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C. W. HODGDON.

LUBRICATOR.

APPLICATION FILED NOV. 27, 1907.

Fig. 1

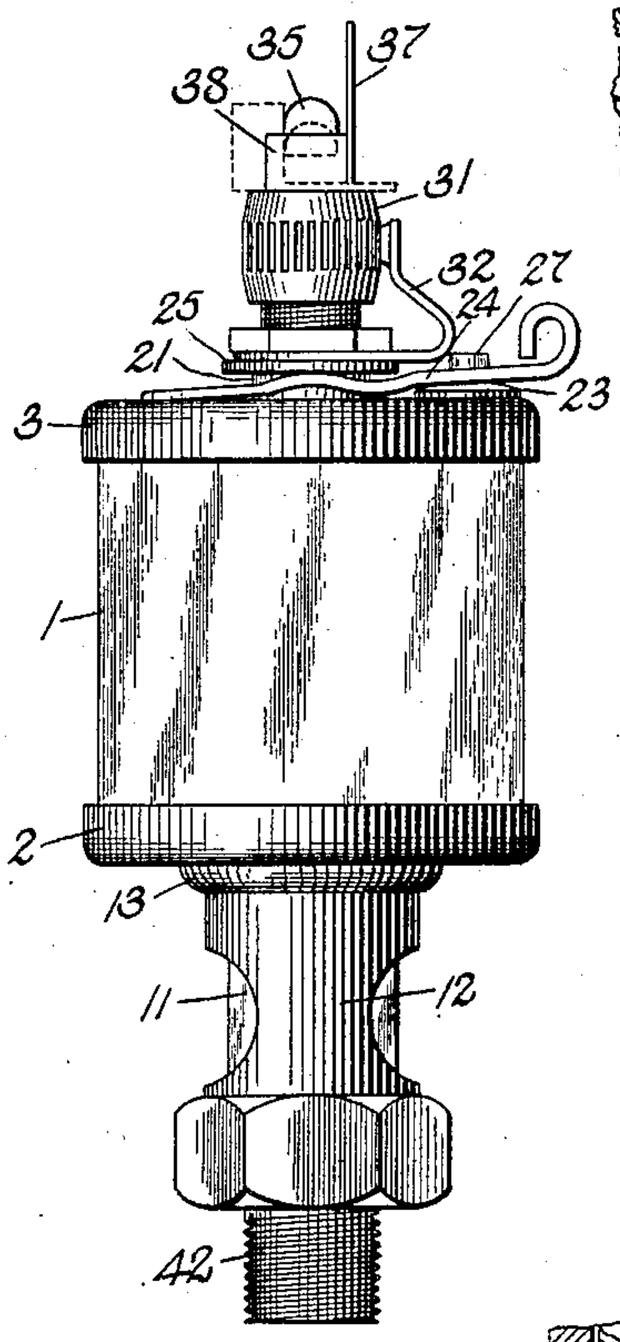


Fig. 3

Fig. 4

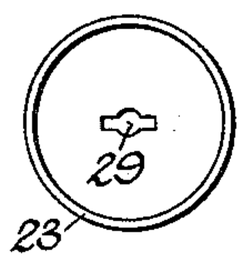


Fig. 5

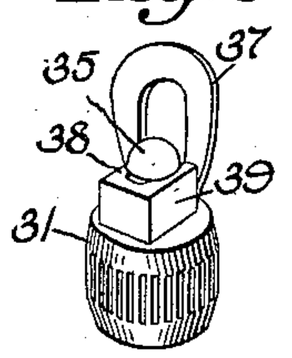


Fig. 2

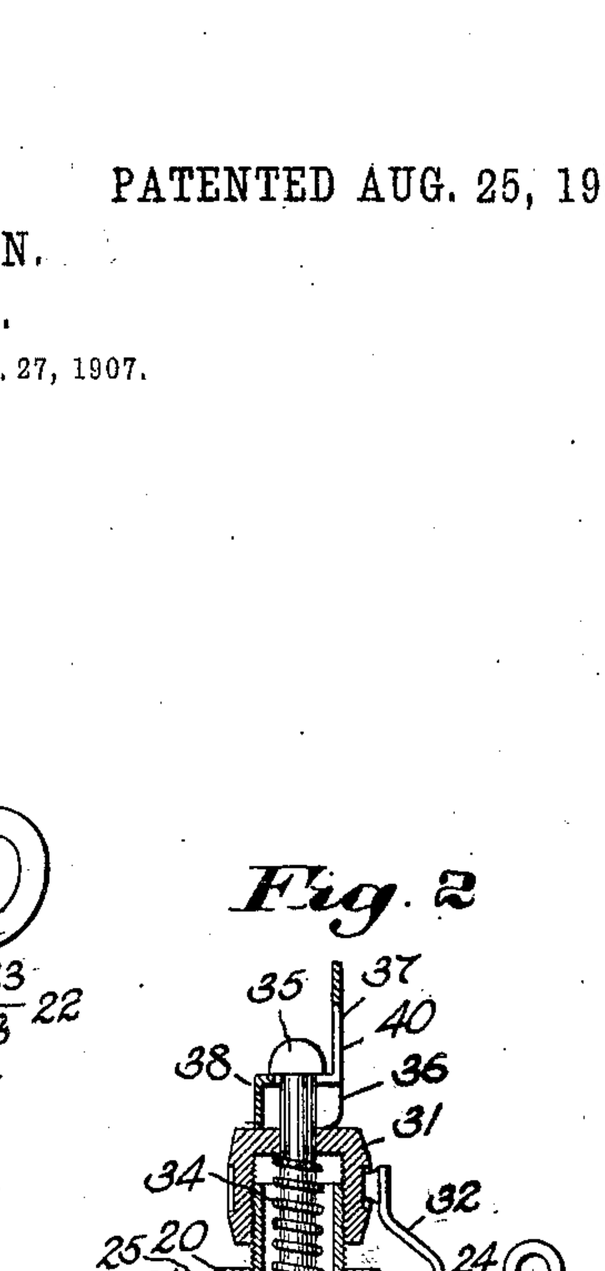
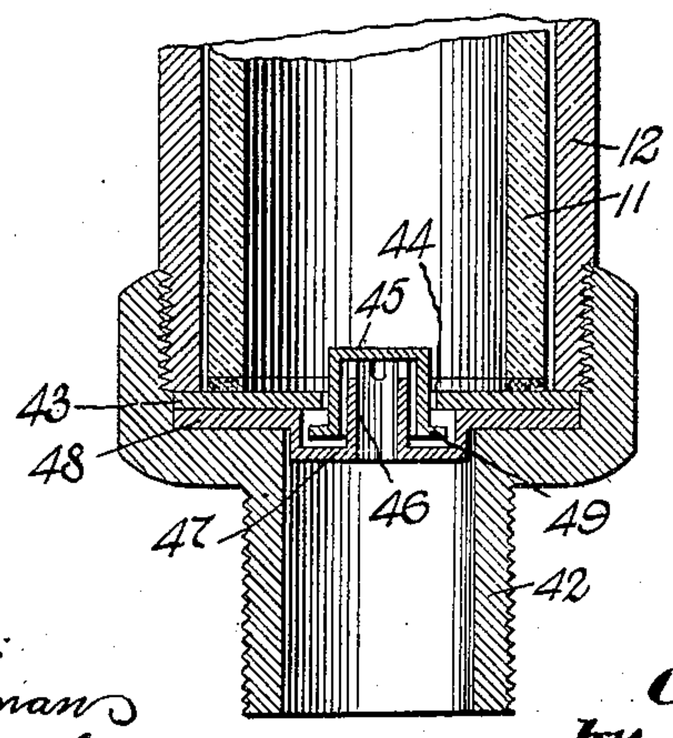


Fig. 6



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LUBRICATOR.

No. 896,829. Specification of Letters Patent. Patented Aug. 25, 1908.

Application filed November 27, 1907. Serial No. 404,069.

To all whom it may concern:

Be it known that I, CHARLES W. HODGDON, a citizen of the United States, residing in Somerville, in the county of Middlesex, and State of Massachusetts, have invented an Improvement in Lubricators, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to lubricators, being more particularly concerned with improvements in the construction of sight feed oil cups.

