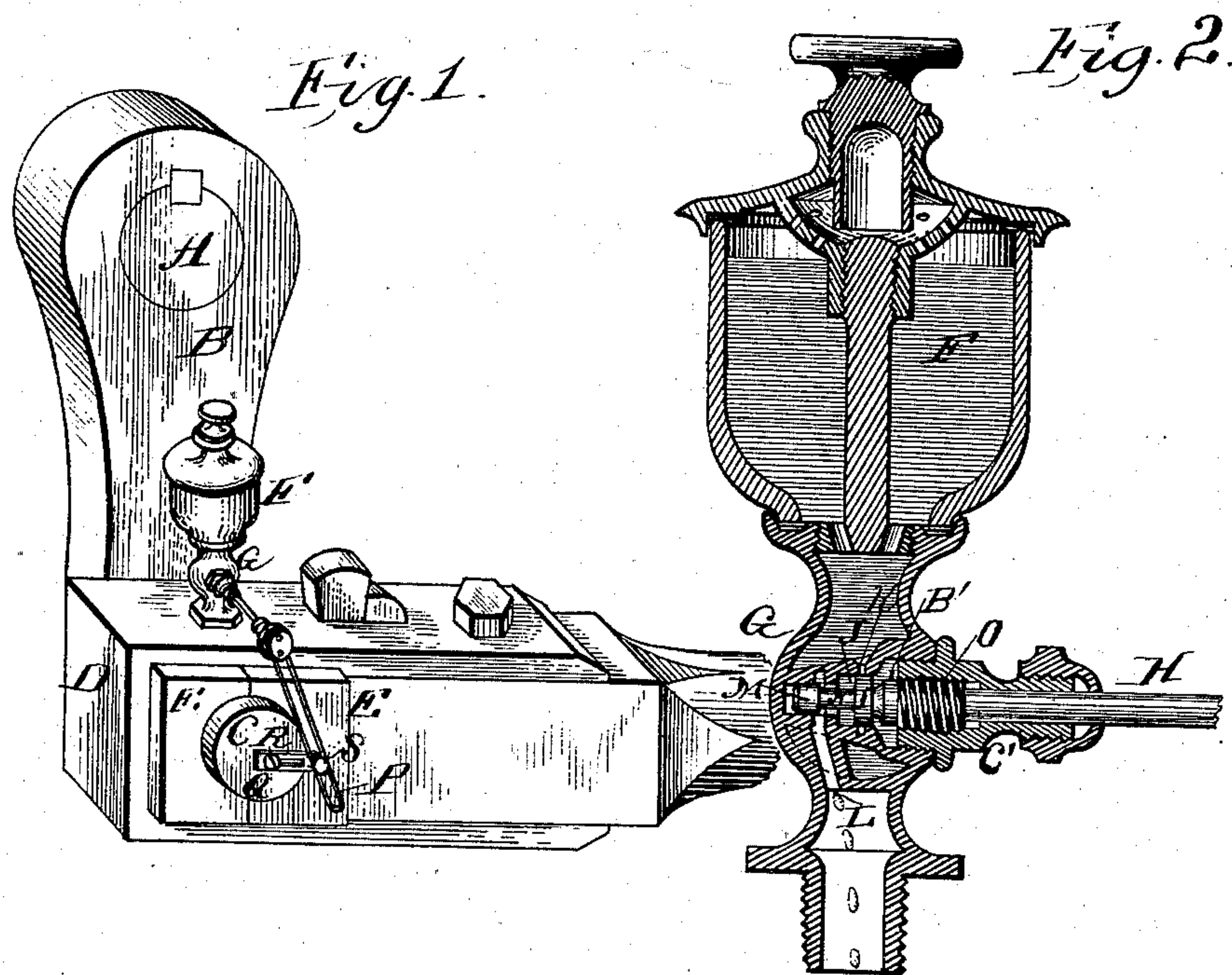


(No Model.)

A. W. MORRELL.
Force Feed Crank Pin Oilers.

No. 239,396.

Patented March 29, 1881.



Witnesses:

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UNITED STATES PATENT OFFICE.

ALBERT W. MORRELL, OF NILES, MICHIGAN.

FORCE-FEED CRANK-PIN OILER.

SPECIFICATION forming part of Letters Patent No. 239,396, dated March 29, 1881.

Application filed January 13, 1881. (No model.)

To all whom it may concern:

Be it known that I, ALBERT W. MORRELL, a citizen of the United States, residing at Niles, in the county of Berrien and State of Michigan, have invented certain new and useful Improvements in Force-Feed Lubricators for Crank-Pins; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in devices for lubricating the crank or wrist pin of engines and other machinery.

The object of my improvements is to provide a device for forcing the oil or other lubricant into the boxes or bearings of the crank-pin while in motion.

Heretofore the oil has been allowed to flow from the reservoir to the wrist-pin of its own gravity. The gravity of the oil, however, often proves insufficient to keep the oil-passages open, and they become obstructed and the flow of oil is stopped.

