E. G. FELTHOUSEN.

Steam-Engine Lubricator.

No. 215,271. Patented May 13, 1879.

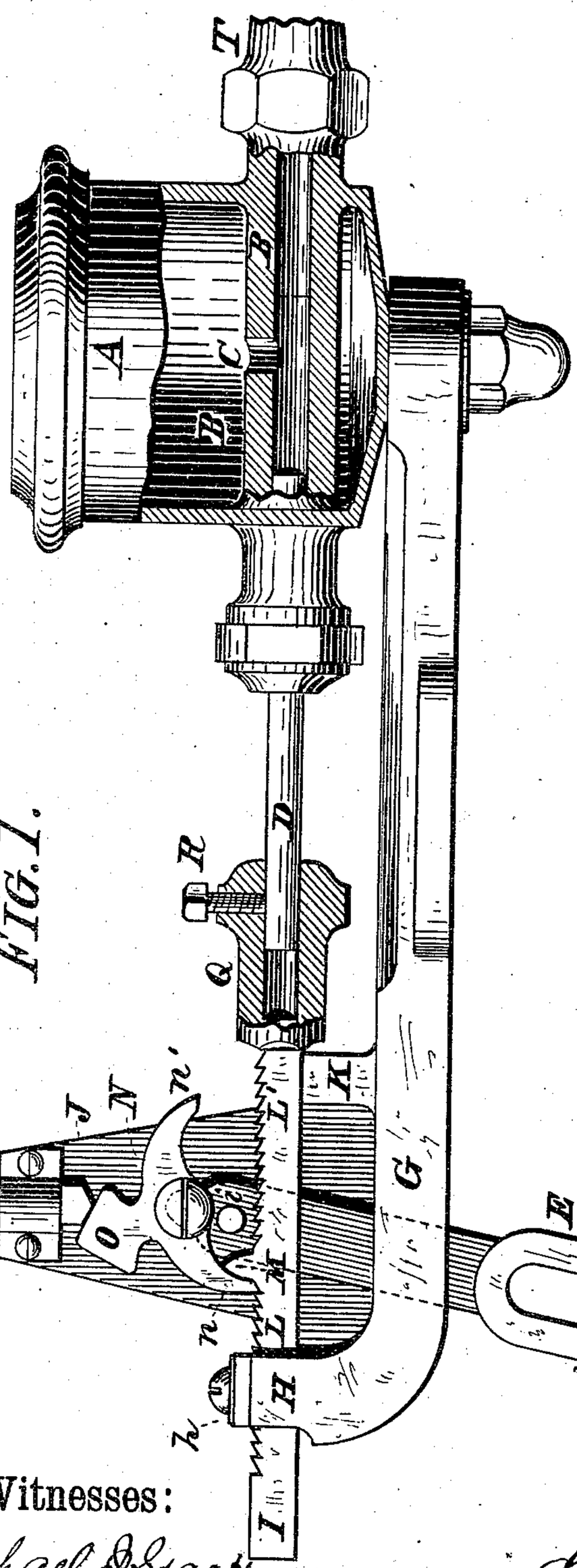

FIG. 1.

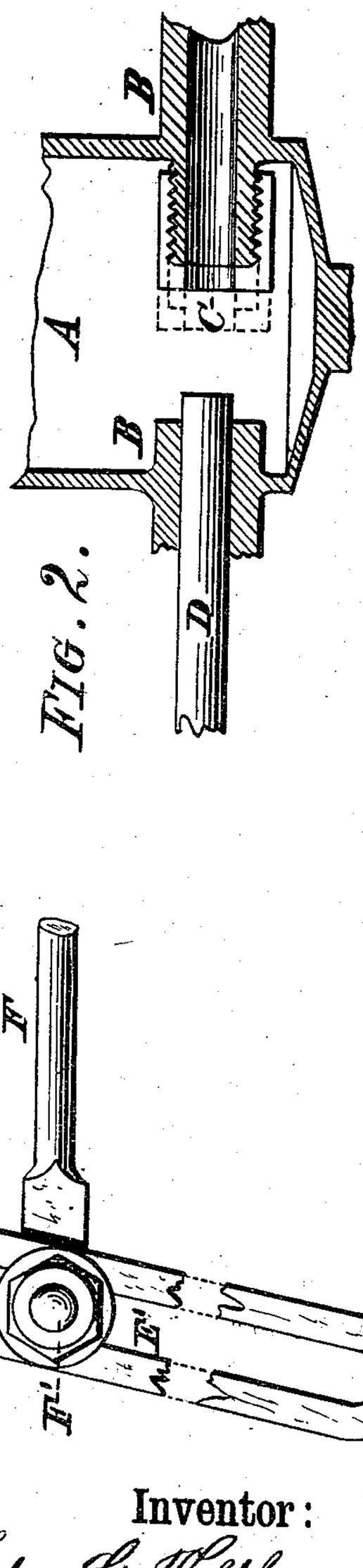

FIG. 2.

