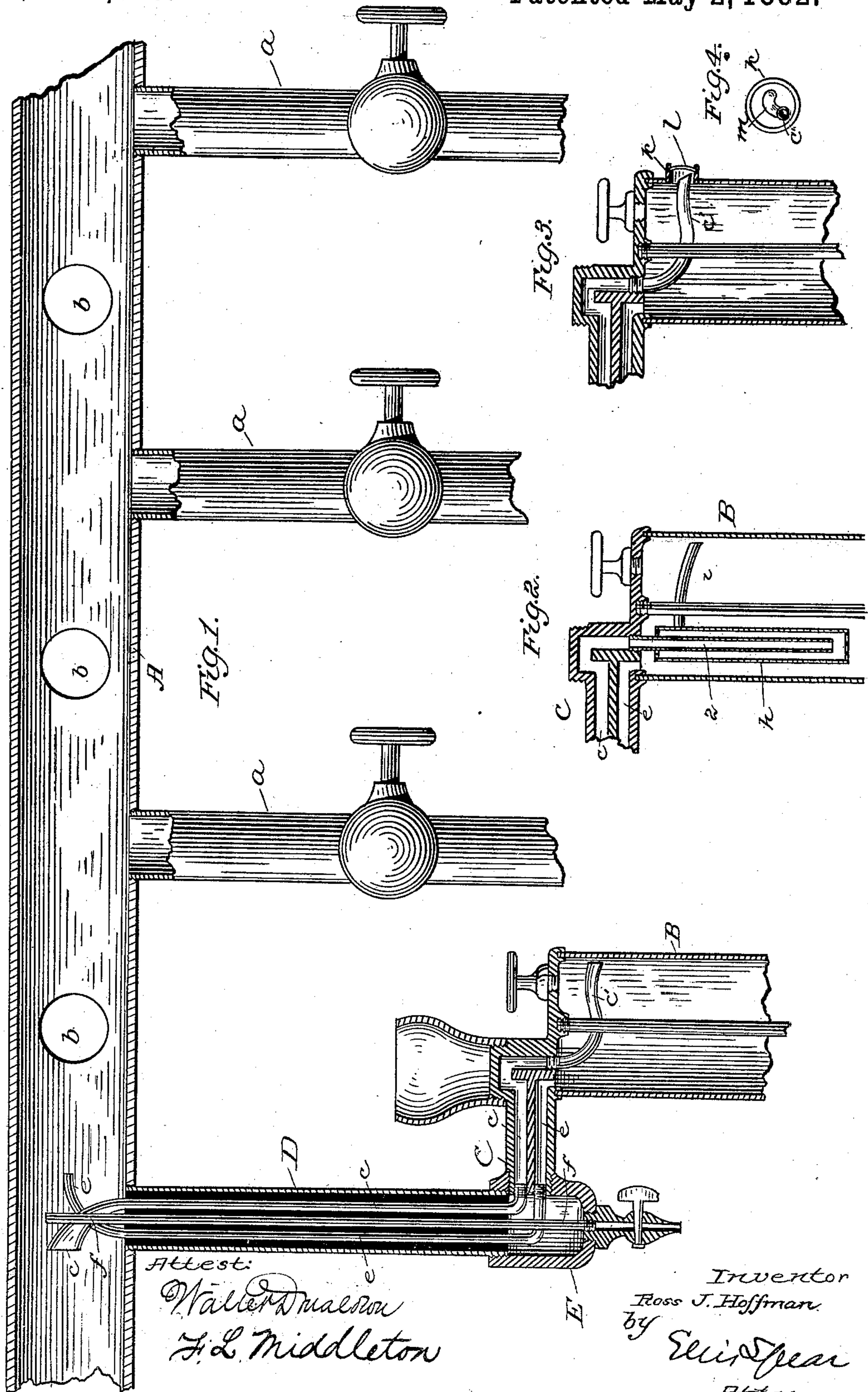


(No Model.)

