

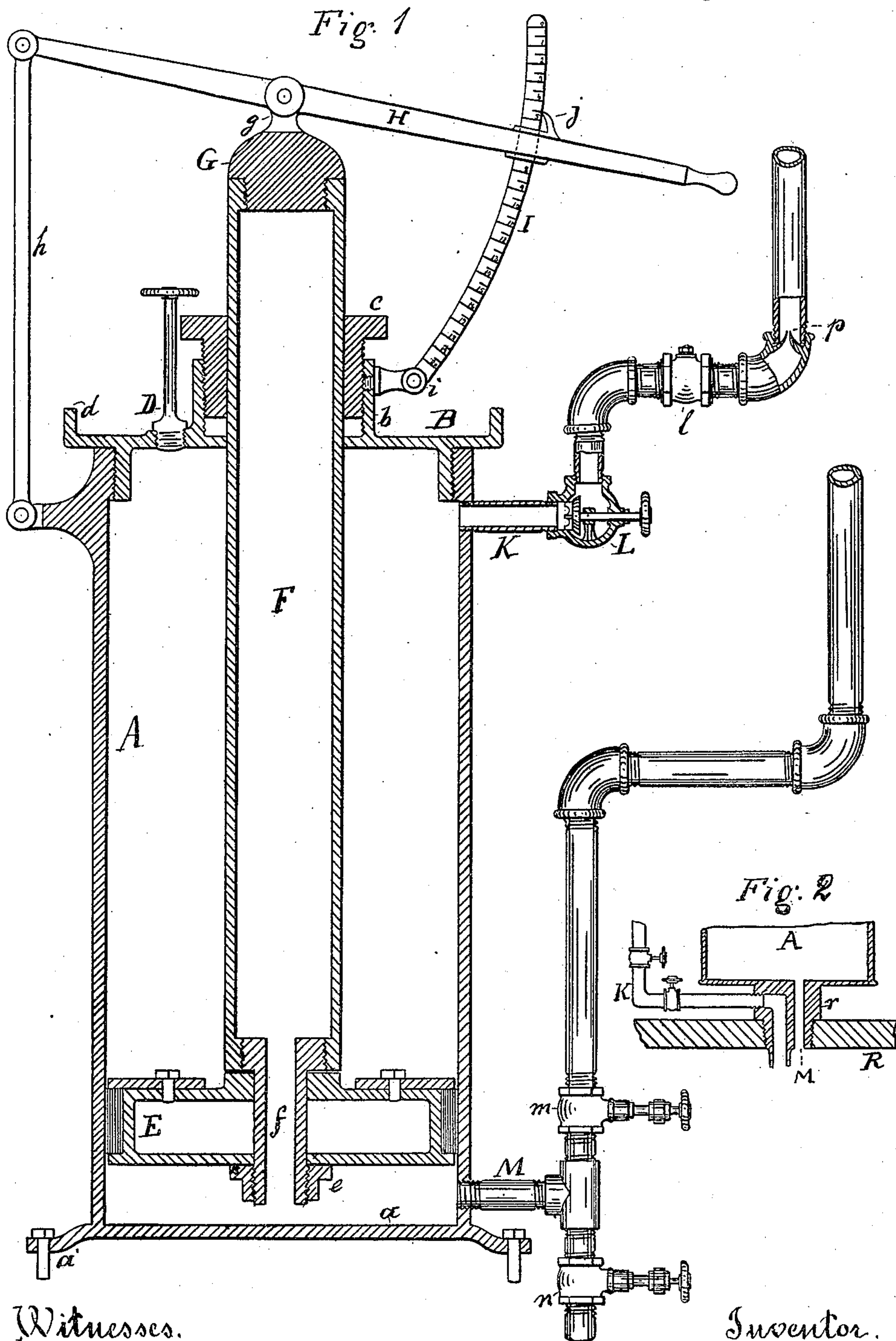
(No Model.)

O. H. JEWELL.

LUBRICATOR.

No. 246,782.

