G. H. HOAGLAND.
Lubricator.

No. 202,820. Patented April 23, 1878.

Fig. 1.

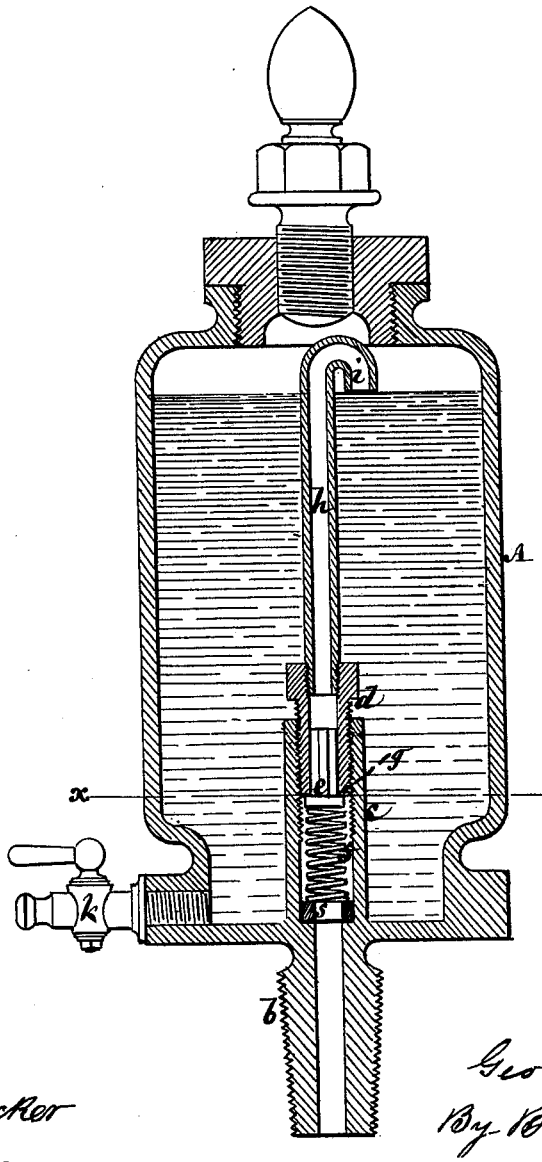

Fig. 2.

Fig. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE H. HOAGLAND, OF PORT JERVIS, NEW YORK.

IMPROVEMENT IN LUBRICATORS.

Specification forming part of Letters Patent No. **202,820**, dated April 23, 1878; application filed January 11, 1878.

To all whom it may concern:

Be it known that I, GEORGE H. HOAGLAND, of Port Jervis, in the county of Orange and State of New York, have invented certain new and useful Improvements in Lubricators, of which the following is a description, reference being had to the accompanying drawing, forming part of this specification.

This invention more particularly relates to lubricators for the valves and cylinders of steam-engines, and will be found especially advantageous in its application to the valve or steam chest of locomotive-engines, inasmuch as said lubricator, which is automatic, keeps up a supply of oil or grease after the steam has been cut off, and when the engine-pistons and their valves are working in a dry condition, or free from any lubrication by the steam. It will therefore be described as thus applied, although it may be used on the valve or steam chest of other engines.

The invention consists in a certain combination, with the oil or grease cup of the lubricator, of a bent tube within the cup, a spring-valve beneath the lower end of said tube, and a duct or ducts for passing steam up through the tube and into the oil-cup, where it is condensed, to provide for keeping up a supply of oil to and down the bent tube, substantially as hereinafter described; and the invention furthermore consists in a combination, with said parts, or certain of them, of an adjustable hollow plug, which forms the valve-seat, whereby provision is made for giving an extended and variable heating-surface by means of the steam, to keep the oil or grease in a fluid or free state.

Figure 1 represents a vertical section of a lubricator constructed in accordance with my invention. Fig. 2 is a longitudinal exterior view of an adjustable hollow plug, with valve and upper bent tube applied thereto; and Fig. 3, a horizontal section, on the line x x, through the valvular portion of the lubricator, looking upward.

A is the oil or grease cup, which may be of any convenient form, and is constructed with a bottom screw-nozzle, d, for establishing connection with the valve or steam chest of the engine. Said nozzle is in direct communication with a hollow neck, c, projecting upwardly within the cup A from the bottom thereof. Within the upper portion of this hollow neck c is screwed a hollow plug, d, capable of adjustment up or down to increase or diminish, as required, the extent of interior surface of the neck c exposed to the heating action of the steam entering by the nozzle b, for the purpose of keeping the grease or oil within the cup in a perfectly fluid or free state. The importance of this will be readily understood, in the case of the application of the lubricator to a locomotive-engine, when it is considered that the lubricator is exposed to travel through the air at a high velocity, subject to varying temperatures.

A valve, e, balanced by a spring, f, serves to close the lower end of the hollow plug d, but leaves a small duct or channel, g, in the bottom of the plug or in the upper surface of the valve, for a small quantity of steam to escape into the oil-cup when the valve e is closed. Such duct is equivalent to a leaking construction of the valve.

Connected with the upper end of the hollow plug d is a tube, h, arranged to project up through the oil or grease in the cup A, and constructed with a short crook or bend at its upper end. The cup A is hermetically closed when the lubricator is in use.

Supposing the engine to be running, with steam in the valve-chest to which the lubricator is applied, a small quantity of steam will pass by the duct or channel g up through the bent tube h into the oil-cup, where it will be condensed and fall to the bottom of the cup, causing the oil, which is lighter, to float on the top. This accumulation of water in the bottom of the cup by condensation of the steam causes the oil in the cup to rise above the mouth or upper end of the bent tube h, and to flow or be discharged down said tube past or through the balanced valve e, to effect the necessary lubrication, and only in proportion to the accumulation of water in the bottom of the cup will the discharge of oil from the latter be kept up.

When steam is shut off from the engine and the latter is kept running—as, for instance, in the case of a locomotive-engine going down grade—then a suction will be created on the under side of the valve e, to open the latter

and keep the valves and piston freely supplied with oil while working in a dry state or free from lubrication by the steam.

Washers of different thickness (and one, *s*, of which is here shown) may be used under the balancing-spring *f* of the valve when the hollow plug *d*, which also forms the valve-seat, is adjusted more or less upward, as and for the purpose hereinbefore described. When, however, said plug is wholly lowered, then the washer under the spring may be dispensed with.

A cock, *k*, on the side and bottom of the cup serves to draw off any excessive accumulation of water caused by condensation of steam within the cup.

I claim—

1. The combination, with the oil or grease cup A, of the bent tube *h*, the spring-balanced valve *e*, and one or more ducts, allowing for the escape of steam to the cup past the valve *e* when closed, substantially as specified.

2. The combination of the adjustable hollow plug *d* with the neck *c* in the cup, the bent tube *h*, the leaking valve *e*, and its spring *f*, essentially as and for the purposes herein set forth.

In testimony whereof I hereunto sign my name in the presence of two subscribing witnesses.

G. H. HOAGLAND.

Witnesses:
HENRY T. BROWN,
VERNON H. HARRIS.