My invention will be best understood by reference to the following description when taken in connection with the accompanying illustration of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a side elevation of an oil cup embodying one form of my invention; Fig. 2 is a central longitudinal section in elevation showing the principal working parts of the oil cup shown in Fig. 1; Fig. 3 is an enlarged detail in section showing the closure for the filling opening; Fig. 4 is a plan view of the closure cap showing the vent opening; Fig. 5 is a perspective showing the valve lifting cam; and, Fig. 6 is an enlarged section showing in detail the check-valve-trap below the sight feed tube.

Referring to the drawings and to the embodiment of my invention there shown, the oil reservoir for the lubricator is provided by the usual glass shell 1, closed at the bottom by means of the flanged bottom piece 2, and at the top by the flanged cover 3, suitable packing washers 4 being provided between the ends of the glass shell and the top and bottom pieces, respectively.

The oil cup is provided with a central oil tube 5, which passes through the oil reservoir and terminates as a nozzle 6 having the oil discharge orifice 7 controlled by the valve 8, the latter having an elongated stem 9 passing up and out through the top of the oil tube. Near the bottom of the reservoir the oil tube is provided with lateral openings 10, through which the oil is adapted to gravitate from the reservoir into the tube, whence it passes through the discharge orifice 7.

The sight tube 11, formed by a glass sleeve, is held in the sight chamber 12, the latter having openings in its sides through which the passage of the oil may be observed.

One feature of the invention which adds to the durability and simplicity of the disclosed form of lubricator is the manner in which the parts are secured together and particularly the attachment of the reservoir to the adjacent connecting part, herein the sight chamber 12. The reservoir bottom 2 is provided with a down-turned portion in which the nozzle 6 is formed. This piece may be formed of sheet metal, with the down-turned portion originally in the form of a cylindrical tube. When the parts are assembled the oil tube is threaded or otherwise secured part way in the down-turned portion of the bottom piece, and the washer or spacing ring 13 placed in position between the bottom piece and the inturned wall 14 of the sight tube casing. The inturned wall 14 is provided with an annular opening having a beveled edge, as shown, and, when thus assembled the parts are placed in a suitable die and the metal in the down-turned tube portion of the bottom piece pressed or squeezed so as to form the nozzle 6, and, at the same time, the overlying integral shoulder 15, which is pressed out against the beveled edge of the end wall and locks it and the attached parts securely together. This construction gives a very rigid and effective connection between the parts and avoids the weakening of the metal by thread cutting, where threaded engagement between the bottom piece and the sight tube chamber is relied upon.

The distance ring 13 provides for the air chamber 16, with which the vent tube 17 connects, the latter leading to the top of the oil reservoir. The distance piece or washer 18, having an annular opening somewhat larger than the nozzle, is preferably provided so as to maintain the air chamber 16 in communication with the interior of the sight tube through the vent opening 19.

In order to hold the parts of the cup together, the oil tube where it emerges from the cover 3 is threaded and provided with a nut 20 adapted to clamp the parts together through pressure upon the bushing or sleeve 21, the latter having a shouldered part engaging with the outside of the cap.

The cover is provided with a filling opening 22 which is normally closed by the cap

or closure 23. While this closure may be arranged in various ways, in the described form of the invention it is suitably pressed down against the cover by means of the spring arm 24, which latter embraces the sleeve 21 and is adapted to swing about the same as a pivot, the flange 25 upon the said sleeve forcing the spring arm down against the cap in whatever position it is placed. In order that the closure may be universally adaptable to the surface of the cover or to unevenly applied pressure from the spring arm, and may therefore seat itself positively over the vent opening when placed there, there is preferably provided some kind of a loose connection between the spring arm and the closure, such, for example, as is afforded by the convex bearing piece 26 which surmounts the cap and with which the spring arm directly engages. The bearing piece 26 has an upturned portion 27 which passes loosely through a suitable opening in the spring arm. With the construction described the closure is caused to seat itself firmly and certainly over the filling opening when placed there at all times and under all conditions.

When oil cups of this type are used upon the cylinders of explosion engines they are customarily placed in communication with that part of the cylinder which is separated from the pressure space by the piston.

