(No Model.)

G. McNEIL.

LUBRICATOR.

No. 418,214. Patented Dec. 31, 1889.

Fig. 1.

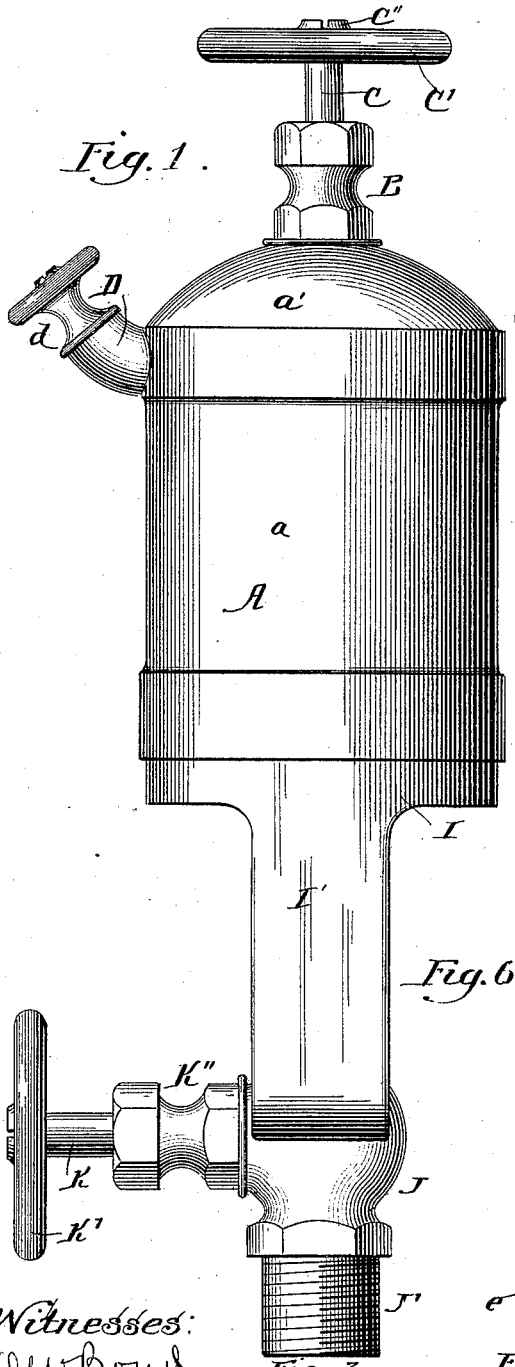

Fig. 2.

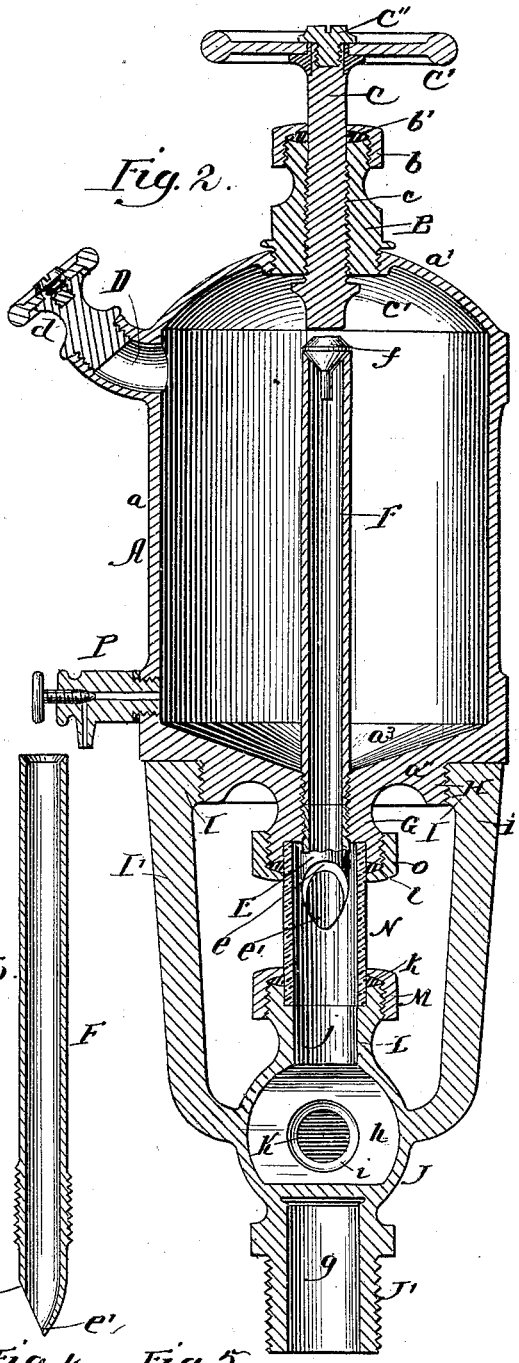

Fig. 6.

