H. BROCIOUS, H. E. BENSINGER & S. WRAGG.

Lubricator.

No. 205,524. Patented July 2, 1878.

Fig. 2.

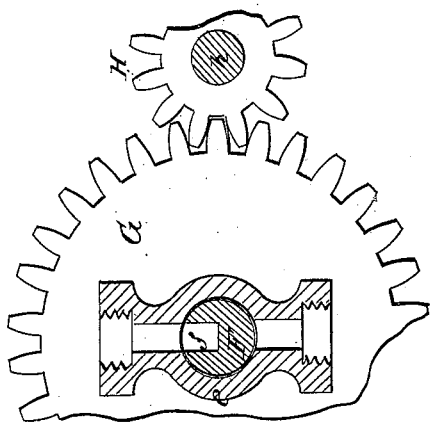
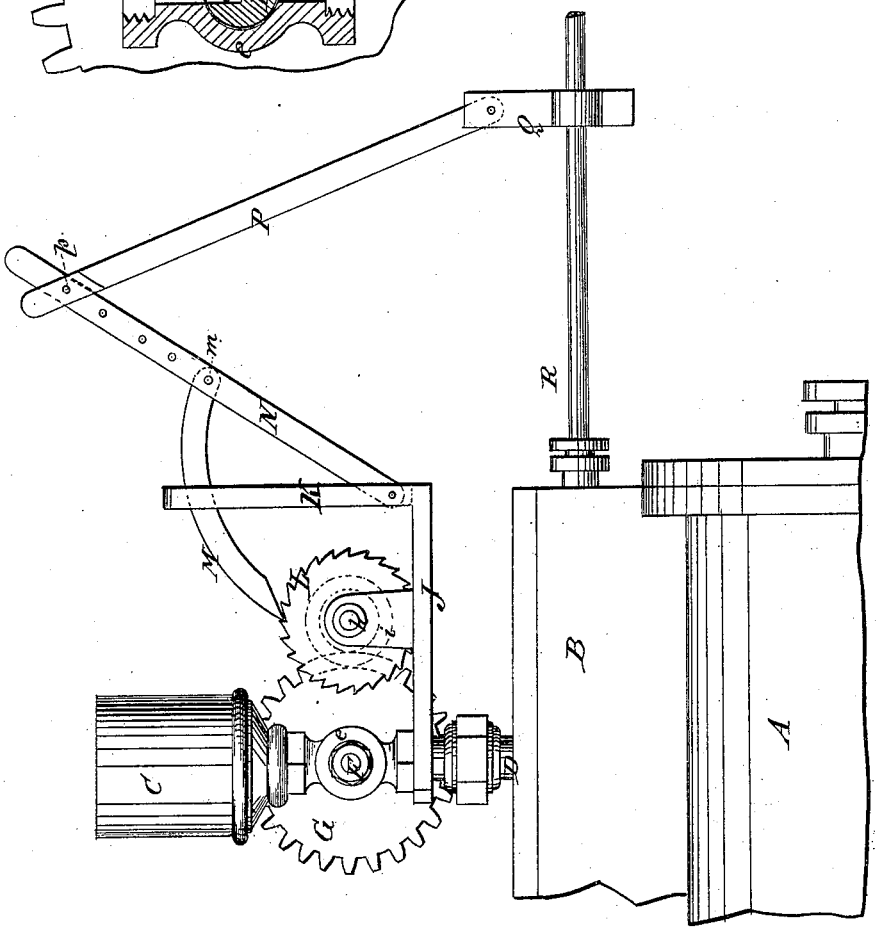


Fig. 1.



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UNITED STATES PATENT OFFICE.

HARMAN BROCIOUS, HIRAM E. BENSINGER, AND SAMUEL WRAGG, OF RAVEN RUN, PENNSYLVANIA.

IMPROVEMENT IN LUBRICATORS.

Specification forming part of Letters Patent No. **205,524**, dated July 2, 1878; application filed June 1, 1878.

To all whom it may concern:

Be it known that we, HARMAN BROCIOUS, HIRAM ELIJAH BENSINGER, and SAMUEL WRAGG, of Raven Run, in the county of Schuylkill and State of Pennsylvania, have invented new and useful Improvements in Lubricators, of which the following is a specification:

Our invention relates to certain improvements in means for automatically lubricating the piston and piston-rod, valve and valve-stem, and other parts of a steam-engine.

