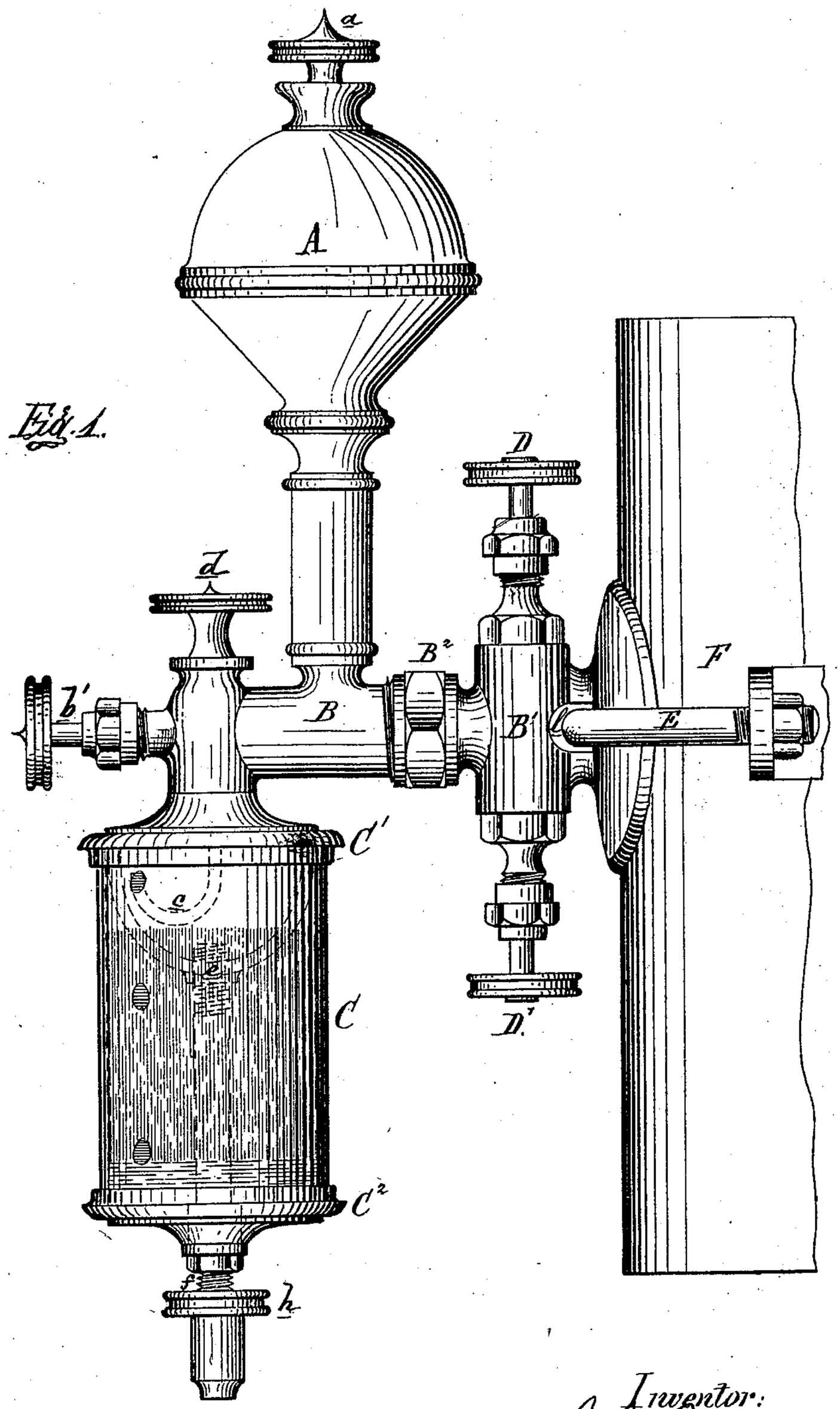
2 Sheets—Sheet 1.

J. J. & J. V. RENCHARD.

LUBRICATOR.

No. 184,426. Patented Nov. 14, 1876.

Fig. 1.



