W. HAMILTON.

Steam Lubricators.

No. 140,270. Patented June 24, 1873.

Fig. 2.

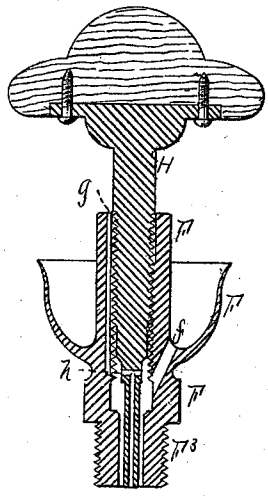


Fig. 1.

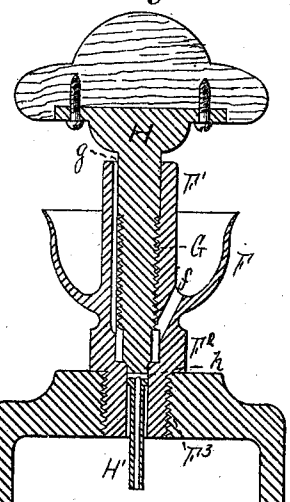
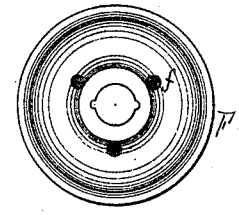


Fig. 3.