The invention consists in a novel arrangement of an oil-cup or lubricant-holder, and a novel construction and arrangement of devices employed in connection therewith, whereby the lubricant is automatically supplied at regular intervals and in uniform quantities; and, further, in certain details of construction and arrangement of devices for regulating the quantity of lubricant and frequency of supply.

In carrying out our invention the lubricant-holder is arranged, preferably, on the top of the steam-chest, and communicates with a rotary valve and a conduit leading to said steam-chest. The valve is rotated by gearing which receives motion through a ratchet, pawl, and levers connected with the slide-valve stem, so that at every stroke of the slide-valve the rotary valve receives motion, and after a certain number of such strokes (which number may be regulated at the pleasure of the person in charge of the engine) the lubricant is supplied by the rotary valve.

The accompanying drawing illustrates a mode of carrying out our invention.

Figure 1 is a side view of a portion of a cylinder and steam-chest with our improvements applied thereto. Fig. 2 is detail view, partly in section, hereinafter referred to.

Similar letters of reference indicate corresponding parts.

The cylinder A and steam-chest B, portions of which are shown in Fig. 1, are of any ordinary or suitable construction. The oil-cup or lubricant-holder C is attached to the upper end of a tube or pipe, D, the lower end of which enters the steam-chest B. At a suitable point in the pipe D, between the cup C and the steam-chest, is a seat, *e*, in which works a rotary valve, which is here shown as consisting of a round plug, F, provided with a recess, *f*. (See Fig. 2.) To the stem of this rotary valve F, or the end of the plug which forms the valve, is attached a gear-wheel, G, which meshes into and is driven by a gear-wheel, H, attached to a shaft, *h*, journaled in bearings *i* on an arm, J, and carrying a ratchet-wheel, L.

The arm J may be arranged in any suitable manner. It is here shown as attached to and supported by the pipe D, extending outward therefrom, and carrying a slotted standard, K.

At the lower end of the slot in the standard K is pivoted the lower end of a slotted bar or lever, N. A pawl, M, is pivoted in the slot of the lever N, with its toe or point engaging with ratchet L. The pawl M works in and is guided by the slot in the standard K. To the upper end of the lever N is pivoted the upper end of a rod or pitman, P, the lower end of which is attached, by means of a clamp, Q, to the rod or stem R of the slide-valve.

The operation is as follows: As the valve-stem R moves outward the pawl M slips over the ratchet L and engages with another tooth, and, as the reverse motion of the rod takes place, the pawl M turns the ratchet a distance equal to the length of one or more teeth, and, through the gearing G H, gives motion to the rotary valve F, so as to carry the recess *f*, containing the lubricant, in a direction toward the lower end of the pipe D. Thus, at every revolution of the valve F, a certain quantity of lubricant is taken from the cup or holder C to the steam-chest B, and from thence distributed with the steam throughout the steam-chest and the cylinder.

There may be any desired number of recesses *f* in the valve F, so as to supply the lubricant more frequently than once for each revolution.

The speed of rotation of the valve F may be increased or diminished by adjusting the pivot *p* of the pitman P either higher or lower in the slotted lever N, so as to cause the pawl to engage with a greater or less number of teeth on the ratchet and turn it more or less at each stroke of the valve-rod R.

We are aware of the existence of a lubricating apparatus consisting of an oscillating or revolving oil-cup, having a perforated bottom

and turning on a perforated plug fitted to the journal-box of the shaft to be lubricated. In this case the oil-cup receives its motion from the shafting by a worm and screw and other mechanism.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination of the rotary valve F, having the recess *f*, and the tube D, having the valve seat or tube *e*, with the oil-cup or lubricant-holder C, as and for the purpose set forth.

2. The combination of the gearing G H, ratchet L, pawl M, and lever N with the oil-cup C, the rotary valve F, and discharge-tube D, as and for the purpose set forth.

3. The combination, with the lever N and slide-valve rod R, of the rod or pitman P and clamp Q, substantially as and for the purpose shown and described.

his
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mark.
HIRAM ELIJAH BENSINGER.
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Witnesses:
EPHRAIM GOLDING,
WILLIAM KLEES.