Attest:
Edward Barthelt
Chas J. Hunt

Inventor:
J. J. Renchard
J. V. Renchard
By Atty
Thos S. Sprague

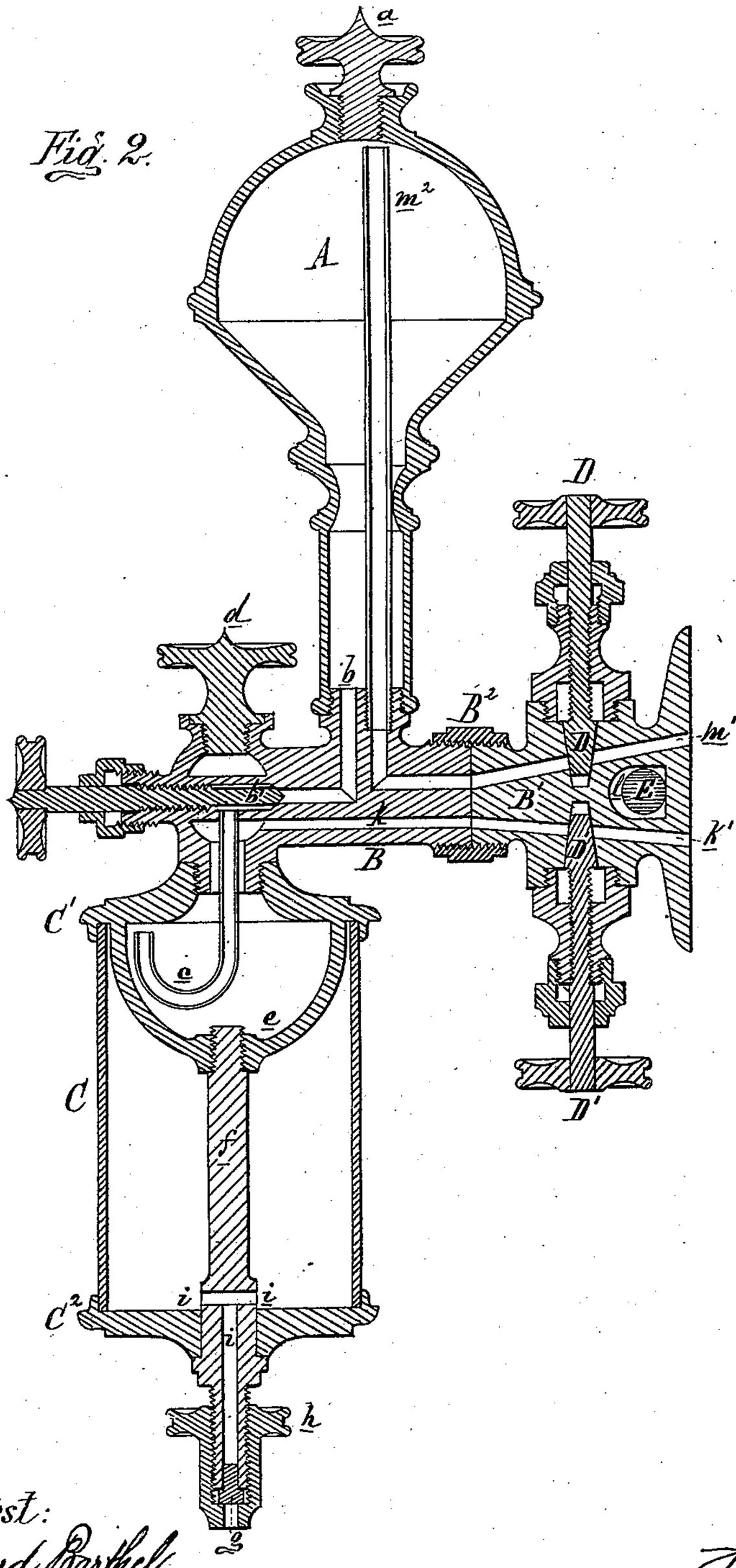
2 Sheets—Sheet 2.

J. J. & J. V. RENCHARD.

LUBRICATOR.

No. 184,426. Patented Nov. 14, 1876.

Fig. 2.



Attest:
Edward Barthel.
Charles J. Stewart

Inventor:
J. J. Renchard
J. V. Renchard
By Atty
Thos. S. Sprague

UNITED STATES PATENT OFFICE.

JOHN J. RENCHARD AND J. VINCENT RENCHARD, OF DETROIT, MICHIGAN.

IMPROVEMENT IN LUBRICATORS.

Specification forming part of Letters Patent No. **184,426**, dated November 14, 1876; application filed August 5, 1876.

To all whom it may concern:

Be it known that we, JOHN J. RENCHARD and J. VINCENT RENCHARD, of Detroit, in the county of Wayne and State of Michigan, have invented an Improved Lubricator, of which the following is a specification:

Our invention relates to an improvement in devices for coupling the lubricator to the steam-pipe of an engine, and so constructed that the said steam-pipe may be tapped and connections made while steam is up; and, further, in the combination of these devices and the peculiar lubricator, as more fully hereinafter explained.

Figure 1, Sheet 1, is an elevation, showing our device applied to the steam-pipe of an engine. Fig. 2, Sheet 2, is a vertical section of the same.

In the drawing, A represents a reservoir, provided with a screw-plug, *d*, at the top, through which it can be filled with water. The stem of the reservoir is screwed onto the top of a horizontal trunk, B, in which there is an angular passage, *b*, communicating with the stem of the reservoir, to conduct water from the latter into an oil-cup, C, suspended under the outer end of the trunk. The outer end of the passage *b* forms a seat for a compression-valve, *b′*, horizontally tapped through the end of the trunk. Into an enlarged continuation of the passage is tapped the upper and longer leg of an inverted siphon-tube, *c*, whose short leg terminates near the top of the cup, and close to the side thereof usually observed. *d* is a screw-plug tapped into a filling-hole cored in the top of the trunk, at the outer end thereof. The tube *c* passes up in the middle of the lower part of this filling-hole.