Witnesses:
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Fig. 3.

Fig. 4.

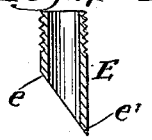

Fig. 5.

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UNITED STATES PATENT OFFICE.

GEORGE McNEIL, OF CHICAGO, ILLINOIS.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 418,214, dated December 31, 1889.

Application filed February 20, 1889. Serial No. 300,626. (No model.)

To all whom it may concern:

Be it known that I, GEORGE McNEIL, 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; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, forming a part hereof, in which—

Figure 1 is an elevation. Fig. 2 is a longitudinal section. Figs. 3, 4, 5, and 6 are longitudinal sections of the discharge-nozzle, showing several forms of construction, Fig. 6 showing the nozzle and eduction-tube formed together.

This invention relates to that class of lubricators termed "automatic" for feeding the oil or other lubricant at regular intervals and specific quantities to the parts to be lubricated, such lubricator being placed on the steam-chest, steam-pipe, or otherwise located, and in which steam is admitted into the cup to condense and form water, by which the lubricant is discharged, to pass with the steam, as required.

The objects of the invention are to improve the construction of the oil cup or reservoir in reference to the admission of steam and discharge of the oil, to improve the construction and operation of the discharge-nozzle, to improve the means for attaching the cup or reservoir in position and supporting a sight-tube, and to improve generally the construction and operation of the lubricator as a whole; and its nature consists in the several parts and combinations of parts hereinafter described, and pointed out in the claims as new.

In the drawings, A represents the oil cup or reservoir, made of brass or other suitable material, cast or formed into shape to have a side wall a, a top a', and a bottom a'', the bottom having a countersunk inner face, forming an inclined bottom a^3.

B is a plug screw-threaded into the top a' at the center thereof, and having a screw-thread at its outer end to receive a stuffing-box b, inclosing stuffing b'.

C is a stem passing through the plug B and having a screw-thread c fitting a screw-thread in the plug, and having also a flange or collar c', which forms a limit-stop for the withdrawal of the stem C. This stem C at its outer end receives a hand-wheel C', secured to the stem by a screw C'' or otherwise, by which wheel the stem can be advanced and receded.

D is a filling-opening located at the upper end on the side of the cup A. This spout is closed by a solid plug, as shown in Figs. 1 and 2.

E is the discharge-nozzle, formed from a piece of straight tube cut at an angle on one side to form a diagonal face e and leave a discharge-point e', from which the oil or other lubricant can flow drop by drop. This discharge-nozzle can be formed, as shown in Fig. 5, with the discharge-point e' curved inward to bring the discharge at or near the center of the tube, or the discharge-point e' can be left, as shown in Fig. 6, in line with the wall of the tube; but in either form the tube is to be cut at an angle on one side to have the diagonal face e, which face constitutes the essential feature of the nozzle.

F is a tube located in the interior of the cup or reservoir A at the center thereof and in line with the discharge-nozzle E. The passage through this tube F is controlled by a check-valve f, which seats on the top of the tube, by which valve the flow of oil or other lubricant is controlled through the stem C, the advancing or receding of the stem permitting the valve to raise to the degree required for the passage of a small or large drop or quantity of oil or lubricant.

G is a plug formed with the bottom a'', and through which and bottom a'' is a screw-threaded hole for the nozzle E and tube F, and this plug on its exterior has a screw-thread, as shown in Figs. 1, 2, and 3.

H is an annular flange depending from the bottom a'' of the oil cup or reservoir, and having an exterior screw-thread, as shown in Fig. 2.

I is a ring having an interior screw-thread to receive the flange H, and having on opposite sides, in line one with the other, arms I', as shown in Figs. 1 and 2.