Witnesses:

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UNITED STATES PATENT OFFICE.

EDWARD G. FELTHOUSEN, OF BUFFALO, NEW YORK.

IMPROVEMENT IN STEAM-ENGINE LUBRICATORS.

Specification forming part of Letters Patent No. **215,271**, dated May 13, 1879; application filed April 9, 1879.

To all whom it may concern:

Be it known that I, EDWARD G. FELTHOUSEN, of Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in a Steam-Engine Lubricator; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to lubricators for steam and other engines; and it is particularly designed to forcibly inject a stream or quantity of oil or other lubricating substance to the place or places to be lubricated.

It consists, essentially, in the combination, with an oil-reservoir, of a pump and mechanism for operating the same, as hereinafter first fully set forth and described, and then pointed out in the claims.

In the drawings, Figure 1 is a front elevation of my improved pump, parts being shown in section. Fig. 2 is a sectional elevation of a modified form of one portion of the same.

A is the oil-reservoir, and B the pump-cylinder, both parts being constructed, essentially, in accordance with Letters Patent of the United States granted to me on the 9th day of February, 1878—that is, the cylinder has simply a filling-aperture, C, through which the lubricant to be ejected gains admission. D is the piston, operated by a pendulum-lever, E, connected with any reciprocating part of an engine, &c., by means of a connecting-rod, F.

The cylinder B is secured to one end of a suitable frame, G, the forward end of which carries a bearing, H, for the reception of a rack-bar, I, and a standard, J, serving as a means of attachment of said pendulum-lever E by a pivot, *i*. The frame G is, furthermore, provided with a guide-block, K, serving as a rest for the rack-bar I. This rack-bar has on one end a double series of teeth, L L′, standing in opposite directions, and between the two sets of teeth a long projecting tooth, M.

On the upper end of the lever E is pivoted a double pawl, N, having its upper extremity provided with a spear-shaped part, O, acting in conjunction with a spring-dog, P, in such manner as to keep either one of the prongs *n n′* of said double pawl N engaged with its respective ratchet-teeth L L′.

The end of the rack-bar I is formed into a socket, Q, having a set-screw, R, by means of which the piston D, which enters said socket Q, is held in proper position.

The operation of the mechanism as described will now be readily understood from the following explanation.

The pendulum-lever E being vibrated in any well-known manner causes a corresponding vibration of the double pawl N. This pawl is kept engaged with either series of teeth, L or L′, by means of the spring-dog P. Now, supposing it to be engaged with L, it moves the rack-bar away from the reservoir A until the long tooth M reaches the arm *n* of said ratchet. This long tooth throws the pawl over; then the arm *n′* engages with the ratchet-section L′, and thereby causes an opposite movement of the plunger and rack-bar until the said long tooth reaches the arm *n′* and throws the pawl back again to the position first described. In this manner the rack-bar is reciprocated intermittingly by the pendulum-lever and its ratchet-connection, the said rack-bar moving the space of one tooth for every revolution of the engine-shaft or other parts from which the pendulum receives its motion.

In order to adjust the stroke of the pendulum-lever with reference to that part of the engine from which it receives its motion, it (the said pendulum-lever) is provided with a slot-hole, E′, wherein the stud F′ of the connecting-rod F may be slid up or down to increase or decrease its leverage in accordance with the stroke of said part of the engine.

I find that connection may generally be made with the eccentric-rod of an engine which moves the slide-valves, &c., and, since the stroke of said rod varies in different sizes or styles of engines, I increase the leverage of the pendulum E if the stroke is large, or decrease the same when short, in a manner readily understood by any skilled mechanic.

In the pump-cylinder B is the ingress-aperture C, which fills the said cylinder, as already mentioned. The piston D is adjustable within the socket Q by the set-screw R—that

is to say, it may be pushed farther into or drawn out of the socket Q when the rack-bar I is farthest away from the reservoir A. The end of said piston has then just cleared the said aperture C. When in such a position the pump will eject to its full capacity with every stroke of the piston, because the entire cylinder will be filled with said lubricant and forced out of the same as soon as the piston has passed the supply-opening.

But supposing the piston is pushed into the socket Q the space of one-half inch beyond its first-described position; in this case the piston D in moving out of the cylinder B will pass beyond the aperture C in the direction toward the pendulum-lever one-half inch; and, further, supposing the full stroke of the ratchet-bar I or piston D is one and one-half inch, it will be evident that in the return stroke the piston will make a full stroke of one and one-half inch, and force all the lubricant having entered the cylinder B back into the reservoir A until it has passed the aperture C, and then eject that part of the lubricant only which remains in the cylinder while completing its stroke. The piston having receded beyond the aperture noe-half of an inch, and the aperture being, say, one-quarter of an inch in diameter, this leaves three-fourths of an inch of piston-stroke available for ejecting the lubricant.

