(No Model.)

E. BOURDON.

MODERATOR LAMP.

No. 332,322. Patented Dec. 15, 1885.

FIG_1_

FIG_2_

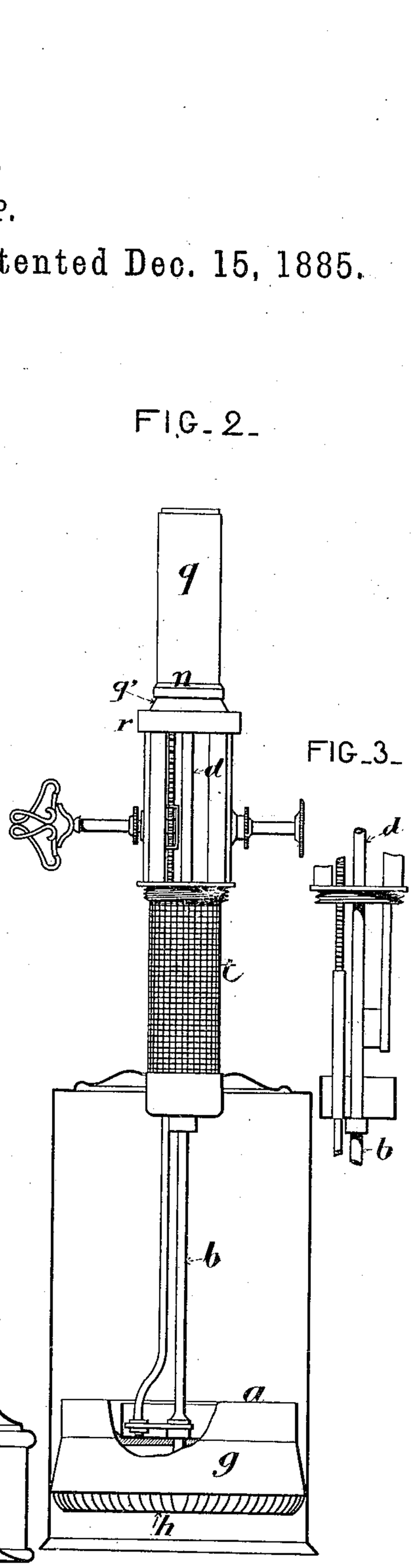


FIG_3_

FIG_7_

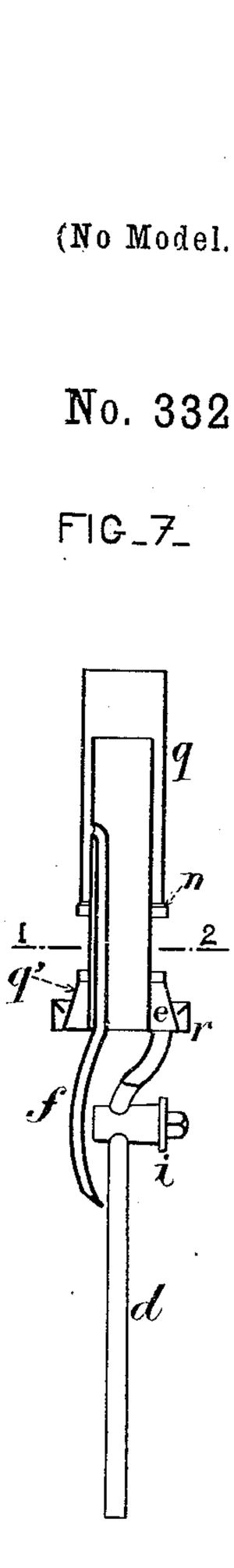


FIG_6_

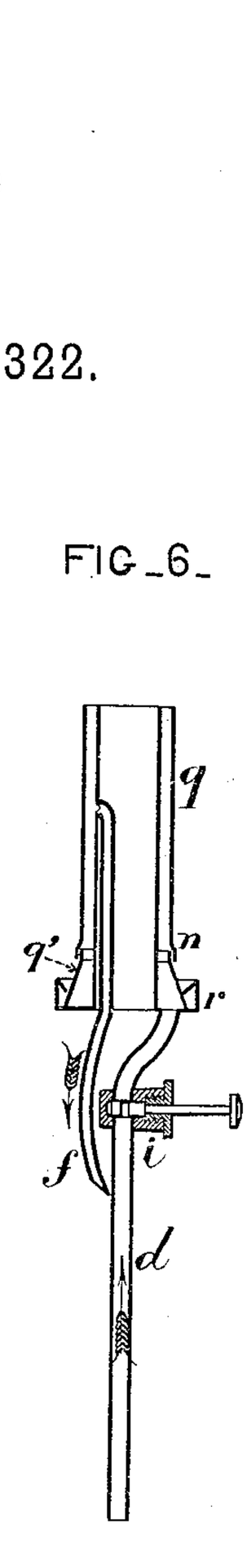


FIG_8_

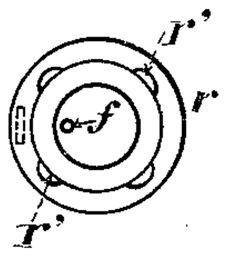
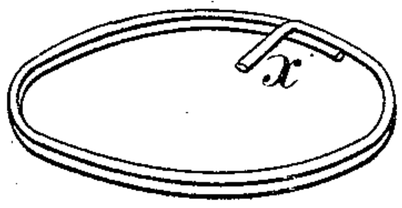


FIG_5_



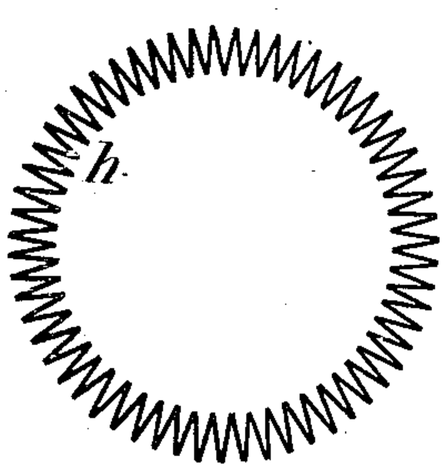


FIG_4_

Witnesses:
Alphonse Bléau
Matt M Kemp

Inventor:
Ernest Bourdon
Brieen & Steele
attorneys

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

ERNEST BOURDON, OF PARIS, FRANCE.

MODERATOR-LAMP.

SPECIFICATION forming part of Letters Patent No. 332,322, dated December 15, 1885.

Application filed May 29, 1885. Serial No. 167,002. (No model.) Patented in France April 5, 1884, No. 161,430.

To all whom it may concern:

Be it known that I, ERNEST BOURDON, a citizen of France, residing at Paris, France, have invented new and useful Improvements in Moderator-Lamps for Burning Petroleum and other Oils, and for which I have received a patent in France, No. 161,430, dated April 5, 1884, of which the following is a specification.

The principal object of this invention is to admit of burning petroleum-oil in ordinary moderator-lamps without altering their principle of construction.

The invention consists of the new combination of parts hereinafter specified.

The accompanying drawings show by Figure 1 a vertical section of a petroleum-lamp with the improvements applied to it. Fig. 2 shows the mechanism removed from the lamp. Fig. 3 is a side view of part of the interior. Fig. 4 is a detail top view of a spring used in the lamp. Fig. 5 is a perspective view of a modified form of spring. Fig. 6 is a vertical section of the burner without the wick-holder; Fig. 7, a similar section of a modification. Fig. 8 is a horizontal section on the line 1 2, Fig. 7.