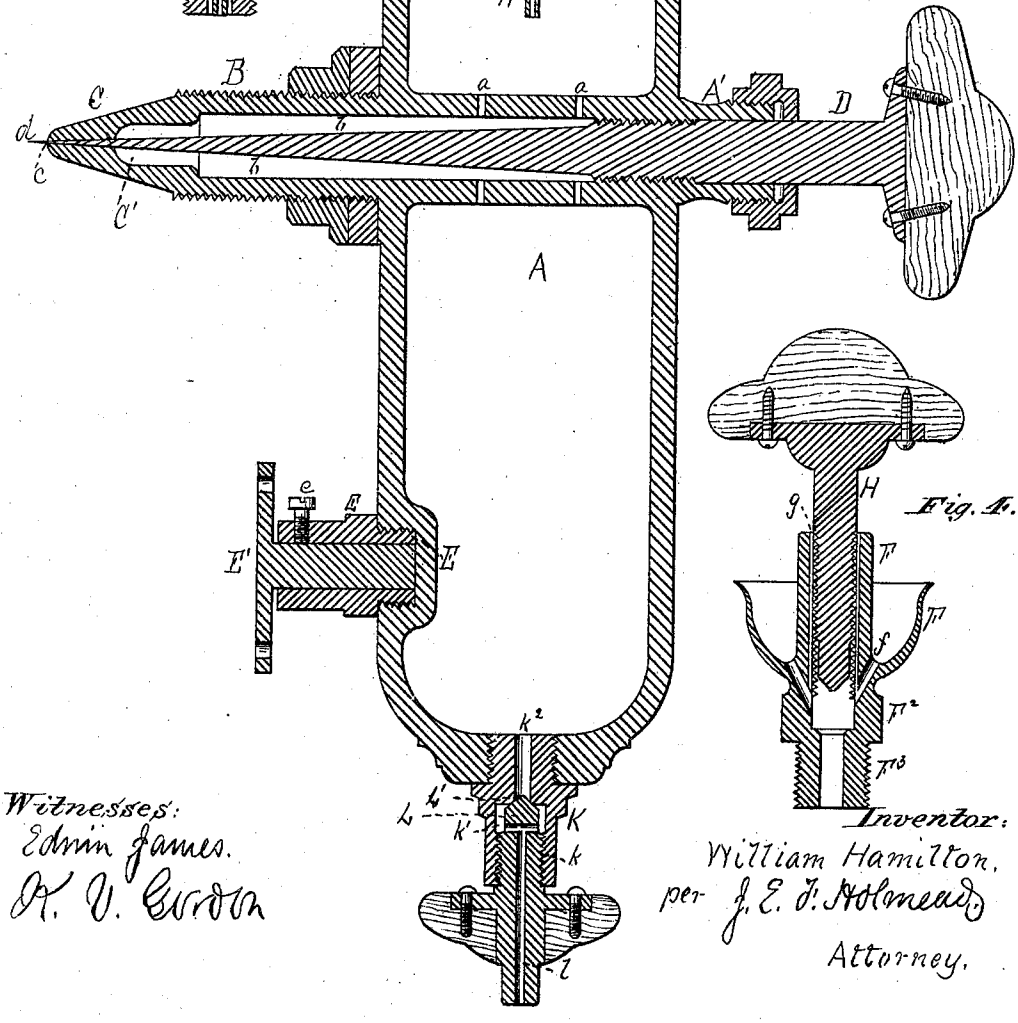


Fig. 4.

Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM HAMILTON, OF ERIE, PENNSYLVANIA.

IMPROVEMENT IN STEAM-LUBRICATORS.

Specification forming part of Letters Patent No. **140,270**, dated June 24, 1873; application filed June 2, 1873.

To all whom it may concern:

Be it known that I, WILLIAM HAMILTON, of the city and county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Steam-Lubricators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing and letters of reference marked thereon, making a part of this specification, in which—

Figure 1 is a vertical sectional view of the lubricator. Fig. 2 is a vertical sectional view of the supply-funnel. Fig. 3 is a top-plan view of the bottom of the supply-funnel. Fig. 4 is a vertical sectional view of a modification of Fig. 2.

My present invention is an improvement on the patent issued to me March 25, 1873, No. 137,073. The nature of my invention consists in casting the lubricating chamber or cup and the hollow or tubular-bolt together in one piece instead of independent, as in my former patent, and where their union is effected by inserting the bolt through openings left in the walls of the cup, and in fastening or securing the same therein by means of jam-nuts. The advantage of thus casting the bolt and cup together is, that it saves two joints in the construction of the lubricating device and correspondingly diminishes its liability to leak, and of which there is always a danger and a tendency to in devices of this character, and consequently every joint avoided or rendered unnecessary adds to the value of the device. My invention also consists in an improvement in the supply-funnel and sediment-cock, as hereinafter described, and which improvements I propose to substitute for the funnel and cock shown in my former patent.

The construction and operation of my invention are as follows: A is the chamber or cup, and B is the hollow or tubular distributing-bolt. Instead of being an independent wrought-iron bolt, as it is described to be and claimed in my former patent, in my present improvement it is cast out of any suitable metal, and in one piece with the chamber or cup A. This hollow or tubular bolt B has openings *a a* through its wall, and which lead directly to the channels *b b*. This bolt B terminates in a point, C, which is recessed, as shown at C′, and from which leads a coniform or tapering discharge-orifice, *c*. These features are all constructed and arranged as shown in the accompanying drawing, and operate precisely in the manner described in my former patent. D is a valve-spindle or needle, and may be constructed of any suitable material. The needle can be made of steel, or of brass with a steel point, but I prefer the latter, particularly when the chamber and bolt are constructed of this material, as then the expansion and contraction are necessarily alike; but I desire it distinctly understood that there is nothing arbitrary about the use of any particular metal. This needle D is provided with a tapering point, *d*. The relative diameters of the orifice *c* and needle-point *d* should be such that when the valve-needle is screwed down into the orifice so as to shut off all further flow of the lubricant the point of said needle shall project through or extend out beyond the mouth of the orifice, as clearly shown in the drawing, and which insures of the orifice always being kept open and free from crustation. This needle or spindle D is inserted in and works through a stuffing-box, A′, and which I have found preferable to the jam-nut. On the outer wall of the cup A, and at the lower section thereof and on a line with the pointed projecting section of the hollow bolt B, is a socket-bearing, E, in which is secured, so as to be adjustable by means of a screw, *e*, the steadying or bearing plate E′, and which serves to assist in retaining the chamber or cup A in proper position after it has been secured to the steam-chest, cylinder, &c. The supply-funnel consists of an inverted cone-shaped cup, F, and a vertical tube, F^2, and which are cast together and are formed with a shoulder, F^2, and a screw-thread, F^3, by means of which the supply-funnel is attached to the chamber. On the inner wall of the tube F^1 is a screw-thread, G, arranged as clearly shown in Figs. 1, 2, and 4. From the base of the cup F, and through the surface in which the screw-thread G is cut, lead annularly-running supply-channels *f f f*, and in the inner wall of the tube F^1, and also leading through the surface are cut vertical air-passages *g g*. H is a screw-plug valve, and may terminate in a hollow spindle-shank, H′, having lateral opening *h h*, as shown in Fig. 1;

