

E. B. HORN.
ARGAND LAMP.

No. 3,735.

Patented Sept. 11, 1844.

Fig. 2.

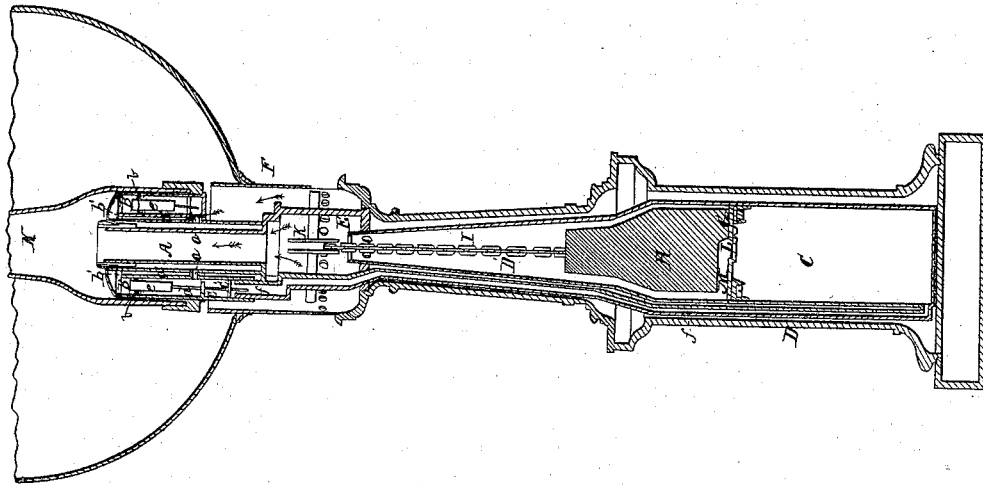
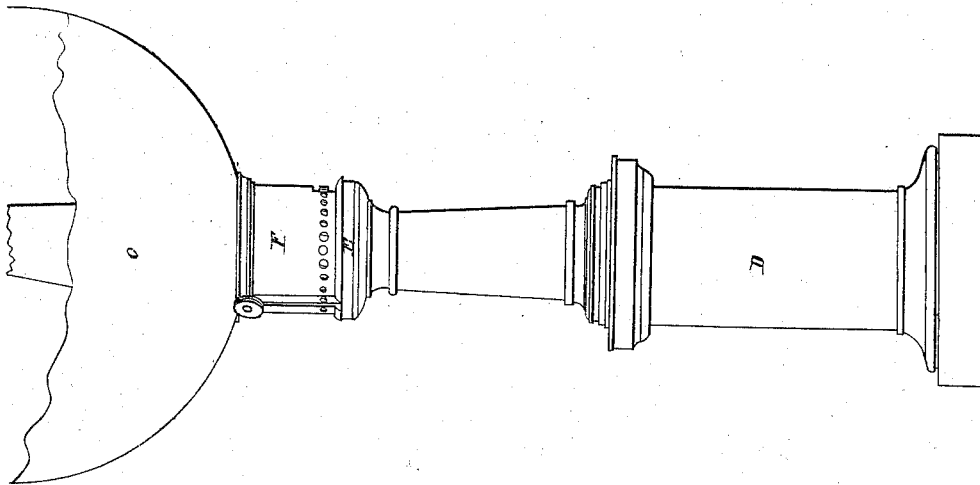


Fig. 1.



UNITED STATES PATENT OFFICE.

EDWIN B. HORN, OF BOSTON, MASSACHUSETTS.

SELF-SUPPLYING LAMP.

Specification of Letters Patent No. 3,735, dated September 11, 1844.

To all whom it may concern:

Be it known that I, EDWIN B. HORN, of Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful improvement in Argand lamps or in mechanism applied thereto for maintaining the oil at a constant level with respect to the upper or inflamed part of the wick, and that the following description and accompanying drawings taken in connection constitute a full and exact specification of the construction and operation of my invention.

Figure 1, of the drawings above mentioned represents, a side elevation of a lamp constructed with my improvement, and Fig. 2, is a central and vertical section of the same.

The burner or concentric case thereof in which the wick is usually inserted is exhibited at A, in Fig. 2. It has a fountain B, surrounding it extending downward about half way from the top to bottom of it—and communicating with it by one or more tubes or passages (*a*). Around the burner, and between the said fountain and the burner, there is to be an external air and oil passage as seen at (*a'*, *a'*) in Fig. 2, the upper part of the fountain opening into the said passage as seen at *b' b'*. The fountain should extend both above and below the level (*b*, *b*.) to which we desire constantly to keep the oil in the burner. A valve *c* opening downward is inserted in the bottom of the fountain B, the said valve having a stem *d*, extending from and above it and attached at its (the stem) top to a suitable float *e*, which is partially immersed in the oil when the fountain is filled to its proper level and is borne up thereby so as to close the valve *c*, upon its seat. The stem *d*, of the valve and float are to be properly sustained and guided so as to play vertically and a tube *f*, should be connected with the fountain so as to form a communication between it (through the opening of the valve *c*) and a main reservoir or oil chamber C, situated beneath the burner and within the lamp stand or case D, as seen in Fig. 2. Just beneath the valve *c* and upon the rod or stem *d*, and within the pipe *f*, there is an additional valve *c'*, which is arranged so as to open upward—and to be fully open when the valve *c* is closed upon its seat—and to be closed upon its seat when the valve *c* is fully opened.