The petroleum, under the influence of the piston *a*, which is contained in the oil-fount, continually rises through the central tube, *b*, sliding in the fixed tube *d*, which latter debouches in the annular chamber *e*, containing the wick. The piston is placed beneath a spring, as in all moderator-lamps. The petroleum, instead of running off as in the ordinary oil-lamps, only fills a part of the chamber *e*, and flows by an inner tube, *f*, whose starting-point is fixed about five centimeters below the flame, and which leads the excess of liquid under the piston. By this means the wick is plunged into a petroleum-reservoir, whose level is kept constant, and is therefore in the most favorable conditions for supplying a regular light. The tubes *d* and *f* are surrounded with the metal gauze *t*, as shown by Figs. 1 and 2. Fig. 3 shows (uncovered) the parts concealed by the gauze in Fig. 2.

In the application of the improved lamp for burning all the mineral oils, especially schist, it suffices to regulate the moderator-shaft according to the fluidity of the oil employed, so as to insure a suitable distribution. By this simple improvement oils, such as schist, burn with as white a light as petroleum at a much less cost than the latter.

One of the essential features of the invention is the application to the piston of a spiral spring, *h*, in form of a ring placed behind the leather *g*, with which the piston is supplied, *vide* Fig. 4. This spring exercises an annular pressure on the thin edge of the leather, and prevents its getting out of shape. It lodges in a grooved retaining-ring, *k*, which keeps it at a suitable height, so that its greater diameter bears against the edge of the leather. This arrangement secures the petroleum as well as oil—that is to say, it establishes and insures absolute tightness to the piston. It can be applied to pistons of irrigators, bellows, pumps, and can be generally used where a perfectly hermetical closure is required.

In lieu of the annular spiral spring *h*, a spring composed of simply two spirals superposed, *vide* Fig. 5, can be substituted. One of the ends of the wire of which it is formed is bent inward at *x*, so as to fix or solder it to the body of the piston. The other end is free. This spring is placed, like the former, behind the leather of the piston, Fig. 1, and fulfils the same object. The metal wire should at least make two turns; but more may be used without inconvenience.

Fig. 6 represents the improved burner minus the wick-holder, to avoid complicating the drawings. This improved moderator-lamp, set once for all to give its utmost supply, can be afterward regulated as required by means of the tap *i*, mounted on the tube *d*, (of ascension of the oil,) the opening and closing of which tap is made to suit the different oils employed, and can be turned either by a square head and key, as in Fig. 7, or by an ordinary shaft and button-head, as in Fig. 6. In the case of the use of a square head the lamp-maker could retain the key, having once regulated it as required, while in the second case, should the proprietor wish to regulate the lamp himself, then the usual regulator, as shown by Fig. 6, would be employed. In this manner the lamps are all made on identical principles. Each one is regulated at the time of purchase in accordance with the nature of the oil to be burned.

To insure the lamp burning to the best ad-

vantage, it is essentially requisite that the "choke," or narrowed part of the chimney, should always be at the same height above the burner. For this purpose the chimneys are all cut exactly the same length. It is also important that the chimney-holder should have a fixed position. It is therefore modified in form, as shown by Figs. 1 and 2. The internal tube, *m*, rests on a rim, *n*, surrounding the burner, which determines the height of the chimney-holder *p*. This latter is also provided with an internal rim, *p'*, on which the chimney *v* rests, and is by this means kept at the proper height.

The tube *m* may be made in two parts, *vide* Fig. 7, *q q'* separating at the rim *n*. This rim may either be on the upper or lower portion, and the two soldered together. When the lamp requires to be repaired and it is necessary to reach the oil-chamber, this solder is melted and the tube *q* removed. It can afterward be easily replaced.

Figs. 6, 7, and 8 show the annular gutter *r*, pierced with holes *r'*. It collects the residue and liquid arising from the vapor of the petroleum and carries it into the oil-chamber.

I claim—

The combination of the oil-fount, sliding pipe *b*, and fixed tube *d* with the spring-pressed piston *a*, chamber *e*, wick-tube, and overflow-pipe *f*, substantially as herein shown and described.

ERNEST BOURDON.

Witnesses:

ALPHONSE BLÉTRY,

ROBT. M. HOOPER.