R. J. HOFFMAN.  
LUBRICATOR.

No. 257,326.

Patented May 2, 1882.





# UNITED STATES PATENT OFFICE.

ROSS J. HOFFMAN, OF BINGHAMTON, NEW YORK, ASSIGNOR TO HIMSELF,  
ORSON A. JENKS, GEORGE W. LESTER, AND RICHARD W. LESTER, ALL  
OF SAME PLACE.

## LUBRICATOR.

SPECIFICATION forming part of Letters Patent No. 257,326, dated May 2, 1882.

Application filed March 24, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, ROSS J. HOFFMAN, of Binghamton, in the county of Broome and State of New York, have invented a new and useful  
5 Improvement in Lubricators; and I do hereby declare that the following is a full, clear, and exact description of the same.

My invention relates to automatic lubricators for engines.

10 My purpose is, first, to make one lubricator serve to oil two or more engines when said engines are supplied from the same steam-pipe.

My second object is to distribute the heat of the steam more uniformly through the oil-cup  
15 of the lubricator; and my third object is to improve what is called the "side feed" of the lubricator in its connection with the oil-cup.

In the accompanying drawings, Figure 1 represents a central vertical section of my lubricator, showing the mode and place of connection with the main supply-pipe, and also showing a series of branch pipes to the separate  
20 engines. Fig. 2 shows a section of the lubricator-cup with the device for diffusing the heat uniformly through said cup. Figs. 3 and 4 show the improved side feed.

In Fig. 1, A represents the main steam-supply pipe, with branch pipes *a a a* leading to as many separate engines. Holes *b b b*  
30 represent the position of other branch pipes leading off horizontally to other engines, as the direction of the branch pipes may be either vertical or horizontal.

The lubricator-cup is represented at E. This  
35 in its main features is shown in Letters Patent of the United States granted to me on the 8th day of November, 1881. It is shown clearly in Fig. 1 as connected to the main supply-pipe at a point between the steam-generator and  
40 the branch pipe of the engine nearer thereto. This communication is preferably made by means of a pipe, D, which connects with the short pipe C of the lubricator. Within this pipe D, I locate the pipe *c*, by means of which  
45 steam is taken from the main supply-pipe and carried to the interior of the oil-cup B. The upper end of this pipe *c* is turned to meet the current of steam, and is preferably formed with a bell-shaped mouth. The tube *e* within

the same pipe D communicates also with the  
50 interior of the oil-cup and opens into the supply-tube, being turned in a direction opposite the pipe *c*, so as to carry the oil or discharge it into the current of steam, where it is carried  
55 uniformly to all the engines which the main steam-pipe supplies.

The construction and operation of the cup, the pipe C, and the pipes *c e* need not be herein particularly set forth, as they are illustrated and explained in my patent hereinbefore men-  
60 tioned. It will be noted, however, that the pipe C, instead of being screwed into the steam-supply pipe, is provided with a cup, E, into which is screwed the bottom of the pipe D, the passages in C forming a continuation of the tubes  
65 *c e*, as shown in Fig. 1. The same figure also shows a pipe, *f*, located within the pipe D, extending up within the main supply-pipe, and downward to communicate with the hole in the bottom of the cup E, the said cup being  
70 supplied with a stop-cock, *g*. When this stop-cock is open or partially open a small stream of steam may pass through and escape, the steam in its passage keeping up the temperature within the pipe D and the cup E, and  
75 thereby the temperature of the pipe *c e*.

The pipe D may be of any length to bring the oil-cup within convenient reach of the workmen, so that it may be readily examined or  
80 supplied with oil, and it may be located upon that part of the pipe nearest the wall, so as to be out of the way. I have shown the pipe D as depending from the main supply-pipe; but it may be placed horizontally if the circumstances require it; but the lubricator may be  
85 connected to the main supply-pipe in any other convenient way.

