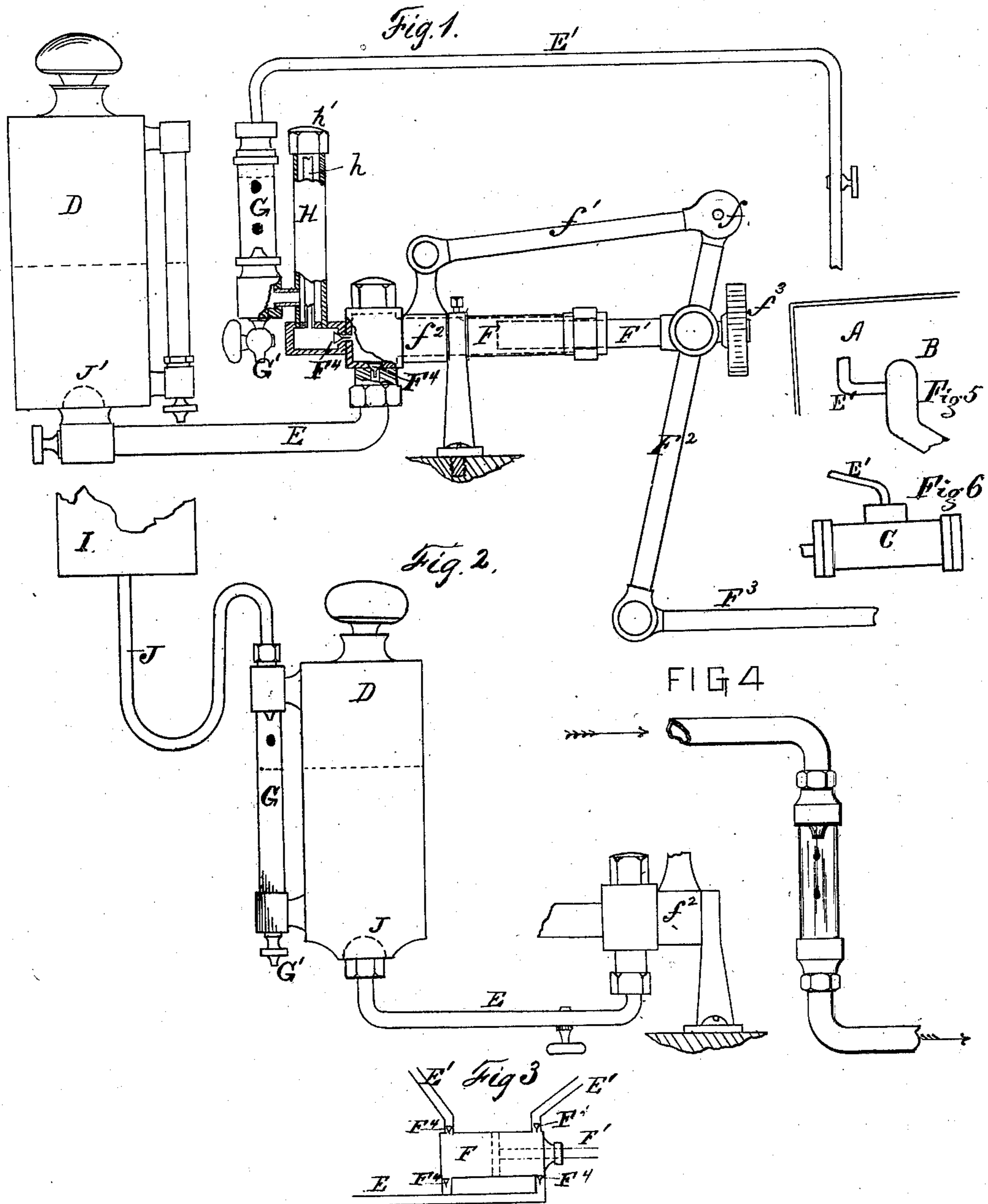


(No Model.)

C. H. PARSHALL.
Lubricator.

No. 236,452.

Patented Jan. 11, 1881.



WITNESSES.

S. Evans Thomas.
Geo. C. Chase

Chas. H. Parshall. INVENTOR.
Ph. Mills. W. Leggett. ATTORNEY.

UNITED STATES PATENT OFFICE.