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LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 246,782, dated September 6, 1881.

Application filed June 17, 1881. (No model.)

To all whom it may concern:

Be it known that I, OMAR H. JEWELL, of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Lubricators, of which the following is a specification.

The object of my invention is to provide means for regularly feeding a lubricant to the cylinder of a steam-engine, and particularly an apparatus that will enable the use of tallow as a lubricant for that purpose; and it consists of a pump in the cylinder of which the tallow is heated by steam to be kept in a liquid condition and from which, by the pressure of the steam, a uniform quantity of the tallow is forced into the cylinder; also, in combination therewith, devices for operating by hand and for regulating by suitable cocks the supply of the lubricant, all as more fully hereinafter described, and pointed out by the claims.

In the accompanying drawings, forming a part hereof, Figure 1 represents a longitudinal vertical section of my lubricator; and Fig. 2 a modification, showing the lubricator screwed upon the steam-chest of a locomotive.

A denotes the cylinder, having a solid bottom, *a*, and a flange or lugs, *a'*, for rigidly attaching it to an engine by screws. This cylinder is bored out, to be perfectly true and smooth, and is closed on top by a cover, B, screwed into the end of said cylinder. The cover B is provided with a stuffing-box, *b*, and gland *c*, for tightening an elastic packing-ring around the piston-rod. It has also a raised edge, *d*, that will form an annular chamber around said stuffing-box for the collection of any oil or tallow leaking through the stuffing-box, and a vent closed by a screw-plug, D, for filling the cylinder with the lubricant.

E is the piston, which may be constructed in any usual manner so as to form a tight joint with the bore of the cylinder; and F is the hollow piston-rod, which is formed of a piece of pipe rigidly secured to the piston by means of a hollow screw-neck, *f*, and a nut, *e*, and hermetically closed on top by a screw-cap, G, that has a forked extension, *g*, and forms a pivotal connection with the middle portion of a hand-lever, H. The rear end of this lever H is pivotally connected with a bracket that forms part of the cylinder A, by a link, *h*, and the front

end of said lever forms a handle by which to move the piston in either direction.

A curved bar, I, that is spaced with marks and is pivotally connected to an eyebolt, *i*, on the stuffing-box, is projected through an oblong slot in the hand-lever, and in combination with a pointer, *j*, that forms part of said hand-lever, it will indicate the position of the piston and the quantity of oil or tallow contained in the cylinder.

A pipe, K, is tapped into the upper end of the cylinder and forms a connection with the steam-chest of the engine. This pipe is provided with a stop cock or valve, L, for regulating or closing the passage through said pipe, and with a check-valve, *l*, that will allow the flow from the lubricator toward the steam-chest of the engine, but will close against a reverse flow of fluids. Another pipe, M, is tapped into the bottom end of the cylinder A, and is connected by a T-coupling to a pipe also leading to the steam-chest of the engine. This pipe M has two valves, *m* and *n*, the former for shutting off the flow of steam from the steam-chest and the latter for discharging the condensed steam from the bottom of the cylinder. The space in the cylinder above the piston is filled, through the opening that is closed by the screw-plug, with molten tallow. Then, after the valve *n* is closed, the valves *m* and L will be opened so as to allow the steam to enter and impart its pressure upon both sides of the piston. Now, if both sides of the piston would present the same area to the steam there would be an equilibrium, and the piston would not move in either direction; but the hollow piston-rod being projected through the cylinder-cover, the area of that end is reduced as much as the area of the piston-rod amounts to, and just as many square inches as the area of said piston-rod contains, multiplied by the pressure of steam, in pounds, that acts upon the piston, will be over-pressure against the under side of the piston, that will force the same upward, thereby compressing the tallow and causing the same to flow through pipe K, toward and into the steam-chest, in proportion as the opening in valve L, which can be regulated, will allow.