Heretofore separate lubricators have been placed upon each engine, supplied from one generator. This arrangement necessitated the  
90 use of a large number of lubricators and increased care and labor in watching and filling. I have discovered that by my invention not only is the expense of the lubricators and labor and time saved, but also I have effected a saving  
95 in the oil, while accomplishing a perfect and uniform lubrication of all the engines.

The second part of my invention is shown in



Fig. 2, in which B is the oil-cup; C, the connecting-pipe, having the steam-passage *c*, and an oil-passage, *e*, the same as those heretofore described. In Fig. 1, however, as in my former patent, the steam passage or pipe *c*, through which the partially-condensed steam enters in drops into the oil-cup, is formed by a piece of pipe marked in Fig. 1 *c'*, which is bent aside so that the end of it comes near the glass of the oil-cup. This arrangement of the bent pipe is for the purpose, common in all such devices, of exposing the drop of water as it issues from the pipe to view from the outside by reason of its proximity to the glass. This requires the location of the pipe *c'* near the top of the cup, where it will be surrounded by the oil, which maintains its position on top of the water; but this arrangement keeps the cup unequally heated. I have therefore provided within the oil-cup a pipe, *h*, as shown in Fig. 2. This is in line with and directly under the entrance of the pipe *c*. It is closed at the bottom, but has a perforated head at the top, through which passes an open pipe, 2, the same being a continuation of the pipe *c*. The pipe 2 is threaded and passes through the upper threaded head, affording an adjustable support for the tube *h*. Small openings are also made in the head of the pipe *h*. Into this pipe *h*, I fix the pipe *i*, extending it to a point near the wall of the oil-cup. When the apparatus is in operation the condensed steam enters the pipe 2 and fills the tube *h*, and, rising, escapes in drops through the tube *i*, exposing itself at the glass with the movement of each drop. The tube *h* may extend down as near as desirable to the bottom of the cup, and as the partially-condensed steam is discharged from the end of the pipe 2, and then rises, it imparts uniformly its heat throughout the cup, while also discharging drops inside, near the top of the oil-cup.

The third part of my invention is shown in Figs. 3 and 4. In order to render the drops of water from the pipe *c'* as plain and distinctly visible as possible, I form a cavity in the side of the oil-cup near its upper end, as shown at *k*. This may be a hollow boss formed in the

wall of the cup or a short piece of tube inserted and secured into the hole in the wall. It is provided with a disk of glass, (marked *l*), preferably concavo-convex, as shown in Fig. 3. The end of the tube C is cut inclined, the lower end of it being arranged to touch, or nearly touch, the disk *l*. As the drops of water emerge from the pipe *c'* the following drop pushes that before it and causes it to rise in the larger space between the glass and the upper side of the tube, where it curves or topples over, as shown at *m* in Fig. 4, forming an enlarged surface, which is further magnified by the form of the glass. This construction allows me to use a metallic cup, which on some accounts is more desirable than a glass cup.

Having thus described my invention, what I claim is—

1. The combination of the main steam-supply pipe with two or more branch pipes, separate engines connected therewith, and an automatic lubricator connected to the main supply-pipe between the generator and the branch pipe nearest thereto, all substantially as described.

2. The combination of the steam-supply pipe and branch pipes, the pipe D, and pipe C *e e*, all in communication with the lubricator, substantially as set forth.

3. The pipe *f*, in combination with the pipe D, and the pipes C *e e*, with steam-supply pipe and lubricator, as set forth.

4. In combination with the oil-cup of a lubricator and with the steam-passage *c* thereof, the tube *h*, pipes 2 and *i*, all combined and operating substantially as set forth.

5. In combination with the oil-cup of a lubricator, the hollow bias or tube *k* and glass *l*, and the pipe *c'*, having inclined end or face, all arranged to operate substantially as described.

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

ROSS J. HOFFMAN.

Witnesses:

E. A. DICK,

F. L. MIDDLETON.