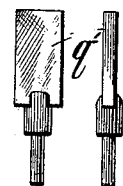
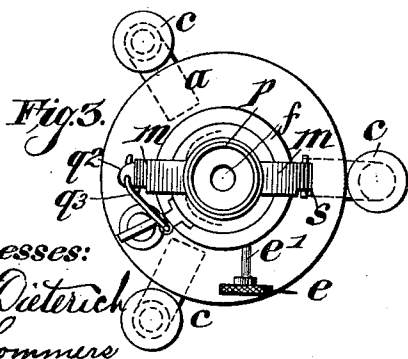
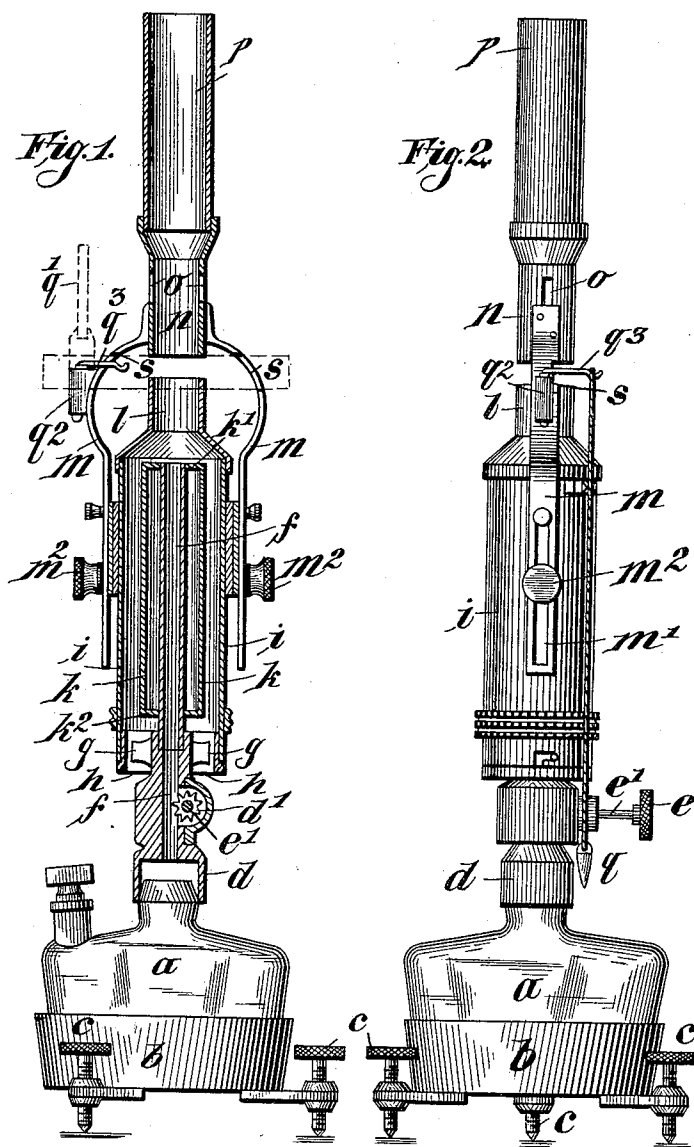


(No Model.)

A. G. V. HARCOURT.
STANDARD OIL LAMP.

No. 480,013.

Patented Aug. 2, 1892.



Witnesses:
H. G. Dieterich
B. Sommers

Fig. 4.

Inventor:
Augustus G. V. Harcourt,
By *Henry M. M. M.* atty.

UNITED STATES PATENT OFFICE.

AUGUSTUS GEORGE VERNON HARCOURT, OF COWLEY GRANGE, ENGLAND.

STANDARD OIL-LAMP.

SPECIFICATION forming part of Letters Patent No. 480,013, dated August 2, 1892.

Application filed December 4, 1888. Serial No. 292,683. (No model.) Patented in England September 3, 1887, No. 11,985, and in France June 20, 1888, No. 191,339.