The steam admitted in the cylinder below the piston will communicate with the interior of the hollow piston-rod through the opening of

the screw-neck, and will keep the walls of the piston-rod heated, whereby the tallow will be kept in a liquid condition, so as to flow easily and regularly. After the piston has reached the upper end of its stroke and has discharged the entire lubricant it contained, the valves *m* and *L* are closed and the valve *n* is opened, when the screw-plug *D* is removed, and then the piston is forced down to the lower limit of its stroke, whereby the water that has condensed in the lower end of the cylinder will be discharged through valve *n*. Now the cylinder is refilled with molten tallow through the opening that is hermetically closed by the screw-plug, when the valve *n* is shut and the valves *m* and *L* are opened, and the lubricator at once will be self-acting again.

When at any time it becomes necessary or desirable suddenly to feed a larger quantity of oil or tallow into the steam-chest, and thence into the cylinder of the steam-engine, the engineer can do so without deranging the adjustment of his valves by pulling the lever upward, so as to increase the upward pressure upon the piston, which will force more oil through the opening in valve *L*; but for a uniform feed the quantity can be regulated entirely by the adjustment of the valve *L*.

If desirable, a part of the pipe *K* above the check-valve *l* can be a glass tube that will show the quantities of oil passing to the steam-chest. In that case I arrange within said pipe a small nozzle, *p*, from which the lubricant will issue in small bubbles, thus directing its flow to rise toward the steam-chest through the center line of the column of condensed steam in the glass tube, and to obviate the oil coming in contact with and sticking to the glass.

As will be readily understood from the foregoing description, by its peculiar construction, this lubricator having a hollow piston-rod that forms a radiator of heat from the steam for keeping the lubricant in a liquid condition, tallow, which has many advantages as a lubricant for steam-cylinders over other oily substances, can be used. Besides, the same steam thus heating the tallow will exert an over-pressure upon the under side of the piston, that will feed the tallow into the steam-chest in such quantities as may be desirable.

Another advantage is that the lubricator can be adjusted to be either self-acting or that it can be operated by hand like a pump, which, during many emergencies, is of great advantage. It is simple in its construction, under ready observation, and easily regulated by the man in charge, so that it will do prompt and effective duty.

The exact construction of this lubricator will depend somewhat upon the position in which it is placed on an engine—as, for example, with a locomotive, where it would be placed directly upon the steam-chest cover, when, as shown in Fig. 2, the lubricator-cylinder will be provided with a neck, *r*, that is screwed into the steam-chest cover *R*, and is provided with two ports, one forming a direct communication between the steam-chest and the space in the cylinder below the piston, thus taking the place of pipe *M*, and the other one is elbow-shaped for connecting the pipe *K* that forms a communication with the space in the cylinder above the piston; but in every instance it will be necessary that both pipes *K* and *M* should form separate communication with the steam-chest of the engine. When the lubricator is thus placed directly upon the steam-chest the valve *n* can be dispensed with, since the condensed steam from the lubricator will run back into the steam-chest, will enter the steam-cylinder through the valve-ports, and will be discharged through the cylinder-cocks. Whenever steam is shut off from the engine or locomotive cylinder the pressure from under the piston of the lubricator will cease and the feeding of the lubricant will stop.

What I claim as my invention is—

1. A lubricator consisting of a cylinder, *A*, having cover *B*, with stuffing-box *b*, gland *c*, and raised rim-flange *d*, and communicating on top and bottom with the steam-chest of the engine through separate pipes *K M*, in combination with the piston *E*, having hollow screw-neck *f* and nut *e*, hollow piston-rod *F*, and lever *H*, pivotally connected to the piston-rod and adapted for operating said piston by hand-power, substantially as set forth.

2. The combination, in a lubricator, of the cylinder *A*, piston *E*, pipe *K*, valve *L*, pipe *M*, and the valves *m* and *n*, all constructed and arranged substantially as and for the purpose described and shown.

3. In a lubricator, the combination, with the cylinder and piston-rod, of the lever *H*, link *h*, pivotally connecting said lever to the cylinder, curved and graduated bar *I*, pivotally connected to the stuffing-box, and indicator-point *j*, substantially as and for the purpose shown and described.

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