The cup C is a cylinder of thick glass, fitted between two flanged heads, C^1 C^2, the former being screwed onto a boss on the under side of the trunk. On its under side is cast a crab, *e*, into the center of which is tapped a center-bolt, *f*, which clamps the cylinder C between the two heads. The lower part of the bolt *f* has a cross-passage, *i*, drilled in it, to draw off the water, which passage is closed at the lower end by a wing-valve, *g*, which is seated by a wheel-nut, *h*, screwed onto the lower end of the center-bolt. The trunk has a feed-passage, *k*, drilled in it, communicating with the filling-hole.

If the lubricator is used for supplying a journal-bearing with oil, a tube is connected with the passage *k*, for conveying the oil thereto.

To operate it, the valve *b′* is closed, and the reservoir A is to be filled with water. Any water in the cup C is then emptied, (through the valve *g*,) and the cup filled with oil by unscrewing the plug *d*, which is then to be replaced. The "feed" of the oil is regulated by the valve *b′*, which can be adjusted so as to allow water to flow from the reservoir into the cup, drop by drop, at long or short intervals, to displace an equal volume of oil through the feed-passage *k*. The water drops from the siphon *c* close to the wall of the cup, and each drop of water is clearly visible as it settles down through the oil into the bottom of the cup.

One of the advantages of having the tube *c* of the form shown (an inverted siphon) is as follows: If the tube were straight, the water, in its descent, would press up the oil, which is of less specific gravity, and the water and oil would thus gradually change places; but, by making it in the shape of an inverted siphon, and being always full of water, the oil cannot force its way down through the short leg, and hence takes another outlet. For the same reason, floating impurities or solid substances in the oil are excluded by this water-seal from rising up to get between the valve *b′* and its seat, and thus derange the feed of the cup.

The filling-plug at the top of the reservoir should be loosened enough to let the pressure of the atmosphere come upon the water; otherwise, when the said reservoir is partly emptied, a vacuum would form therein, and the water would cease to flow out.

If the lubricator is to be attached to the steam-pipe of an engine, a continuation, B^1, of the trunk is provided, having its outer end saddle-shaped to fit the pipe. By means of the union-coupling B^2, the main trunk B is coupled with the continuation B^1, which is provided with two compression-valves, D D′, the former on its upper, and the latter in its under surface, both closing, like plugs, into

sockets in the body thereof. Next the saddle, a passage, *l*, is transversely cored in the body B^1, to pass a stirrup, E, through, so that it may be used to clamp the body to the side of the steam-pipe F. A passage, *k'*, is drilled through the body B^1, on a downward incline, to connect at its upper end with the coincident feed-passage *k*. The passage *k'* may be closed by the valve D'. A similar passage, m^1, is drilled, on an upward inclination, through the upper part of the body B^1, and a continuation thereof is drilled in the main trunk B, from which, by a tube, m^2, is carried up into the top of the reservoir A, where it terminates in a minute aperture. The passage m^1 may be closed at will by the valve D.

The saddle is packed by two soft copper rings, one surrounding the mouth of each passage, m^1 or *k'*, which rings are compressed between the saddle and pipe when the former is forced against the latter under the pressure of the clamp; or any other means may be employed to pack the joint and prevent the leakage of steam.

To tap the steam-pipe under pressure, clamp the body B^1 thereon, as above described; then, by means of the union-coupling, screw on a removable plate at the other end, with a stuffing-box for the shank of a twist-drill, which latter is first inserted in one of the passages—say the upper one—both valves D D' being open. Drill the hole in the pipe, and retract the drill far enough to close the valve D. Withdraw the drill, turn the plate half-way around, and insert the drill in the lower passage. Drill the second hole in the pipe, retract the drill far enough to close the valve D'; then detach the plate and couple on the lubricator-trunk, and open the valves D D' and *b'*, when the feeding of the oil will begin.

The purpose of the passage m^1 *m* and tube m^2 is to prevent the formation of a vacuum in the reservoir as the water flows out, by keeping up a pressure therein equal to the back-pressure in the cup.

What we claim as our invention is—

1. The trunk continuation B^1, provided with the passages *l k' m*^{1}, valves D D', and coupling B^2, for connecting the trunk B therewith, and adapted to be clamped to the side of a steam-pipe by means of a stirrup, substantially as described.

2. In a displacement-lubricator, substantially as described, the combination of the elevated water-reservoir A, the trunk B, the suspended oil-cup C, the passages *b k*, and the extension B^1, provided with valves D D' and passages *l k' m*^{1}, constructed and arranged substantially as described and shown.

3. In a displacement-lubricator, substantially as described, the combination, with the elevated water-reservoir and suspended oil-cup, of the inverted siphon-tube *c*, through which the water passes into the said oil-cup, substantially as described and shown.

JOHN J. RENCHARD.
J. VINCENT RENCHARD.

Witnesses:
H. S. SPRAGUE,
EDWARD BARTHEL.