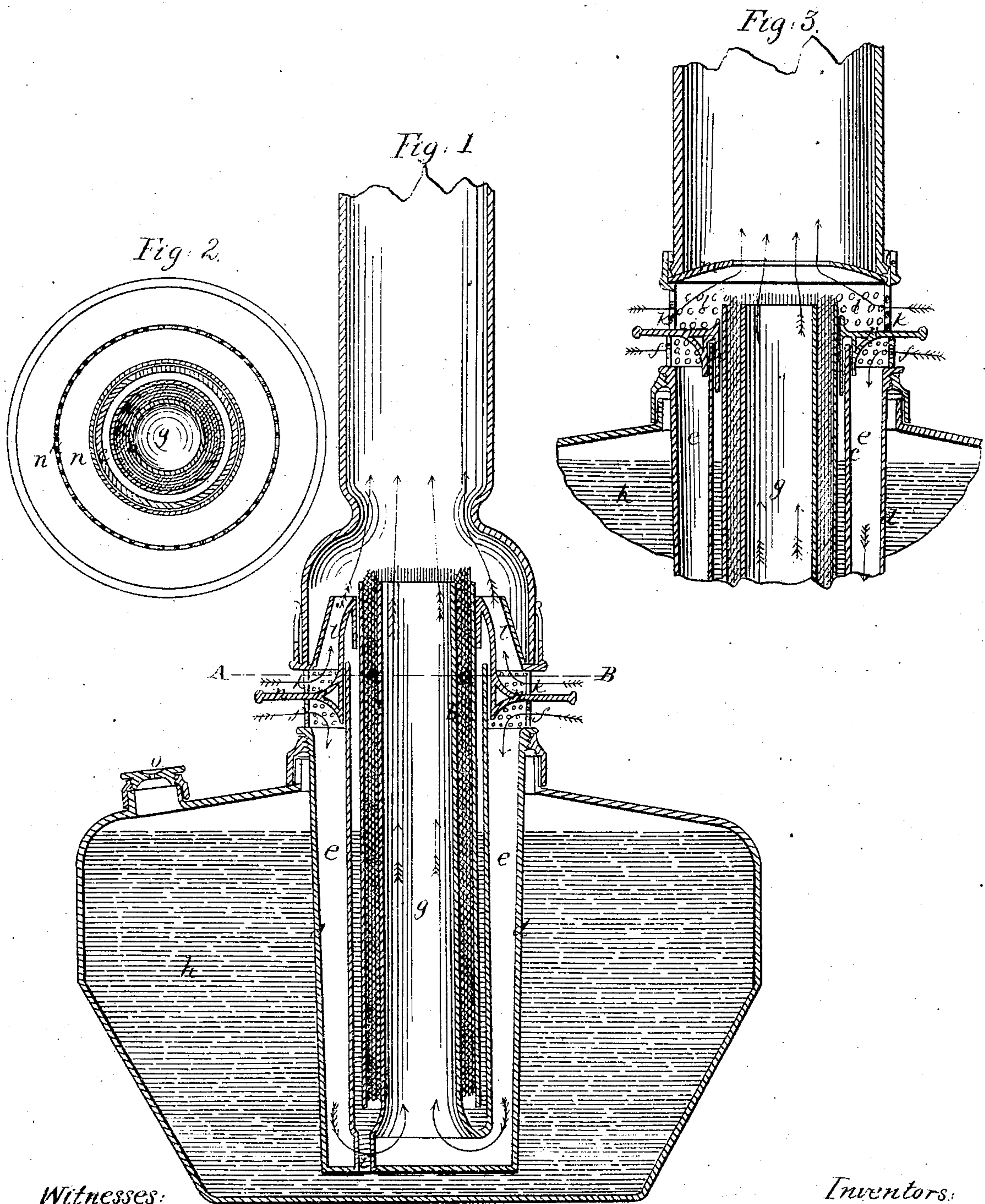


Murray & Howland.

Argand Lamp.

N^o 73455

Patented Jan. 21, 1868.



Witnesses:

M. W. Pond Jr
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Inventors:

A. K. Murray
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United States Patent Office.

A. K. MURRAY AND A. B. HOWLAND, OF TITUSVILLE, PENNSYLVANIA.

Letters Patent No. 73,455, dated January 21, 1868.

IMPROVED ARGAND-LAMP FOR BURNING PETROLEUM.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that we, A. K. MURRAY and A. B. HOWLAND, both of the city of Titusville, county of Crawford, and State of Pennsylvania, have invented certain new and useful Improvements in Argand-Lamps for Burning Crude Petroleum and other volatile hydrocarbons; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification, and to the letters of reference marked thereon.

The nature of our invention consists in so constructing an argand or annular-wick lamp-burner, that crude petroleum or any other volatile fluid hydrocarbon can be safely used under all circumstances for illuminating purposes, and a perfect combustion obtained, while our whole apparatus is so compact that it can be substituted for the common flat-wick kerosene-burner, and attached to any ordinary glass lamp. An annular wick may be thus used at a very slight comparative expense, yet with all the well-known advantages of the most costly metal argand-lamps.