It will now be further observed that by pushing the piston D so far into the socket Q as to compel the piston to make its full stroke of one and one-half inch on that side of the cylinder toward the pendulum-lever F, measuring from the ingress-aperture C, no lubricant would be ejected from the cylinder to the part to be lubricated, because all the lubricant entering the cylinder would be returned to the reservoir through the ingress-opening C.

It is therefore self-evident that the two extremes of this pump being a delivery of oil or lubricant equaling the full stroke of the piston in one case, or none at all in the other case, an adjustment between the two extremes may be made to any quantity of lubricant ranging from nothing up to the full stroke of the piston, and that this adjustment can be effected, irrespective of the length of stroke or the number of strokes of the piston, by simply pushing the piston D farther into or withdrawing it out of the socket Q to the desired point.

For this purpose indicating-marks may be made on the piston showing the number of gallons or other fixed quantity ejected by the pump in a certain space of time, provided the strokes were predetermined and limited to the proper number; but, since this number of strokes is constantly varying with different engines, such an arrangement would be impracticable, and I prefer that a few trials should be made in every case until the desired limit of capacity of the pump has been fixed by experiment.

It is now perfectly evident that the mechanism described for varying the quantity of discharge of my pump is applicable to many other pumps for forcing liquids, while the mechanical movement for converting the pendulum motion described into an intermittent rectilinear reciprocating motion is likewise applicable to many mechanical devices where an intermittent reciprocating motion is a desideratum. I have heretofore described the piston as being rendered adjustable with respect of the ingress-opening in the cylinder, whereby the quantity of the discharge may be adjusted as specified. This arrangement may be modified, however, and the piston made non-adjustable, but the cylinder made adjustable, reversing the order of things described. In Fig. 2 I have shown such an arrangement. Here the piston D has a fixed unalterable stroke within predetermined limits of space, but the cylinder C is rendered adjustable by moving it nearer to or farther away from the piston, which device would act in precisely the same manner as that already described, and be, therefore, a mechanical equivalent thereof.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A lubricator or other pump having a piston within a pump-cylinder, said piston being adjustably arranged with respect of the ingress-opening in said pump-cylinder, whereby the quantity of discharge may be adjusted, substantially as and for the object specified.

2. An oil-pump lubricator having a reciprocating plunger with a fixed stroke operating within a cylinder having an ingress and a discharge opening, said plunger and ingress-opening being arranged in relation to each other with the capability of adjusting the distance which the piston travels beyond the ingress-opening, whereby the quantity of discharge is rendered adjustable, substantially as and for the purpose specified.

3. A pump having an ingress-opening to and a discharge-opening from its cylinder, in combination with a plunger capable of being rendered adjustable with respect of the distance which it travels beyond the ingress-opening of said cylinder, whereby the quantity of discharge is rendered variable, substantially as and for the object stated.

4. The combination, with the oil-reservoir A, having the cylinder B, provided with an ingress-opening, C, of the plunger D and the mechanism for operating said plunger, the cylinder or plunger being adjustable with respect of the said ingress-opening to the cylinder, whereby the quantity of discharge is rendered adjustable, substantially as and for the purpose stated.

5. In a lubricating-pump, the combination, with the holding-bar I, reciprocating within fixed and unalterable limits, of the piston D, adjustably fixed within said holding-bar for the purpose of altering the quantity of discharge of said pump, as and for the object specified.

6. In lubricating-pumps, the device described for imparting a reciprocating motion to the piston, consisting, essentially, of the lever E, double ratchet-pawl N, and ratchet-bar I, provided with two sets of oppositely-pointing teeth and a long tooth between the two sets, as and for the use and purpose stated.

7. In lubricating-pumps, the combination, with the bed-plate G, having the bearing H and rest K, of the rack-bar I, provided with the double series of ratchet-teeth L L′ and a central tooth, M, the pendulum-lever E, and the double ratchet-pawl N, pivoted to the pendulum-lever, as and for the purpose indicated.

8. In lubricating-pumps, the combination, with the pendulum-lever E, having the double pawl N, provided with the spear-shaped part O, of the spring-dog P, as and for the object stated.

In testimony that I claim the foregoing as my invention I have hereto set my hand and affixed my seal in the presence of two subscribing witnesses.

EDWARD G. FELTHOUSEN. [L. S.]

Attest:

MICHAEL J. STARK,
J. A. MCINTOSH.