To all whom it may concern:

Be it known that I, AUGUSTUS GEORGE VERNON HARCOURT, a subject of the Queen of England, residing at Cowley Grange, in the county of Oxford, England, have invented certain new and useful Improvements in Standard Oil-Lamps, of which the following is a specification, and for which I have secured Letters Patent in Great Britain, No. 11,985, dated September 3, 1887, and in France, No. 191,339, dated June 20, 1888.

My invention relates to improvements in oil-lamps; and the object of the same is to obtain a definite and regulated amount of light, so as to be conveniently used as a standard for measuring other lights.

I attain the object by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents a front elevation of the lamp, partly in section. Fig. 2 shows a side elevation of the lamp. Fig. 3 is a plan of the lamp, and Figs. 4 and 5 illustrate two different attachments for facilitating the photometric observations.

I provide a vessel *a*, which may conveniently be of glass and of the form and dimensions of an ordinary spirit-lamp, to contain the oil or liquid with which it is fed and which may conveniently be "pentane," obtained by purification and repeated rectification from American petroleum. This liquid is so volatile that it is converted into gas within the burner, the wick serving only to bring the liquid to a part of the tube where the heat is sufficient to cause it to evaporate at the required rate. I mount this glass vessel upon a stand *b*, provided with leveling-screws *c*. To the vessel is fitted a cap *d*, surmounted by a wick-tube *f*, provided with any suitable wick-raising devices, as a double-spiked wheel *d'*, whose spindle *e'* carries a disk *e*. Around the upper part of this tube *f*, whose diameter may be about a quarter of an inch and its length six or seven inches, is a second tube *k* of about one inch in diameter and four inches in length, which serves as a jacket to keep the temperature within the inner tube *f* more constant and to guide

the air-current, upon which the steadiness and brightness of the flame depends. The two tubes are jointed by flat plates *k'* *k*² above and below, and thereby form a closed space between said tubes, and said parts *f* *k* constitute the burner of the lamp.

Attached to the inner tube by branches *g* is a gallery *h*, carrying a metal chimney which is composed of two sections or parts adapted for vertical adjustment relatively to each other. The lower section *i* surrounds both the burner and the lower part of the flame. Above the burner the part *l* of this chimney-section *i* is reduced to a diameter intermediate between that of the parts *k* and *f* of the burner, and terminates at a short distance above said burner. The upper adjustable section *n* *p* of the chimney is arranged in the vertical plane of the lower section *l* and incloses the upper part of the flame. The lower portion *n* of the adjustable section *n* *p* of the chimney is of the same diameter as the upper part *l* of the lower section *i*, while the upper portion *p* of said adjustable section is of increased diameter. The adjustable portion *n* *p* of the chimney is connected with the lower portion *i* by flat curved arms *m*, conveniently two in number and sufficiently removed from the flame on either side as not to affect it. The width of these arms is one-half the diameter of the contracted portion of the chimney where they encompass the flame, and the vertical portion of said arms is slotted, as shown in Fig. 2, and may be secured in any desired position within the limits of the length of said vertical slots by means of set-screws *m*².

In the space between the upper and lower sections of the chimney the central part of the long flame which the burner produces is alone visible, and as the upper chimney-section is adjustable the light emitted at that point may be regulated in any desired manner.

For the purpose of rapidly, conveniently, and accurately adjusting the space between the stationary and movable sections of the chimney, in order to obtain a light of a given candle-power, I employ discoidal gage-blocks

v, Fig. 5, each of said blocks being of a given thickness corresponding with a given candle-power.

I have found that in burning pentane a light equivalent to one-half, one, and one-and-a-half standard English parliamentary candle-power will be emitted from the space between the chimney-sections when said space is of a height equal to 7.50, 16, and 27.50 millimeters, respectively, so that by the use of gages *v* of corresponding thickness said space can be readily adjusted to the desired candle-power by the interposition of a gage of proper thickness between said sections, and by adjusting the upper chimney-section until it contacts with the upper face of the gage, which is removed after such adjustment. Instead of these gages other means may be employed, such as an adjusting screw or screws; but I prefer to use gages, as they afford a more simple and expedient means of adjustment.

