A. Z. BODA.

LAMP.

No. 186,980 Patented Feb. 6, 1877.

Fig. 1.

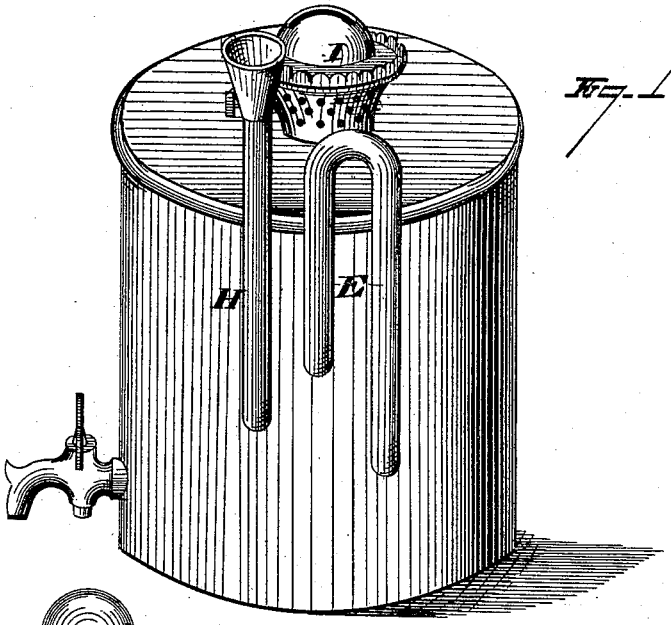


Fig. 2.

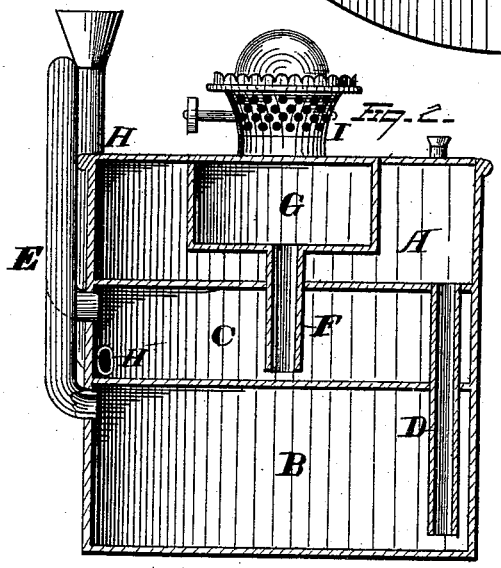
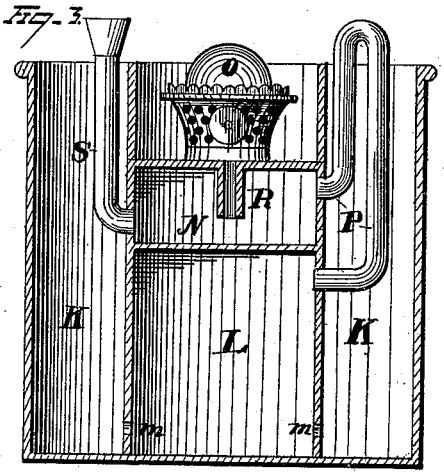


Fig. 3.



WITNESSES

Ed. L. Nottingham

A. W. Bright

INVENTOR

Abia Z. Boda

By Leggett & Leggett,

ATTORNEYS.

UNITED STATES PATENT OFFICE.

ABIA Z. BODA, OF CLEVELAND, OHIO, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO GEORGE B. BURTON AND H. P. MALONE, OF SAME PLA

IMPROVEMENT IN LAMPS.

Specification forming part of Letters Patent No. **186,980**, dated February 6, 1877; application filed December 20, 1876.

To all whom it may concern:

Be it known that I, ABIA Z. BODA, of Cleveland, in the county of Cuyahoga, and State of Ohio, have invented certain new and useful Improvements in Oil Stoves and Lamps; 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 oil stoves and lamps, and consists in the application of the principle of the Hiero fountain thereto, whereby, through the medium of the device hereinafter described, the oil is steadily and unintermittingly fed to the burner as it is consumed, and until the oil is exhausted. The wick-tube is, also, always kept full and cool; and the upper end of the wick is prevented from becoming charred. A better light is also produced than when the oil is raised to the burner by capillary attraction, and the brightness and intensity of the light produced is practically the same when the oil is very nearly exhausted as when the reservoir is full. At the same time a stratum of water is interposed, and may be maintained at all times, between the burner and the oil-chamber, whereby the liability to accidents is greatly diminished.

In the drawing, Figure 1 represents a perspective view of an oil-stove embodying my invention. Fig. 2 is a vertical sectional view of the same. Fig. 3 represents a sectional view of a modification.

My invention is applicable as well to lamps as to oil-stoves, though for convenience sake, only the latter is illustrated in the drawing, for the only difference would be in the external appearance.

