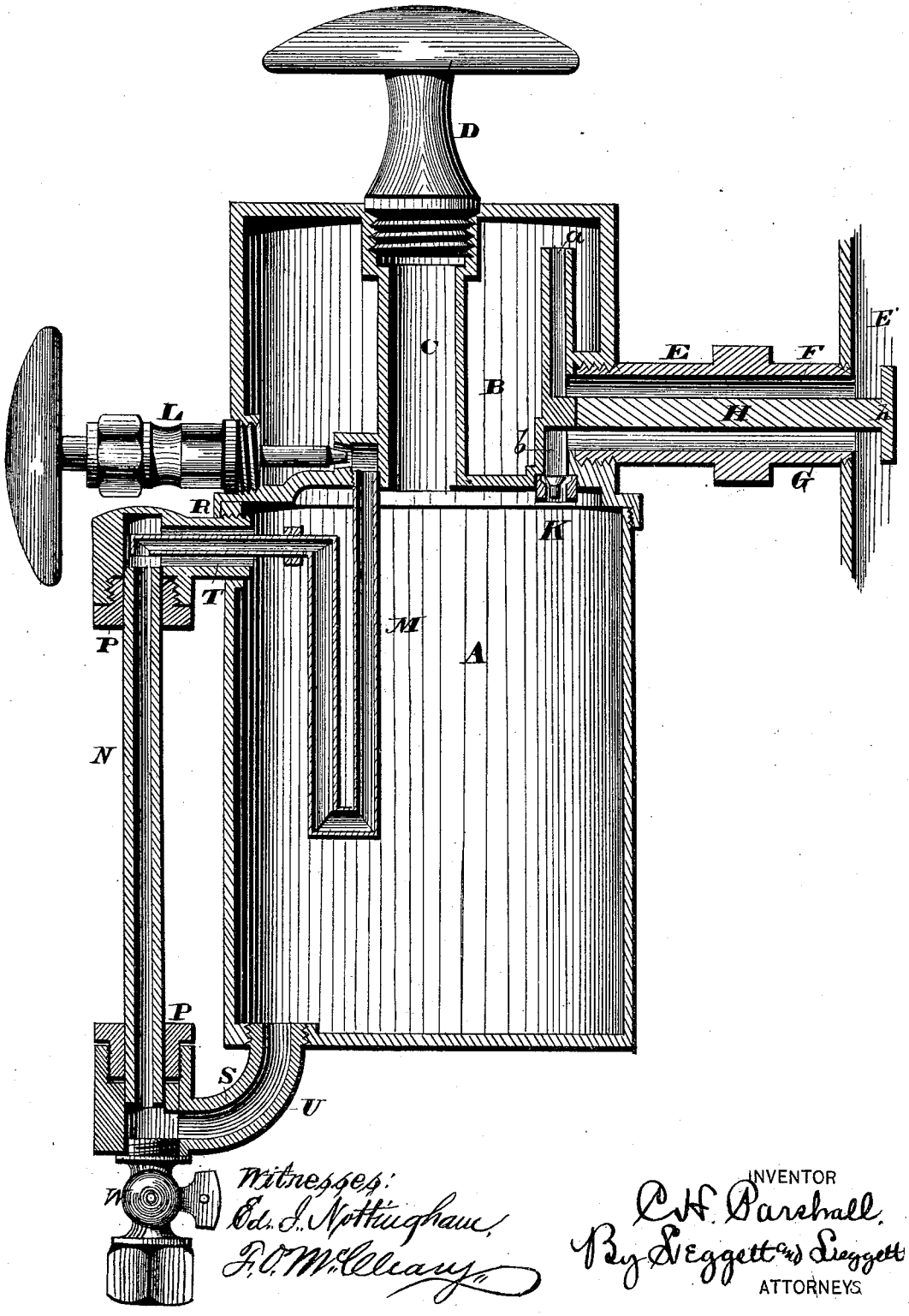
C. H. PARSHALL.

LUBRICATOR.

No. 191,171. Patented May 22, 1877.



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CHARLES H. PARSHALL, OF DETROIT, MICHIGAN.

IMPROVEMENT IN LUBRICATORS.

Specification forming part of Letters Patent No. 191,171, dated May 22, 1877; application filed March 29, 1877.

To all whom it may concern:

Be it known that I, CHARLES H. PARSHALL, of Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Lubricators; 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to certain improvements in lubricators for steam-engines, according to which they are of a construction peculiarly fitting to be readily and neatly applied to any form of engine, and also compacting the several parts into a close and simple body form. The supporting-stem is provided with independent steam and oil ducts, directly connecting the main steam-pipe of an engine with the respective water-condensing and oil-feeding chambers of the lubricator. This stem is formed on the side of the lubricator, and, while permitting the latter to be well engaged with the engine, also makes the parts of the lubricator few and simple. A water-pipe connects the condenser with a glass indicating-tube, located on the side of the lubricator opposite to that of the supporting-stem, and is of such construction as to both warm the oil in the body of the cup, and at the same time to act as an effective seal guarding against the inflow of oil into the condenser. The said indicator has free connection at both top and bottom extremities with the interior of the oil-cup, while the upper extremity connection is free, and opens jointly into the oil-cup and the water-pipe leading from the condenser, thus permitting the water and the oil to pass, respectively, between the indicator and the water-pipe on the one hand, and the indicator and the oil-cup on the other hand.