In order to burn crude petroleum safely and with perfect combustion, it is necessary to supply the interior as well as the exterior surface of the annular wick and flame with a strong, steady current of oxygen, (or atmospheric air,) and at the same time it must be so arranged that there shall be no possible chance or risk incurred of the oil within the lamp becoming heated, by contact with the wick-tubes or other heated surfaces. It is also necessary to keep the top of the wick as near to the level of the oil within the lamp as possible, consistent with safety and convenience, so that the crude particles of the petroleum may be drawn up the wick to the flame; otherwise the wick will become clogged with these crude particles, and only the lighter portions or gas will be burned. The accompanying drawings illustrate our method of construction—

Figure 1 being a vertical section of the lamp and burner,

Figure 2 a cross-section of the same on line A B, and

Figure 3 a vertical section of a burner, of a somewhat different form, for special uses.

The form of construction of the upper part of the burner, shown in fig. 1, is intended for hand and portable lamps for general use, it being so arranged that the current of air supplying the outer surface of the flame shall not, when the lamp is moved about from place to place, impinge directly upon the flame, and cause it to waver and flicker. The arrangement shown in fig. 3 is intended for stationary chandelier and table-lamps, which are not ordinarily moved about nor subject to unsteady currents of air, and in this form we are able to bring the flame nearer the surface of oil in the lamp than in the former.

Parts performing similar functions are indicated by similar letters in each of the figures.

a represents the annular or "argand" wick, contained between the wick-tubes *b* and *c*, said tubes being connected and soldered together at their lower ends, forming an annular chamber for holding the wick. *d* is a third tube, placed around and concentric with the wick-tubes, forming an annular air-passage or chamber, *e*, around said outer wick-tube. The tube *d* is closed at the bottom, and is provided at its upper end with a screw-thread, by means of which the whole apparatus can be screwed into the ring or collar of an ordinary lamp. Air for supplying the interior of the flame enters the perforated casing *f*, at the top of the chamber *e*, passes thence down through said chamber *e* under the wick-tubes, and up through the centre space *g* to the interior surface of the flame. Oil is supplied from the reservoir or lamp *h* to the wick, by means of the small feed-tube *i*. By this arrangement the oil contained in the reservoir *h* is perfectly protected from becoming heated, by the constant current of cold air passing between it and the wick-tubes. Air is supplied to the outer surface of the flame through the perforated casing *k* and air-passage *l*, being directed against the flame properly, in the form of burner shown in fig. 3, by means of the perforated disk *m*. In fig. 1, a contracted chimney is used, and in fig. 3 the disk *m* is so formed that a straight chimney may be used.

It being necessary to keep the flame as low down as possible, for reasons hereinbefore stated, it is important to provide some means of separating the two currents of air entering the perforated casings *f* and *k*, and giving to each its proper direction, otherwise the greater portion of it will pass through the passage *l* by the nearest route to the flame, and the arrangement for supplying air to the interior surface of the flame will be ineffective. For this purpose we provide a partition or flange, *n*, which is arranged to embrace the outer wick-tube *c*, and extends outward to or beyond the casings *f* and *k*, sufficiently to separate them, and the currents of

air entering them, and to give to each current its proper direction. Without the use of this partition or flange the light is unsteady and flickering, and combustion is imperfect; with it, the inner and outer currents of air are equally steady and effective, and a steady, brilliant light, and perfect combustion are obtained. The casings *f* and *k* may be more or less open or closed, according to the amount of air required. The direction of the interior and exterior currents of air is indicated on the drawing by red arrows. To allow of the free escape of any gases accumulating within the lamp, and of the ingress of air to occupy the place of the same, a perforated stopper, *o*, is provided to the usual filling-aperture. The wick is raised and lowered by the usual means, by revolving the upper detachable portion of the burner, of which the flange *n* may form a part. The edge of the flange may be milled, and the wick adjusted by turning the flange.

By the above-described arrangement of burner, crude petroleum, as it issues from the wells, may be burned with perfect safety, at one-third the cost of any other oils, and with a light of much greater illuminating power than can be obtained from refined oil or any other fluid in use. At the same time the various light products and results of the distillation and refining of the crude oil can be used with equal safety.

We do not claim broadly the manner of supplying air to the interior of the flame through the passages *e* and *g*, as we are aware that lamps have been heretofore constructed with a similar arrangement of air-passages, but,

What we claim as our specific invention, and desire to secure by Letters Patent, is—

1. The employment of the partition or flange *n*, or its equivalent, arranged with relation to the air-passages *e* and *l*, substantially as and for the purposes set forth.
2. The arrangement and combination of the disk *m*, perforated casing *k*, and partition or flange *n*, with the annular wick-tubes, substantially as and for the purposes set forth.
3. The general arrangement and combination of the flange *n* and air-passages *e* and *l* with the annular wick-tubes, substantially as and for the purposes set forth.

Dated at Titusville, Pennsylvania, this twenty-ninth day of July, A. D. 1867.

A. K. MURRAY.
A. B. HOWLAND.

Witnesses:

M. W. POND, Jr.,
G. A. CHASE.