J is an ordinary globe-valve chamber

formed with the arms I′ and ring I, and having the usual dividing-wall *h* in its interior. This chamber J has on one side a plug J′, screw-threaded for attachment to the steam-chest, pipe, or other locality, and this plug J′ has a passage *g* for the steam to enter the chamber J. The ring I, arms I′, and globe-valve J, with its plug J′, form a frame for supporting the oil-cup and attaching it in position.

K is a valve-stem having a valve *i* seating against an opening in the wall *h*, as usual, and operated by a hand-wheel K′ in the usual manner.

L is a plug extending out from the valve-chamber J, and having through it a passage *j*, leading from the interior of the valve-chamber, and this plug L has an exterior screw-thread.

M is a stuffing-box screw-threaded onto the plug L and inclosing a packing *k*.

N is a sight-glass entering the end of the plug L and encircled by the stuffing-box M, so as to be made steam-tight by the packing *k*.

O is a stuffing-box screw-threaded onto the plug G and inclosing a packing *l*. The sight-glass end enters the end of the plug G, and is encircled by the stuffing-box O and packing *l*, so as to be steam-tight.

P is a blow-off cock attached to the cup at the bottom, as shown in Fig. 2, through which the water of condensation can be drawn off when required to fill the cup with oil or lubricant.

The cup can be assembled by screwing the stem into the plug B, screwing the tube F into the bottom *a*″, dropping the valve *f* onto its seat at the end of the tube F, screwing the plug B into place, and closing the opening D by its plug *d*. The discharge-nozzle E is screwed into the hole therefor in the plug G, the end of the sight-tube is passed through the stuffing-box O and packing *l* and entered into the end of the plug G around the nozzle E, and the stuffing-box O screwed onto the plug G. The stuffing-box M, with its packing *k*, is screwed onto the plug L, and the ring I is screwed onto the flange H, with the end of the sight-tube N entering the stuffing-box M, packing *k*, and the end of the plug L. The stuffing-boxes M and O are screwed down to compress the packings *k* and *l* around the sight-tube N and make steam-tight joints. The stem K is passed through the stuffing-box K″, and the stuffing-box K″ screwed onto the chamber J, and the hand-wheels C′ and K′ are attached to the stems C and K, when the cup is ready for use.

In use the plug J′ is screwed into the steam-chest, supply-pipe, or other place, so that steam can pass through the passage *g* into the chamber J, and when the valve *i* is opened this steam can pass through the passage *l*, sight-tube N, and nozzle E to enter the cup or reservoir A as each pulsation of the steam lifts the valve *f*, and each rising of the valve *f* allows a drop or quantity of oil to pass from the oil cup or reservoir A and enter the passage of the tube F, to pass through the nozzle E and be discharged from the end *e*′ to pass through the chamber J to the point to be lubricated. The steam passes up through the nozzle E and the oil or lubricant flows down on the sides of the nozzle and is guided by the diagonal edge or face *e* to the point *e*′, so that all the oil flowing into the nozzle is concentrated at one point, to pass therefrom drop by drop, and the amount of oil passed is controlled by the check-valve *f*. If a small quantity and slow drop is wanted, the check valve is adjusted to lift but slightly with each pulsation of the steam, and the quantity and number of drops can be increased by giving the check-valve a higher lift. The check-valve *f* is regulated by advancing the stem C to lessen the quantity of oil passed and receding such stem to increase the quantity passed, the advance of the stem decreasing the lift of the check-valve *f* and the receding of the stem increasing the lift of the check-valve.

The sight-glass N can be readily and quickly removed in case of repairs, as all that is necessary to be done is to loosen the stuffing-boxes M and O sufficiently to release the packing from the glass and then unscrewing the cup A from the ring I, leaving the glass free to be removed, and this can be done also in case of breakage of the glass N, requiring its replacement by a new one, by loosening the packing-rings *k* and *l*, removing the cup A, and taking out the broken glass and inserting a new one, replacing the cup A, and again tightening the packing-rings *k* and *l* by screwing down the stuffing-boxes M and O. The steam is to be shut off in removing the sight-glass, which can be done by closing down the valve *i* through the stem K, and the flow of oil from the cup or reservoir is to be stopped, which can be done by advancing the stem C to have it close down the check-valve *f*.

The cup is filled by closing down the valves *f* and *i* through the stems C and K, respectively, and opening the petcock P for the water in the cup to flow out, and when emptied the plug of the opening D is removed, the petcock closed, and the cup or reservoir filled, after which the plug of the opening is inserted and the valves *f* and *i* opened for the oil or lubricant to pass out through the tube F and nozzle E.