The tube *f* opens into the reservoir C at or near its bottom. The reservoir in this case is formed cylindrical, and has a tube *D'*, extending upward from its top and opening into and connected with an oil cup E, upon the upper edge of which a part F, of the ornamental case of the lamp rests, and is made removable in order that the oil chamber C may be supplied with oil at any time whenever necessary—the same being effected by raising the part F, and pouring the oil into the cup E, from whence it flows down through the tube *D'*, and into the oil chamber. The oil is forced upward through the tube *f*, and into the fountain B by means of a weighted piston G which plays within the cylindrical barrel of the oil chamber C and is borne down upon the surface of the oil by a weight H, to which it is attached and which weight, together with the piston may be elevated at any time by means of a chain I passing over a pulley K, and having other proper appurtenances or by any other contrivance suitable to the purpose. The piston G should have a valve L, fitted to its lower side and opening downward from which (valve) a passage M formed through the weight, should communicate with the tube *D'*, so as to permit the oil poured therein to flow through the opening of the valve L into the oil chamber C. The depression of the weight H, and piston upon the surface of the oil in the chamber C, will close the valve L. The glass chimney which is usually applied to the burner is seen at N, Fig. 2, and the globe or glass shade which encompasses the chimney, at O, in Fig. 1.

I am aware that there may be other means or mechanism employed for causing oil to flow into the fountain B, or through the tube *f* into the said fountain, with a pressure sufficient to introduce it into the fountain, whenever the valve *c*, thereof is opened, and I intend to make use of all known means, for this purpose. In some cases the main reservoir may be elevated above the fountain B, so as to cause the oil to descend into the latter by the force of gravity.

From the above it will be seen that by means of the constant pressure exerted by the weighted piston upon the oil in the chamber C, it will be driven up the tube or passage *f*, and through the opening of the valve *c*, and into the fountain B, and

this will continue until the float *e*, is elevated to a sufficient height to close the valve *c*. Now as the oil is consumed by the flame a descent of the float *e* will take place, which opening the valve *c* will cause a like quantity of oil to rush from the tube *f*, into the reservoir and thus the equilibrium or level of the oil therein will be always maintained while there remains oil in the chamber *C*. The advantage of thus keeping up a permanent level of the oil in regard to the inflamed part or top of the wick, will be apparent to every person using a lamp of this kind, for in ordinary Argand lamps, as the consumption of oil gradually takes place, the level of the surface thereof is constantly lowering with respect to the top of the wick. Furthermore, as the wick is gradually consumed and grows shorter by occasional trimming of the same, the gradual elevation of it removes it by degrees out of the oil, the two operations combined creating, an increasing deficiency in the supply of oil to the wick. Therefore it is a great desideratum to obtain a method of keeping the oil, at a constant level with respect to the inflamed portion of the wick.

The object of the valve *c*, is to prevent any of the oil which is thrown up into the fountain from returning into the chamber *C'* when the piston and weight is raised. It is found that in a close fountain the air which occupies more or less of the space of the interior will (when the force pump is raised and depressed) be blown into the wick space or chamber of the burner and with such force as often to extinguish the

flame, by making an opening *b' b'*, through the upper part of the inner side of the fountain *B*, the air and surplus oil be blown out through the same, and the latter will run down the air passage between the fountain and the burner. It often occurs that small belts of wood or other extraneous matter in the oil, will catch between the valve *c*, and its seat so that when the oil is forced up into a chamber closed at top, the surplus will rush into and up the wick chamber to such an extent as to generally extinguish the flame. This evil is prevented by making one or more orifices in the upper part of the fountain as seen at *b' b'*. By having an outer air passage between the fountain and burner, the external current of air acting upon the flame is brought into more direct and better contact with the flame, than the same is when it traverses over the outside of the fountain.

Having thus set forth my invention I shall claim—

1. The combination and arrangement of the burner and fountain containing the float with the air and oil passage between them substantially in the manner described.

2. Also forming one or more openings through the inner side of the upper part of the fountain, for the escape of the air and surplus oil in the manner, and for the purpose as set forth.

EDWIN B. HORN.

Witnesses:

R. H. EDDY,
JOHN NOBLE.