Referring to the drawing, which is a view, in vertical section, of a lubricator made according to my invention, the oil-cup A is made of metal, having the steam-condenser B located above it, and provided with an annular feed-tube, C, passing centrally through it, by which the oil is conducted into the body of the cup. A screw-plug or stopper, D, controls the outer opening of this tube.

This condensing-chamber has a screw-tapped opening in its side wall, in which the supporting-stem E is engaged, and is also provided with respective steam and oil passages *a* and *b*, formed in the same piece with the wall of the chamber. The upper or steam-passage *a* is of length such that sufficient room is left between its discharge-opening and the top of the condenser, to permit of suitable steam-condensing space above the water in the latter. The lower or oil passage *b* extends downward, and connects directly through the bottom of the condensing-chamber into the oil-chamber. A check-valve is seated in the bottom of the condenser, and automatically governs this oil-passage *b* at its connection with the oil-cup.

The stem E, engaging with the side of the condenser, has its outer extremity connected with the main steam-pipe of an engine by suitable screw-threaded engagement, this steam-pipe being shown in broken section at E′, and the supporting-stem is screwed into it sufficiently to insure a tight joint with it and the two independent steam and oil ducts, respectively lettered F and G.

The upper duct, F, takes steam direct from steam-pipe into its corresponding passage *a* in the condenser, while the lower duct, G, carries the displaced oil from out the cup through its respective connecting-passage *b*, and empties it into the steam-pipe. The partition-piece H separates the two ducts, and is provided, at its outer extremity, with the right-angular cross-guard *h*, which latter is formed in the same piece with the partition, and acts as a guard jointly for both the ducts, so that only steam can pass into its appropriate duct, and that in a suitable quantity, while the oil discharging from its duct is borne along with the main volume of the steam on into the valve-chest and cylinder of the engine. Thus the condenser is always free from oil, and no steam can enter the oil-cup through duct G on account of the check-valve K opening outward from the cup into the said duct, and thus controlling this connecting-passage.

The feed-valve L, regulating the flow of water into the cup, is located at the bottom of the condenser, on that side opposite to the stem E. This bottom is formed in a single

piece with the body of the condenser, and an angular pipe, M, connecting therewith carries the water well down into the body of the cup, thence up to a horizontal level with the top of the glass indicating-tube, whence the pipe leads at right angles into the latter.

By thus conducting the hot-water pipe well down into the cup, the oil of the latter is maintained constantly at a proper degree of temperature, so that while it is always in a suitable liquid state to flow easily, at the same time its properties as a lubricant are not affected. Not only does the above result obtain, but also, by constructing this water-pipe with longer and shorter vertically-parallel legs, the same is made to act as an effective water-seal against the induction of oil from the cup up into the condensing-chamber.

This indicating-tube N is of glass, and formed on the side of the lubricator farthest from the steam-engine, its highest point being on a level lower than the bottom of the condenser. It is provided with packing-nuts P, engaging its upper and lower extremities, respectively, with the screw-threaded stems R and S, which latter in turn, respectively, are formed with the interior oil-passage T and water-passage U. The passage T freely connects the oil of the cup with the indicator-tube, in which latter it floats at a depth corresponding to the depth of oil within the body of the cup. As water is allowed by the regulating-valve L to pass through the water-seal pipe M into the indicator, it necessarily, by reason of its superior specific gravity over that of oil, falls in drops down through the oil in the indicator to the level of the water within the same, which forces a corresponding volume of water through the water-passage U up into the cup. By the above displacement of water the oil filling the cup is forced up out through the check-valve opening K into the oil-duct G, and from thence into the steam-pipe, as before indicated.

A waste-cock, W, is located at the lower extremity of the angularly-curved stem S, which drains both the cup and the indicator of water, as desired.

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

1. The side-supporting stem, having its steam and oil ducts communicating with their respective chambers by independent passages, the passage from the oil-chamber into its corresponding duct being provided with a check-valve, substantially as described.

2. A lubricator divided into steam and oil chambers, which are secured directly to each other, the steam or condensing chamber formed with a T division-plate, with which is connected the supporting-stem, the latter being provided with independent steam and oil passages or ducts, substantially as set forth.

3. A lubricator divided into steam and oil chambers, directly secured to each other, the steam or condensing chamber formed with an inwardly-projecting screw-threaded socket, which latter has steam and oil passages leading from its sides, in combination with a supporting-stem, the same being provided with independent steam and oil passages, substantially as set forth.

4. The side-supporting stem, having independent steam and oil ducts, whose partition-piece is provided with the right-angular cross-guard, made in the same piece therewith, substantially as described.

5. A lubricator provided with independent steam and oil chambers, the bottom of the steam-chamber provided with two openings at right angles to each other, one opening serving as a valve-seat, while the other is screw-threaded, for the attachment of a water-seal pipe, substantially as set forth.

6. The combination, with the oil and condensing chambers, directly secured to each other, of a water-seal pipe, the upper end of which connects with the condensing-chamber, while the lower portion of the pipe depends into the oil-chamber, and the lower end connects directly with a glass indicator, the ends of which have free communication with the oil-chamber, substantially as and for the purpose set forth.

7. The condensing-chamber, constructed with independent openings in its bottom for the separate passage of water and oil, the openings provided, respectively, with a water-seal and a check-valve, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand this 22d day of March, 1877.

CHARLES H. PARSHALL.

Witnesses:
JOHN COLLINS,
LEWIS C. HANMER.