By my improvement an automatic force-feeding device is formed in the neck of the oil-reservoir, by which the oil is forced through the connecting-passages upon the wrist-pin.

My invention is further explained by reference to the accompanying drawings, of which—

Figure 1 represents a perspective view. Fig. 2 represents a vertical section.

Like parts are indicated by the same reference-letters in both views.

A is a crank-shaft. B is the crank. C is the wrist or crank pin. D is the strap of the connecting-rod. E E are journal-boxes of the wrist-pin. F is the reservoir or oil-cup, which cup is provided with an enlarged neck, G. The reservoir F is rigidly secured to strap D. H is a piston-rod. I is a piston. J is an intermediate chamber for the reception of the piston. K is an oil-passage, through which the oil enters the chamber J as the piston is withdrawn therefrom. When the piston moves forward into the chamber J the oil therein is forced therefrom down through the passage L upon the crank-pin C.

M is a valve or cut-off, which is connected with the piston I by neck N, and moves with it. Thus when the piston I moves toward the right the passage K is opened, and the passage L is closed by the valve M, whereby the flow of oil from the reservoir to the passage L is cut off. When the piston-rod moves toward the left the mouth of the passage K is closed by the piston I and the passage L is simultaneously opened, and the oil which has previously entered the chamber J is forced out through the passage L. By this arrangement it is obvious that but one of the oil-passages is open at a time. Thus it becomes impossible for the oil to escape from the reservoir while the crank is at rest, without regard to its position. The piston I and valve M also perform another important function. By their outward movement the passage L is closed by the valve M, and a vacuum is formed in the chamber J, when the oil from above is forced down through the passage K by the atmospheric pressure from above with such force that all obstructions are removed and the passage is kept open.

The piston-rod H is provided with a screw-thread, O, arranged to operate in the nut or bonnet c', and can be moved toward the right and left only as it is being turned forward or backward in the bonnet, by which forward and backward turning a very slight reciprocating movement of the rod is produced. The piston-rod H is provided with a check-pin, B', adapted to engage against a shoulder formed upon the edge of the bonnet c' and prevent the piston-rod from making an entire revolution, without which check-pin the rod might be thrown out of its proper adjustment.

P is a slotted lever, by which a slight turning movement is communicated to the piston-rod H from the wrist-pin C through the action of the slotted crank Q. The crank Q is rigidly attached to the end of the wrist-pin C by set-screw R, and revolves with it. The outward end of the lever Q performs one revolution around the point of its attachment with each revolution of the wrist-pin around the crank-shaft. The outward end of the lever Q is provided with an anti-friction roller or slide, S, which operates in the slot of the lever P, whereby the lever P is caused to vibrate toward the right

and left simultaneously with each revolution of the crank. The vibratory movement of the lever P communicates the partial revolutionary movement to the piston-rod described, while the screw O carries the piston-rod alternately toward the right and left simultaneously, as mentioned.

The quantity of oil forced from the reservoir may be increased or diminished, as desired, by increasing the length of the stroke of the piston. The length of the stroke of the piston is regulated by the adjustment of the crank Q upon the set-screw R. By releasing the set-screw R the lever Q may be extended or contracted so that its outward end will describe a larger or smaller circle. The set-screw R operates in the slot of the lever Q, which permits of any required adjustment of the same. The length of the vibration of the lever P corresponds to the diameter of the circle described by the outward end of the lever Q, and the piston-rod is turned and carried toward the right and left a greater or less distance corresponding to the diameter of the circle described by the outward end of the crank or lever Q. Thus it is obvious that the flow of oil is easily regulated by the adjustment of the crank Q.

Having thus described my invention, I do not confine or limit myself to the peculiar mechanism shown for oscillating the piston-rod, as a variety of devices may be substituted therefor. A weighted lever or pendulum may be substituted for the slotted lever P, which will be

caused to vibrate by the reciprocating motion of the connecting-rod, whereby the same motion will be imparted to the piston-rod as that described.

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

1. In lubricators for wrist-pins, a force-feed mechanism consisting in the chamber J, piston-rod H, piston I, valve M, the piston I and valve M being connected together by neck N, passages K and L, as adapted to receive a quantity of oil from the reservoir and discharge the same upon the crank-pin with each reciprocating movement of the piston, substantially as specified.

2. The combination of rod H, provided with screw O, and slotted lever P, as adapted by its vibratory movement to communicate a reciprocating movement to the piston-rod, substantially as and for the purpose specified.

3. The improvement in lubricators herein described, consisting in the enlarged neck G, provided with chamber J, passages K and L, piston-rod H, provided with screw O, piston I, valve M, strap D, lever P, slide S, crank Q, set-screw R, and crank-pin C, all combined and arranged substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

ALBERT W. MORRELL.

Witnesses:

JAS. B. ERWIN,
E. G. ASMUS.