When the piston packing is new little or no pressure is apt to pass the piston, and as the oil level falls in the reservoir unless atmospheric or other pressure is admitted thereto, the resultant vacuum interferes with the proper working of the device. If it is attempted to remedy this by venting the oil reservoir to the atmosphere after the piston packing becomes worn, the pressure in leaking past the piston and into the lubricator tends to blow the oil out of the vent opening. In the present embodiment of my invention this is accomplished by the provision of a ball check valve 28 provided within the cap piece 23, the ball normally resting upon a seat 29 (see Fig. 4) so shaped as to admit atmospheric air to the oil reservoir. The bearing piece 27 is also provided with a circular vent opening 30, which, however, on the access of pressure to the oil reservoir from below is adapted to be closed by the ball check valve 28.

In order to open and close the valve 9 and to adjustably change the open position of the latter, there is provided an abutment 31 in the form of a threaded nut adapted to be adjusted up or down upon the end of the oil tube and held in its adjusted position by the bent spring finger 32 clamped between the nut 20 and the sleeve 21, the said finger having a V-shaped tip engaging the knurled exterior of the threaded abutment 31. Between a fixed packing collar 33 secured to the stem within the oil tube and the abutment 31 there is provided a coil spring 34 which tends to force the valve stem to a closed position. The latter, however, is provided exteriorly with an enlarged head 35 between which and the abutting nut 31 there is provided a cam member 36 adapted to be moved to lift the valve to its open position against the spring or drop the same to its closed position. The cam member employed in the described embodiment of the invention comprises a very simple device preferably of sheet metal composed of two members 37 and 38, herein joined in a single piece at right-angles to each other, the effective thickness of the piece 38 being made greater than that of the piece 37 by the provision of the down-turned edges 39, on which it rests. The valve stem passes through a slot 40 cut part way in one piece 37 and part way in the other piece 38, so that the cam may be tripped for closing the valve by merely turning it from its upright position shown in full lines (Figs. 1 and 2) to its depressed position shown in dotted lines in Fig. 1,—a reverse movement effecting restoration or opening of the valve.

The collar 33 is preferably retained upon the valve stem by enlargements 41 formed or pressed out from the stem itself, thereby producing no weakening in the structure of the stem, as would a pin or other like retaining means.

Where trouble is experienced from the spattering of oil upon the sides of the sight tube through access of exploded gases thereto, or where, for any other reason, a check valve is required between the sight tube and the part to be lubricated, there may be employed such means, as I have disclosed, between the sight tube and the attaching nipple 42 to provide a conveniently located and removable combined check-valve and trap as follows. The bottom of the sight tube is partly closed by the washer 43, having an opening 44 in which is supported the cylindrical cap valve 45 of slightly less diameter than the opening 44. The valve 45 rests upon the upturned tube portion 46, the outside diameter of which is less than the inside diameter of the cap, the tube projecting from the bottom of a pocket 47 sustained by the flange 48, which is also clamped between the sight tube and the nipple. The upper end of the tube 46 is grooved or otherwise perforated so that normally the lubricant overflows the top of the tube. This arrangement provides a trap maintaining the pocket filled with oil which reaches in the sight tube chamber to the level of the grooved portions of the tube 46, the oil in its course passing down outside of the cap into the pocket, thence up between the cap and the tube and through the grooves at the top thereof down into the passage through the nipple. On

sudden admission of pressure below the tube 46 the cap will be lifted up until its flanged lower edge 49 is brought against the bottom walls of the washer 43, thereby shutting off the pressure from the sight tube and preventing spattering of the oil.

While I have shown for purposes of illustration a single embodiment of my invention, it is to be understood that the same is susceptible of various modifications and departures from the details herein shown and described without departing from the spirit thereof.

Claims.

1. In a lubricator the combination with an oil reservoir having a filling opening therein, a slidable cover for said opening and a swinging spring arm loosely engaging said cover for moving the same and pressing it against the reservoir, there being provided a convex bearing surface between the spring arm and the cover.