The filling-opening is located on the side of the cup, and its location is one to have an outflow as the oil in the cup reaches the top of the tube F, thereby preventing an overfilling of the cup.

The discharge-point *e*′ of the nozzle E can be in line with the wall of the nozzle *e*, as shown in Fig. 4, or it can be curved inward, as shown in Fig. 5; and this discharge-nozzle can have two opposite sides cut away to form two diagonal faces *e*, each at an angle to the

wall of the tube, and two points of discharge e', as shown in Fig. 5, which unites the flowing oil to form a single drop; but this two-faced nozzle will be made the subject of separate claim in another application. The eduction pipe or tube F and the discharge-nozzle E can be formed together, as shown in Fig. 8, in which case the tube is screw-threaded into the opening in the bottom a^3 of the coil-cup and the plug G for the tube and nozzle to be in the position shown in Fig. 2.

The ring I, with its arms I′, and chamber J, with its plug J′, furnish a strong frame for attaching and supporting the oil cup or reservoir, and by using this frame the oil-cup or reservoir is attached independently of the sight-glass and at the same time the sight-glass is not interfered with in its connection, and it will be noticed that the frame supports the oil cup or reservoir at the periphery and not from the center, thereby rendering the connection less liable to breakage, or to be effected by jar or vibration, and likewise dispensing with packing at this point.

What I claim as new, and desire to secure by Letters Patent, is—

1. A discharge-nozzle for a lubricator, having a straight body with a center delivery and cut at the delivery end by a diagonal face for concentrating and discharging the lubricant clear of a sight-glass, substantially as specified.

2. A discharge-nozzle for a lubricator, consisting of a straight body having a common passage for steam and oil, and a delivery end formed by a diagonal face cutting the body at an angle to the straight sides, whereby a concentrating edge and a discharge-point is formed for the lubricant, substantially as and for the purposes specified.

3. A cup or reservoir for a lubricator, in combination with an eduction-tube, and a discharge nozzle having a straight body cut at the delivery end by a diagonal face, substantially as and for the purposes specified.

4. A cup or reservoir for a lubricator, an eduction-tube leading from the cup or reservoir, and a steam-actuated check-valve controlling the passage of the eduction-tube, in combination with a discharge-nozzle having a straight body with a central delivery and cut at the delivery end by a diagonal face, substantially as and for the purposes specified.

5. A cup or reservoir for a lubricator, an eduction-tube leading from the cup or reservoir, a steam-actuated check-valve controlling the passage of the eduction-tube, and an adjustable stem for regulating the opening of the check-valve, in combination with a discharge-nozzle having a straight body with a central delivery and cut at the delivery end by a diagonal face, substantially as and for the purposes specified.

6. The cup or reservoir A, tube F, for the passage of steam and oil, and check-valve f, in combination with the discharge-nozzle E, having a straight body and a central delivery and cut at its delivery end to form the diagonal face e and discharge end e', substantially as and for the purposes specified.

7. The cup or reservoir A, tube F, for steam and oil, check-valve f, operated by pulsations of the steam, and adjusting-stem C, for regulating the valve f, in combination with the discharge-nozzle E, having a straight body and a center delivery and cut at its delivery end to form the diagonal face e and discharge end e', substantially as and for the purposes specified.

8. A cup for a lubricator, having at the bottom an annular flange adjacent to the periphery of the cup, in combination with a supporting-frame consisting of a ring receiving the annular flange, side arms supporting the ring, and stuffing-boxes receiving a sight-glass for supporting the cup at the periphery and attaching the cup and sight-glass independent of each other, substantially as and for the purposes specified.

9. A cup for a lubricator, having an annular depending flange at the bottom adjacent to the periphery of the cup, in combination with a receiving-ring for the flange, and filling the space between the flange and the periphery of the cup, supporting-arms for the ring, a valve-chamber, and stuffing-boxes for a sight-glass, substantially as and for the purposes specified.

10. The cup A, having at the bottom the screw-threaded flange H, adjacent to the periphery of the cup, in combination with the ring I, receiving the flange H, and filling the space outside the flange, arms I′, and valve-chamber J, with screw-threaded plug J′, substantially as and for the purposes specified.

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Witnesses:
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