CHARLES H. PARSHALL, OF DETROIT, MICHIGAN, ASSIGNOR TO DETROIT LUBRICATOR MANUFACTURING COMPANY, OF SAME PLACE.

LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 236,452, dated January 11, 1881.

Application filed September 23, 1880. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. PARSHALL, of Detroit, county of Wayne, State of Michigan, have invented a new and useful Improvement in Lubricators with Pump-Feed; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that class of lubricators which are more particularly adapted for the lubrication of steam-engine cylinders or other similar machinery where there is a back-pressure exerted from the mechanism that is being lubricated, though it is equally well adapted for lubricating any kind of machinery.

My invention consists, essentially, in combining a pump-feed with a visible-feed lubricator, so that the pump-feed shall take the oil from the reservoir and force it by a positive action to the parts to be lubricated, and the rate of feed be visible at the transparent chamber.

In the drawings, Figure 1 is a side elevation of a lubricator embodying my invention, with parts in section. Fig. 2 represents a variation in which the sight-feed is of the kind in which water drops through oil in a transparent chamber. Fig. 3 is a variation in which a double-acting pump is employed, so as to feed oil to one steam-chest from one end of the pump-cylinder, while the other end of the pump-cylinder feeds oil to the other steam-chest, both drawing their supply of oil from the same oil-reservoir. Fig. 4 is a variation in which the oil passes through a transparent air-space, either before entering or after leaving the pump. Fig. 5 represents the oil-discharging pipe F' as leading into the dry-pipe. Fig. 6 represents it as leading into the steam-chests.

Heretofore lubricators have been made with pump feeding mechanism, and they have also been made without the pump-feed, but provided with visible or drop feed mechanism.

It is the object of my invention to combine the pump with a visible feed; for where the pump alone is used the fact that the valves are working properly and the oil feeding regularly to the parts to be lubricated is necessarily a matter of inference only, and where the visible feed is employed without the pump it is a nice

operation to properly adjust all the parts to satisfy the varying circumstances of steam-pressure, and where the lubricator is of that class which requires an equilibrium of pressure within, the joints are all required to be steam-tight and expensive of construction.

In carrying out my invention, A is a steam-boiler. B is its dry-pipe, and C the steam-chests of its cylinders. D is an oil-reservoir, from which an oil-conduit, E, leads to a pump-chamber, F. In this pump-chamber a piston or plunger, F' , is driven by any suitable machinery—either a small separate engine, or by connecting the plunger with some moving part of the machinery. This piston or plunger may be connected by direct connections with the moving parts; but I prefer to employ a link mechanism, substantially as shown, whereby the motion may be at once adjusted to correspond with that of any adjacent moving part, and by which the feed of the oil can be regulated. Such a construction is represented in the drawings, F^2 being a lever, pivoted at f to a loose connecting-rod, f' , which, in turn, may be connected with a swivel, f^2 , so that the lever F^2 may project in any direction for convenience of attachment under all circumstances, and without requiring special means in every separate case. A suitable link, F^3 , unites the outer end of the lever F^2 with some moving part of the machinery by which the pump is actuated, and a set-screw at f^3 enables the engineer to adjust the stroke of the pump for any required rapidity of feed of the oil, for the longer the stroke the more oil is pumped at each stroke. In this construction the plunger turns about its axis with the lever F^2 whenever the latter is turned in a new direction. F^2 is connected to F' by a pivot-connection, so as to yield as the pump is operated, the set-screw f^3 simply serving to clamp the lever F^2 whenever it has been adjusted longitudinally through the connection to change the stroke of the plunger by lengthening or shortening the distance between the fulcrum f and piston or plunger F' .

G is a transparent chamber, through which the feed can be witnessed drop by drop. In Fig. 1 the construction is such that the oil, after it is forced from the pump, is caused to rise in drops through water in the transparent chamber, while in Fig. 2 the arrangement is such that the feed of oil is shown by the rate at

which drops of water enter and settle through the oil in the transparent chamber.