2. In a lubricator the combination with an oil reservoir having a filling opening therein, a slidable cover for said opening, and means engaging said cover to press the same against the reservoir while permitting sliding movement of the cover along the same under said pressure and also movement of the cover relatively to the engaging means to adapt the cover to the surface of the reservoir by the pressure of the engaging means.

3. In a lubricator the combination with an oil reservoir having a filling opening, a closure for said opening, and a spring arm engaging the closure but permitting relative movement between the latter and the arm.

4. In an oil cup the combination with an oil reservoir having a filling opening, a movable closure for the said opening, a vent in said closure and a check valve for the said vent.

5. An oil cup having an oil reservoir, a vent opening therefor and means for preventing exit of pressure from the cup while permitting access of pressure thereto through the said vent opening.

6. An oil cup having a suitably inclosed oil reservoir, and means for preventing the formation of a vacuum therein without allowing the exit of pressure therefrom.

7. An oil cup having an inclosed oil reservoir, a filling opening in said reservoir, movable closure means for said opening, spring-pressed means loosely engaging said closure means and pressing the same against the reservoir, a vent opening in the closure means, and a check valve for the vent opening permitting entrance of atmospheric air to the oil reservoir but preventing exit of pressure therefrom.

8. An oil cup having an oil reservoir, a vent opening 30 and a gravity actuated inwardly opening check valve.

9. An oil cup having an oil reservoir, an oil discharge opening near the bottom thereof, a valve controlling the said opening, said valve having a stem extending through the top of the cup, an enlarged head at the end of the stem, an abutment through which the stem passes, and a lifting cam member for the valve loosely embracing the said stem and adapted to work between the head and the abutment.

10. An oil cup having a valve provided with a stem and a valve-controlling cam comprising two members joined at right-angles and of different effective thickness and provided with a continuous slot extending partway in each, through which slot the stem passes, an abutment on the stem and an abutment on the cup between which said cam member is adapted to work.

11. An oil cup having a valve provided with a stem and a sliding cam member for moving the valve loosely engaging the stem between a part on the stem and a part on the cup.

12. An oil cup having a valve, a valve stem and a sheet metal cam member in sliding engagement with said stem.

13. An oil cup having a valve, a valve stem, abutments on the cup and stem, respectively, and a cam member between the two abutments, said member being bodily slidable between the abutments to control the valve.

14. An oil cup having an oil reservoir, a connecting part adapted for connection to the oil reservoir and to the part to be oiled, said part having an inturned wall at its end adjacent the reservoir, a part attached to the said reservoir and projecting through the said end wall, and an out-turned shoulder portion on the said projecting part adapted to overlie a portion of said inturned end wall and thereby bind the parts together.

15. In an oil cup the combination with the oil reservoir having a part projecting from the bottom thereof, a connecting piece for connecting the reservoir to the part to be oiled, an opening in the said connecting piece adjacent the reservoir, said opening being contracted toward the reservoir, said projecting part passing through the said opening and an integral shoulder portion on the said projecting part engaging the said contracted opening, thereby binding the parts together.

16. In an oil cup the combination with an oil reservoir, having a bottom piece, a sight feed chamber, and an integral shoulder on the bottom piece for retaining the said chamber in position.

17. In a sight feed oil cup the combination with an oil reservoir, a sight feed chamber and attachment nipple, of a combined check valve and trap clamped between the sight tube and nipple.

18. In an oil cup the combination with a

sight feed chamber and a combined check valve and trap below the sight feed chamber, the same comprising an oil pocket, a cylindrical valve cap working in said pocket, and a tubular exit member for the pocket surrounded by said cap.

19. A combined check valve and trap for an oil cup comprising the pocket 47, tubular member 46 and valve cap 45.

20. In an oil cup the combination with an oil reservoir, an attachment nipple and a combined check-valve and trap clamped between the oil reservoir and nipple.

21. In a sight feed oil cup the combination with an oil reservoir, a sight feed chamber and attachment nipple, and a check valve clamped between said sight feed chamber and nipple.

22. In a sight feed oil cup the combination with an oil reservoir, a sight tube, a sight tube casing, and a check valve clamped between the sight tube and the bottom part of the sight tube casing.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

CHARLES W. HODGDON.

Witnesses:

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