or the hollow spindle-shank H′ may be dispensed with, as shown in Fig. 4. This plug-valve H is inserted in the tube F¹, its screw-thread engaging with the female thread G, and the surface of this latter thread extending below the discharge-orifices of the supply-channels *f f*, and also below the inlet or escape openings of the air-passages *g g*. Each can be opened and closed at pleasure simply by turning the plug-valve H. The tube K of the sediment-cock is screwed into an opening at the base of the chamber A, and is formed with a female screw-thread, *k*, cut on its inner wall, and which terminates in a small valve-chamber, k^1, into which leads a channel, k^2, that is flaring or cone-shaped at its head, and which furnishes a valve-seat for the conical point or end L^1 of the valve-plug L. This plug is formed with a long-armed T-shaped channel, *l*, the lateral branches of which lead into the chamber K′.

From the foregoing description, and in view of the description embraced in my former patent, the operation of my improved lubricator will readily be understood. It is attached to the steam-chest, cylinder, or other steam-vessel, in precisely the same manner I formerly proposed, and is sustained in position by the steadying-plate precisely in the manner described. The lubricator being thus secured in position, the lubricant is poured into the cup, and the tube F and valve-plug H are screwed up or elevated to such position as to leave the lower orifices of the channels *f f* and air-passages *g g* open and unobstructed. The air will then escape as the liquid flows in, and which is a great advantage, as it gives the engineer perfect control over the cup whether the engine is in motion or at rest, and with no risk of getting scalded with boiling oil or tallow, as frequently happens with the lubricators now in use. So soon as the chamber is filled the plug H is screwed down, entirely closing the supply-connection. The spindle D is now screwed back and, bringing with it its needle-point *d*, leaves an opening through the orifice of the point C of the bolt B. The degree of this opening, and the quantity of the discharge, depend on the position of the needle-point, and of course can be regulated at pleasure simply by screwing the spindle in or out, as the case may be. The lubricant now enters through the openings *a a* into the hollow and tubular section of the bolt, and is discharged through the opening *c*. Steam also enters and, passing out through the openings *a a*, becomes condensed and falls to the lower section of the vessel, and, being heavier than the lubricant, always keeps the same in condition readily to flow or to be fed to the tubular section of the bolt D. I find, by practical experience, that when I empty the cup the amount drawn off is just equal to the capacity of the cup; consequently the lubricant is always above the bolt and in condition to be fed through the upper openings *a a*; and this, in connection with the fact that the pressure from the boiler is felt in the cup or chamber for a period even after the steam is shut off, causes my improvement to operate with great advantage in going down grades, and when, as is well known, the steam is always shut off. To draw off the contents of the chamber I simply have to turn the valve-plug L so as to leave an opening between its point L′ and the valve-seat when the sediment, &c., can readily escape through the T-shaped opening *l*, passing out through the center of the valve-plug.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. The chamber or cup A, and the hollow or tubular-bolt B, each constructed as shown, and cast in one piece, in combination with the spindle D, formed as stated, the whole being arranged to operate substantially as described, as and for the purpose specified.

2. In combination with the chamber A and hollow bolt B, the supply-cock, consisting of the cup F and tube F′, supply-channels *f f*, air-passages *g g*, and the valve-plug H, the whole being constructed and arranged to operate substantially as described.

3. The sediment-cock, consisting of the tube K having a channel, k^2, with a flaring mouth or valve-seat, and the valve-plug L having a cone-shaped point L′, and the central T-shaped channel *l*, the whole being combined and arranged to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM HAMILTON.

Witnesses:
JAMES SKINNER,
JOHN OLIVER.