(No Model.)

3 Sheets—Sheet 1.

C. W. SHERBURNE.

CYLINDER LUBRICATOR.

No. 345,929. Patented July 20, 1886.

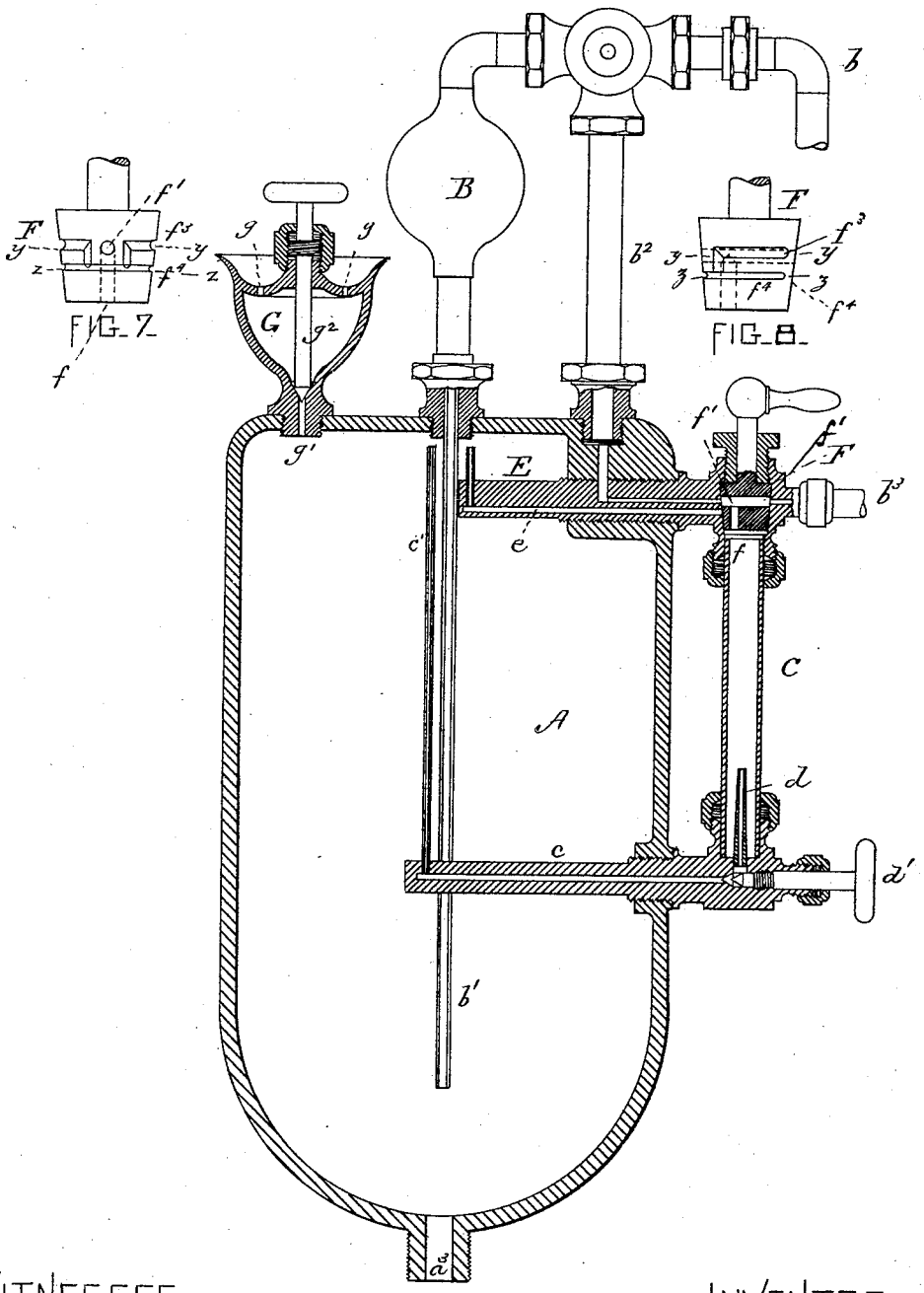

FIG. 1.

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(No Model.) 3 Sheets—Sheet 2.