In Fig. 1, H is a tube or chamber extending up above the water in the chamber G, and an inner tube, h, leads from the bottom up through the chamber and discharges into the latter at the top, as shown. A plug, h', is provided at the top, by removing which the chamber can be cleansed and the chamber G be filled with water. A drain-cock, G', is provided, by which to draw off any residuum that may gather in the transparent chamber, and through which the water may be withdrawn from time to time. In Fig. 2 the transparent chamber G is not located between the pump and the cylinder, but back of the pump, at the oil-chamber, or thereabout, as shown. I is a water-supply chamber, or may be any source from which water may be obtained. The pipe J, leading therefrom, enters the top of the transparent chamber G, so that as the oil is pumped to the parts to be lubricated, for every drop of oil pumped from the oil-chamber a drop of water will descend through the oil in the chamber G to supply its place, and thus the feed is rendered visible. It will be observed in both these cases that the oil-chamber need not have any steam-pressure within it, although steam-pressure may exist without detriment to the operation of the device, and in the device shown in Fig. 2 it may be convenient to connect with a steam or water pipe leading from the boiler, in order to supply water by condensation or from the boiler. By this construction the oil is always fed with absolute certainty, and at the same time the feed is rendered visible and entirely independent of the pressure in the boiler or engine.

The object of the chamber H and its inner tube, h, is to prevent the water from flowing back through the oil-pipe and to keep the water-chamber always full of water.

If desired, the pump in Fig. 2 may be located in the water-pipe instead of in the oil-pipe, so as to pump water, drop by drop, into the oil-chamber, thus displacing the oil and driving the latter off to the parts to be lubricated; and it is immaterial, also, whether the water-pipe in Fig. 2 enters the transparent chamber from the outside, or whether it passes into the body of the oil-reservoir, and leads thence to and delivers its water, drop by drop, into the top of the transparent chamber.

Suitable valves, F⁴, are located adjacent to the pump-chamber in the inlet and outlet passages.

There may be one or more passages leading from the pump, so as to lead the oil through one or more visible feed-chambers, if necessary, to several localities to be lubricated.

The apparatus has been supposed, in this description, to be connected with a locomotive, but is equally well adapted for any other engine, and may lead directly to the steam-chest or to the dry-pipe, or to any steam-pipe in an ordinary engine.

If desired, the pump may be double-acting,

as shown in Fig. 3, and pipes E' lead therefrom, one to each cylinder, if necessary, and a visible feed be provided upon each branch. So, also, I prefer generally to employ a screen, J', to arrest any sediment before it reaches the pump.

I am aware that pump feeding mechanism in connection with lubricators is old; but the valves in such devices are apt to get out of order, and while the pump is otherwise in operation it may fail to feed the oil onward; but by combining with the pump a transparent chamber, through which the oil urged forward by the pump is caused to pass in visible drops or quantities, the difficulty is overcome. The engineer can at all times see that his pump is operating properly, and at the same time can see whether the stroke of his pump needs to be altered in order to deliver the requisite quantity of oil.

What I claim is—

1. A lubricator consisting of the following parts in combination, viz: an oil-reservoir, a pump for forcing the oil to the parts to be lubricated, and a transparent chamber through which the oil fed by the action of the pump is caused to pass in visible drops or quantities, substantially as described.

2. In combination, an oil-reservoir, an oil-conduit leading therefrom to the parts to be lubricated, a pump located on the line of the said conduit, and a transparent water-chamber through which the oil, actuated by the pump, is caused to rise in visible drops as rapidly as oil is fed onward by the pump.

3. In combination, an oil-reservoir, an oil-conduit leading therefrom, a pump adapted to force the oil to the parts to be lubricated, a transparent water-chamber through which the oil rises in visible quantities as rapidly as fed by the pump, and a trap located adjacent to the water-chamber, whereby the water is prevented from passing back out of the chamber, substantially as described.

4. In a lubricator-pump, the combination, with the plunger, of a lever for driving the same, adjustably connected thereto, and a yielding link, to which said lever is fulcrumed, whereby the stroke of the plunger may be altered by shifting the point of connection of said lever with said plunger, substantially as described.

5. In a lubricator-pump, the combination, with the plunger, of a lever for driving the same, connected thereto, and a yielding link, to which said lever is fulcrumed, said yielding link being, in turn, swiveled about the pump-shaft, the construction being such that the driving-lever may be turned in any direction for ready connection to a moving part of the machinery, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

CHARLES H. PARSHALL.

Witnesses:

ALBERT M. HENRY,
HENRY C. HODGES.