In the lower contracted portion *n* of the adjustable chimney-section *n p* are formed two vertical slots *o* diametrically opposite each other to expose the tip of the flame to view.

The amount of light emitted from the space between the chimney-sections is invariable after said sections have been adjusted, as above described, whenever the tip of the flame is visible either at the upper or lower portion of the slots.

When the lamp is vertical, so that the arms *m* will lie perpendicular to the horizontal bar of the photometer, a point in the horizontal plane intersecting the edges of the arms nearest to the photometric disk and the vertical center of the space between the chimney-section is the zero-point of the usual photometric scale from which the distances are to be measured. In order that the plane in which said point lies may be readily determined the arms *m* on the upper chimney-section *np* have formed in their edge nearest to the photometric disk and diametrically opposite each other a recess *s* for the reception of a flat strip of metal (shown in dotted lines in Fig. 1) of a thickness equal to the depth of the said recesses, so that when the strip is placed in the recesses its outer face will be flush with the edges of the arms *m*, the zero-point from which the distances are to be measured lying or being indicated on the said outer face of the strip. One of the arms *m* is provided with a sleeve or socket bearing *q*² for a hooked rod *q*³, from which a plumb-bob may be suspended for setting the lamp vertical, and said bearing *q*² may also serve as a holder for the stem of a carrier supporting a strip of colored glass *q*¹, as shown in dotted lines in Fig. 1, or a separate bearing may be provided for said carrier, so that the strip of glass may be placed in front of one of the slots *o* and the tip of the flame observed through said glass, or the latter may be so

positioned as that the said tip of the flame will be reflected thereby.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a lamp of the class described, the combination with the burner, of a non-transparent chimney composed of two superposed sections adjustable relatively to each other, so as to form a space between them, the proximate ends of said sections lying above the burner in the vertical plane of the same, for the purpose set forth.

2. In a lamp of the class described, the combination, with a jacketed burner, of a non-transparent chimney composed of two superposed sections adjustable relatively to each other, so as to form a space between them, the proximate ends of said sections lying above the burner in the vertical plane of the same, for the purpose set forth.

3. In a lamp of the class described, the combination, with the burner, of a non-transparent chimney composed of a lower stationary section encompassing the burner and having a contracted portion extending beyond said burner, so as to inclose the lower portion of the flame, and an upper section, the lower portion of which is likewise contracted and adapted to inclose the upper portion of the flame, said upper section having curved arms *m*, and means for adjusting the said arms on the stationary section of said chimney, for the purpose set forth.

4. In a lamp of the class described, the combination, with the burner, of a non-transparent chimney composed of a lower stationary section encompassing the burner and having a contracted portion extending beyond said burner, so as to inclose the lower portion of the flame, and an upper section, the lower portion of which is likewise contracted and provided with two vertical slots *o* diametrically opposite each other, said contracted and slotted portion being adapted to inclose the upper portion of the flame, said upper section having curved arms *m*, one of which is provided with a bearing *q*², and means for adjusting the said arms on the stationary section of said chimney, for the purpose set forth.

5. In a lamp of the class described, the combination, with the burner, of a non-transparent chimney composed of a lower stationary section encompassing the burner and having a contracted portion extending beyond said burner, so as to inclose the lower portion of the flame, and an upper section, the lower portion of which is likewise contracted and adapted to inclose the upper portion of the flame, said upper section having curved and recessed arms *m*, said recesses being formed in the edges of the arms diametrically opposite each other, and means for adjusting the said arms on the stationary section of said chimney, for the purpose set forth.

6. In a lamp of the class described, the combination, with the burner and a chimney composed of two sections adjustable vertically relatively to each other, the proximate ends
5 of said sections lying above the burner in the vertical plane thereof, of means, such as a gage-disk *v*, for determining the hiatus between the two chimney-sections, substantially as and for the purpose set forth.

10 In testimony that I claim the foregoing as

my invention I have signed my name, in presence of two witnesses, this 27th day of July, 1888.

AUGUSTUS GEORGE VERNON HARCOURT.

Witnesses:

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Bedford.

JOHN EDW. MORRIS,
17 Conduit Road, Bedford.