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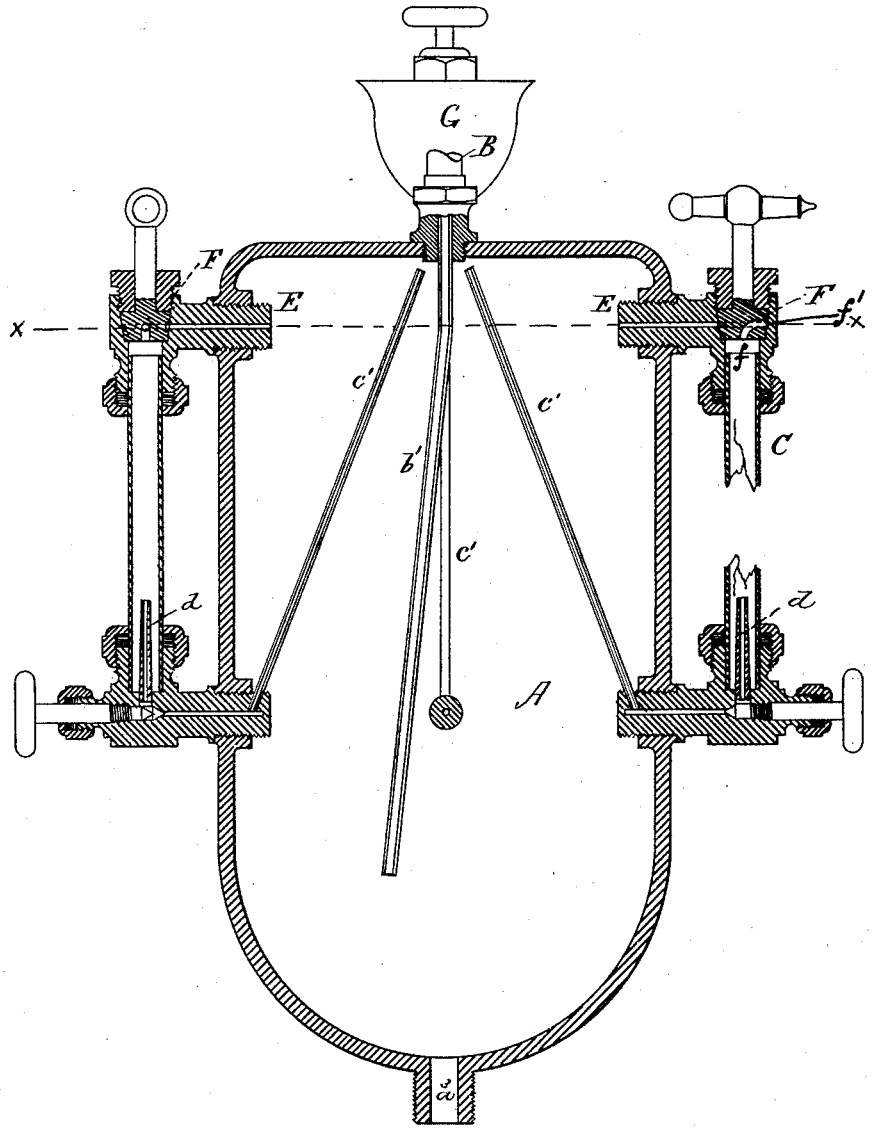

FIG. 2.

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(No Model.) 3 Sheets—Sheet 3.

C. W. SHERBURNE.

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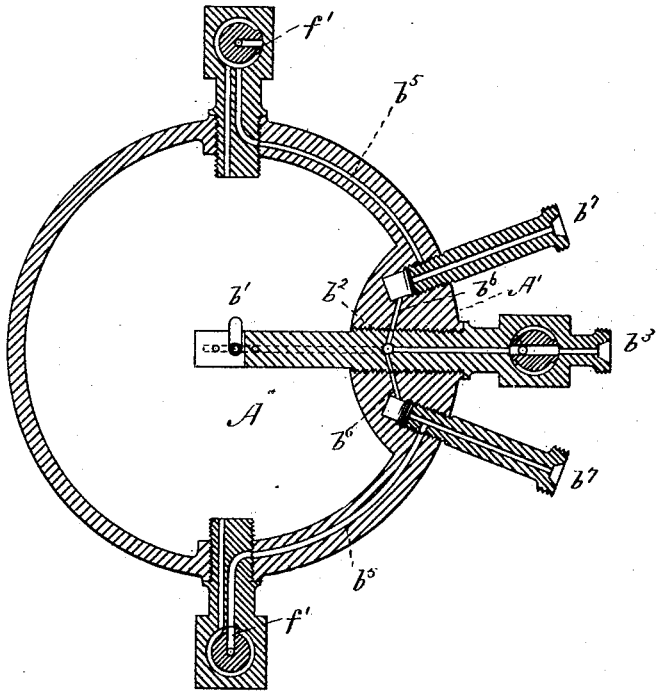

FIG. 3.

