It will be noted that in this structure the pendulum, while of greater area than the cross sectional area of the openings through the end nipples 10, is less than the area of the filling opening. Therefore the pendulum in assembled condition, or in other words, with the stem in it can be introduced into the casing and the sleeves 28 afterwards placed in position to form a mounting for the same.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the herein described invention.

What I claim, is:

1. In a lubricator, the combination with a casing having a lubricant reservoir and opposite fluid ports, of a member separate from the casing in the casing and interposed between the ports and having a passageway in communication with said ports, means in the member for directing lubricant from the reservoir into the passageway, said casing having an opening between the ports of sufficient size to permit the passage of the member into the casing, means movable with respect to both the casing and member for mounting the member in the casing after its insertion, and a closure for said opening.

2. In a lubricator, the combination with a casing, having a lubricant reservoir and opposite fluid ports, of a member separate from the casing in the casing and interposed between the ports and having a passageway in communication with said ports, a stem mounted in the member and having ports that provide means for directing lubricant from the reservoir into the passageway, said casing having an opening between the ports of sufficient size to permit the passage of the member into the casing, means movable with respect to both the casing and member for mounting the member in the casing after its insertion, and a closure for said opening, said stem being accessible through the opening when the closure is removed.

3. In a lubricator, the combination with a casing, having a lubricant reservoir and opposite fluid ports, of a swinging pendulum member in the casing between the ports and having a passageway in communication with said ports, means in the pendulum member for directing lubricant from the reservoir into the passageway, said casing having an opening between the ports that is large enough to permit the passage of the pendulum member, sleeves fitted into the ports and engaging the pendulum member to form journals therefor, and a closure for said opening.

4. A lubricator comprising a casing providing a lubricant reservoir and having opposite end ports and a side opening, a pendulum of sufficiently small area to pass through the side opening, means for journaling the pendulum in the casing after its insertion and providing a fluid passageway through the reservoir from one end opening to the other, means carried by the pendulum for directing lubricant from the reservoir into the passageway, and a closure for the side opening.

5. A lubricator comprising a casing providing a lubricant reservoir and having opposite end ports and a side opening, a pendulum of a width less than the length of the reservoir and a length less than the width of the reservoir, said pendulum being small enough to pass through the side opening, tubular means fitting in the end opening of the casing and constituting trunnions for the pendulum, said means and pendulum having a fluid passageway between the openings, means carried by the pendulum for directing lubricant from the reservoir into the passageway, and a closure for the side opening.

6. A lubricator comprising a casing forming a lubricant reservoir and having a side filling opening and a closure for the opening, a pendulum swung within the casing and having a fluid passageway therethrough, a stem rotatably mounted on the pendulum and having one end accessible through the filling opening, said stem having means for directing lubricant from the reservoir into

the passageway, means for rotating the stem on the pendulum, and indicating means for positioning the stem formed on the casing.

7. A lubricator comprising a casing forming a lubricant reservoir and having a side filling opening and a closure for the opening, a pendulum swung within the casing and having a fluid passageway therethrough, a stem rotatably mounted on the pendulum and having one end accessible through the filling opening, said stem having means for directing lubricant from the reservoir into the passageway, a key that detachably engages the stem for rotating the same, said key constituting a pointer, and a scale formed on the casing and with which the pointer coacts to determine the position of the stem.

8. A lubricator comprising a casing forming a lubricant reservoir, a passageway for fluid through the casing, a stem rotatably mounted in the passageway and intersecting the passageway, said stem having transverse openings entirely therethrough at different points and opening into the fluid passageway, and oppositely extending bores extending from the transverse openings through opposite ends of the stem and opening into opposite portions of the lubricant reservoir.

9. A lubricator comprising a casing forming a lubricant reservoir, a pendulum journaled within the casing and having a fluid passageway therethrough, a stem rotatably mounted in the pendulum and intersecting the passageway, transverse openings entirely through the portion of the stem that is in the passageway, oppositely extending bores in the stem extending from the transverse openings through the ends of the stem, means at the lower end of the pendulum for securing the stem in place in the pendulum, and said casing having a filling opening through which the other end of the stem is available to rotate it.

In testimony whereof, I affix my signature.

EDWARD F. TERRY, JR.