The device, as shown in the drawing, is constructed of three principal chambers, reservoirs, or receptacles, of which the upper one A is a water-reservoir only, having a suitable inlet, through the medium of which it is supplied with water, and through which also the external air has access to the interior. B is an air and water chamber, which communicates with chamber A by means of the pipe D. C is the intermediate air and oil chamber, which communicates with chamber B by means of the pipe E. Into this oil-chamber or reservoir also passes the wick-tube F, and the feed-pipe H, by which latter oil is supplied to the same. G is a small secondary oil-chamber, situated a short distance below the burner, which is intended to catch any accidental overflow of the oil, and also to keep a small reservoir of oil near the burner. I is the burner.

In the modification represented in Fig. 3. K K is the water-chamber. L is the air and water-chamber, and N the air and oil chamber. P is the pipe which connects chamber L with chamber N. R is the wick-tube, and O the burner. *m m*, the openings which establish communication between chambers K and L. S is the pipe by which the oil-chamber is supplied with oil.

The operation of the device is as follows: The oil-chamber C is filled, or nearly filled, with oil through the feed-pipe H, which enters the chamber near the bottom thereof. Chamber A is then filled with water, which will gradually pass into the air and water chamber B, by means of the tube D, which extends nearly to the bottom of said chamber. As the water rises in this chamber B, it compresses the air in the same, and in the connecting-pipe E, and also the air in the oil-chamber C, when part of the oil has been consumed, thus forcing the oil up through the wick-tube F to the burner I. As the oil is removed in the process of burning it tends to remove or rather lessen the compression of the air; but this tendency is neutralized by an additional quantity of water descending through the tube D, thus increasing the volume of water in chamber B, which, of course, tends to compress the air therein. Thus, as oil is removed from chamber C, water is added to that in chamber B, and a practically uniform compression of the interposed air is continually preserved. The moment that the level of the oil in chamber C falls below the mouth of wick-tube F, the supply of oil is practically cut off, as the air will escape by the feed-pipe H, the opening of which, leading into the chamber C, is arranged on a level

with the mouth of wick-tube F, before referred to.

I prefer to construct the water-chamber A of greater capacity than the air-and-water chamber B, so that always a certain quantity of water, greater or less, may be retained in the upper chamber, to exert its cooling influence on the wick-tube F. This, however, is not an essential feature of my invention, as the chambers may be of equal size, or the lower chamber may be larger than the upper, without departing from the spirit thereof. When, however, the upper chamber A is of greater capacity than the lower chamber B, then it is necessary that the tube E should be carried to such a height as to prevent an overflow of water into the oil-chamber C, which must be above the level of the remaining water in chamber A, after chamber B is entirely filled.

The form of the stove may be round, square, or of any other shape desired, and the pipes H and E can be arranged within the outer walls of the stove as well as without the same. The upper reservoir may be constructed with or without a cover.

In the modification shown in Fig. 3 the reservoir corresponding to A, in Fig. 2, is arranged on both sides or around the air and water chamber, and the oil chamber is arranged above the latter; but this construction has one disadvantage in that the wick-tube is not surrounded by the water-reservoir. The wick-tube F is made of such a length, or extended to such a height, as to practically prevent any overflow of the oil from the burner.

It will be observed that the air-passage tube E connecting the air-chamber with the oil-reservoir is continued up, so that its extreme upper extremity is in a horizontal plane higher than that of the upper surface of the water-chamber. By this construction the hydrostatic column, even when the water-chamber is full, is on a lower level than the highest part of the vertical tube E, and it is hence impossible that any carelessness should cause an introduction of water into the oil-reservoir through this passage E.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The fountain attachment for oil-stoves, lamps, &c., consisting in the combination, with the connecting mechanism, of a vertical series of chambers, the first of the series being the water, the second the oil, and the third the air chamber, the same operating as described, whereby the oil is forced up in the wick-tube, and the latter is kept cool by its passage through the upper water-pressure chamber, substantially as and for the purpose set forth.

2. The combination, with the upper water-chamber located just below the burner, the lower air-pressure chamber, and the intermediate oil-reservoir, of pipes connecting, respectively, the air-pressure chamber with the water and oil chambers, the latter provided with a wick-tube extending down from the burner through the water, and nearly to the bottom of the oil-chamber, substantially as and for the purpose set forth.

3. The combination, with the oil-reservoir located between the upper water and lower air chamber, together with their connecting mechanism, of the wick-tube and the small secondary oil-chamber, the latter suspended within the water-chamber and just below the burner, substantially as and for the purpose set forth.

4. In a fountain-attachment for lamps, oil-stoves, &c., the combination, with the oil-reservoir located in a vertical series between the upper water and lower air chambers, of an air-passage tube connecting the air-chamber with the oil-reservoir, the said air-tube extending up into a horizontal plane above that of the hydrostatic column, whereby flow of water into the oil-chamber is obviated, substantially as and for the purpose described.

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

ABIA Z. BODA.

Witnesses:
FRANCIS TOUMEY,
WM. BEHRENS.