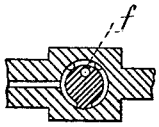

FIG. 4.

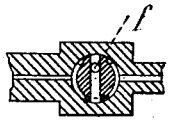

FIG. 5.

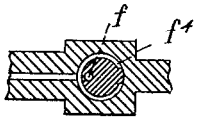

FIG. 6.

WITNESSES.
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UNITED STATES PATENT OFFICE.

CHARLES W. SHERBURNE, OF BOSTON, MASSACHUSETTS.

CYLINDER-LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 345,929, dated July 20, 1886.

Application filed April 15, 1885. Serial No. 162,288. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. SHERBURNE, of Boston, in the county of Suffolk and State of Massachusetts, a citizen of the United States, have invented a new and useful Improvement in Cylinder-Lubricators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification in explaining its nature.

This invention relates to that class of lubricator which employs a hydrostatic column and a drop-up sight-feed, and is specially designed for use on locomotives, and especially of those locomotives which have an air or vacuum brake attached. It is provided with three sight-feed glasses.

The principal feature of novelty in this apparatus is in making the passages, which are usually made by exterior piping within the metal of the shell of the lubricator, and in so arranging them in connection with each other and with the outside piping as to reduce the exterior piping to a minimum, and also to provide a more convenient filling apparatus than is at present in use.

In the drawings, Figure 1 is a vertical longitudinal section. Fig. 2 is another vertical longitudinal section transverse to Fig. 1. Fig. 3 is a transverse section on the line *x x* of Fig. 1. Figs. 4, 5, and 6 are transverse sections of the two-way cock and its housing.

A two-way cock already forms a part of a patent application No. 153,147, filed February 17, 1885, on which this is an improvement.

In the drawings, A is the body of the lubricator.

B is the condenser, which receives the steam from the boiler or other proper source of steam-supply through the pipe *b*, which steam, by condensation, forms water, which is transmitted to the bottom of the oil-vessel through the pipe *b'*. A branch, b^2, of the same pipe, which leads to the condenser, also leads into the oil-delivery, and thus the same steam-pressure is exerted upon the opposite ends of the oil-column contained in the apparatus, because the same steam-pressure that rests upon the top of the water in the condenser B is applied, through the pipe b^2, to resist the expulsion of oil from the apparatus, and hence the rate of expulsion will be determined solely by the gravity of the water in the condenser B and its attached pipe *b* and the preponderance of this water-column in the reservoir A and in the delivery-pipes.

C is a sight-feed glass having the usual nipple, *d*, entering its bottom for the delivery of oil, which delivery is controlled by means of the cock *d'*. This cock controls a pipe, which leads through the side of the reservoir A and turns upward to near the top of the reservoir, and receives from the top of the reservoir the oil that is flooded out by the water that descends from the condenser B and pipe *b'*. Another pipe, E, which takes the oil, if necessary, from the same level in the reservoir that the pipe *c'* takes it from, leads through the side of the reservoir to the housing at the top of the sight-feed glass C. The two-way cock F, at the top of the sight-feed glass C, determines by its position whether oil shall be taken through the sight-feed glass, it being necessary in order to keep the lubrication of a cylinder constant that such means should be provided when a sight feed glass is broken, and such a provision for taking oil through a two-way cock, either through or over a sight-feed chamber, is shown in the Seibert Patent No. 214,589, of April 22, 1879, although the details of the contrivance in that apparatus differ from the details of the two-way cock in this application. The contrivance, also, for putting the same pressure upon both ends of the oil-column, by means of a branch steam-pipe, is shown in another Seibert Patent No. 179,226, of June 17, 1876, on the details of which this apparatus is an improvement.

G is the filling-cup, which is a permanently-covered vessel having perforations *g* in its cover, which cover also is formed as a basin. Through a gland in the center of the cover of the cup G is the stem g^2 of a spindle-valve, which, when screwed down to its seat in the bottom of the cup G, serves to close the passage *g'* into the reservoir A.

a^2 is the drainage-vent of the reservoir A. This has applied to it a pet-cock (not shown in the drawings) by which it can be opened or

closed at will, it being closed during the working of the lubricator, and opened only to drain it.

The described apparatus, consisting of the tunnel-shaped filling-cup G, with its valve and permanent cup-cover, perforated as described, is a great improvement on the former apparatus for filling the reservoir of the lubricator. It avoids the difficulty of seating the plug on the lubricator, the chance of losing the removable filling plug generally employed, and is practically much more convenient than the arrangement hitherto employed in connection with replenishing the oil of the lubricator.

In Fig. 2 one of the sight-feed glasses, C, is shown as broken, and the two-way cock F on that side is shown as so turned as to take the oil-feed from the top of the reservoir and over the sight-feed glass C, instead of through the sight-feed glass, as shown in the left-hand side of Fig. 2. It will be noticed that the pipes E of Fig. 2 open into the cavity of the reservoir at a slightly lower level than the pipe E in Fig. 1, and this is advisable where an air-brake and locomotive-cylinder oiling apparatus are combined in the same cup, because it is a little more important to oil the main cylinder of a locomotive than it is to oil the air-brake, and if occasion comes for sacrificing either, the air-brake should be trusted without oiling rather than the main cylinder of the locomotive, especially as the oil cylinder of an air-brake would be likely to do better without oil than the main cylinder of the locomotive. Still, I do not consider this detail as at all essential.

The two-way cock (shown in elevation in Figs. 7 and 8 on a larger scale than in the other drawings, and shown in transverse section in Figs. 4, 5, and 6, and in vertical section in Figs. 1 and 2) differs somewhat from the two-way cock described in the application of February 17, 1885. As it is desirable to put steam-pressure upon the top of the sight-feed glass, as shown in Fig. 1, as well as upon the bottom through the water-induction pipe b', and also to put steam-pressure upon the top of the oil-reservoir, when the two-way cock is in the position shown on the right-hand side of Fig. 2, the construction of the cock is modified. A vertical hole, f, is made in the two-way cock F, which extends upward until it opens into the transverse passage f', which transverse passage is on the level of the steam-passage connected with the steam-pipe b^2, and hence the current of steam passing through the steam-passage b^2 will exert a steam-pressure on the top of the water in the sight-feed glass C, and also will go forward with the oil through the steam and oil pipe b^3 or b^7 of Fig. 3, into which this transverse passage f opens when the two-way cock F is in the position shown at Fig. 1.

Fig. 5 shows a transverse section of the two-way cock, F, on the line $y\ y$ of Fig. 8. On the outside of the cock, on the level of this line and opposite each other, are grooves f^3, which are terminated at one end by branches leading into the groove f^4, which is on the level of the line $z\ z$ of Figs. 7 and 8. This groove f^4 extends rather more than three-quarters around the barrel of the cock F, so that when the cock is set in the position shown on the right side of Fig. 2, which is illustrated in section in Fig. 5, on the level of the line $y\ y$ of Figs. 7 and 4, on the level of the line $z\ z$ of Figs. 7 and 8, there will be a channel of oil three-quarters around the cock on the level of the oil-passage e of Fig. 1, and this channel around the cock will communicate through the vertical branch passages shown in Figs. 7 and 8, with the groove f^3 on the level of the line $y\ y$, and through this groove f^3 with the oil and steam passages b^3 b^7 and with the steam-passage b^2.

At and above and shortly below the level of the line $x\ x$ of Fig. 2 the wall of the reservoir A is thickened on one side, as shown in Fig. 3, and has a pretty large boss of irregular form made in it. In this thickened wall and boss are made oil-passages b^5, which correspond in duty to the oil-passage b^3 of Fig. 1; but steam does not reach them until they arrive at the metallic boss A′. In this metallic boss are branch steam-pipes b^6, which communicate with the induction-steam pipe b, as shown in Fig. 3, and feed steam to couplings b^7, which lead to the steam-cylinders. Through the hollow of these couplings steam-pressure is brought upon the top of the sight-feed glass or the top of the reservoir, as the case may be, through the oil-conduits b^5, and a current of steam accompanies the oil through the couplings b^7.

It will be seen that the details of the two-way cock F differ slightly, according to their position, as shown in Fig. 3, but not in principle, according as the housing has passages on opposite sides of the cock as return-passages in its stem.

I claim as my invention and desire to secure by Letters Patent of the United States—

1. The reservoir A, having its wall thickened near its top on one side and provided with the boss A′ at or near its top, said thickened wall and boss having oil-channels b^5 and steam-channels b^6 therein, substantially as and for the purposes described.

2. The two-way cock F, provided with two sets of exterior grooves, f^3 f^4, at different levels and of different lengths, which two sets of grooves communicate with each other, substantially as described.

3. The two-way cock F, having the interior vertical passage, f, and interior transverse passage, f', in combination with the exterior connecting passages, f^3 f^4, of different lengths, substantially as and for the purposes described.

CHAS. W. SHERBURNE.

Witnesses:
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