

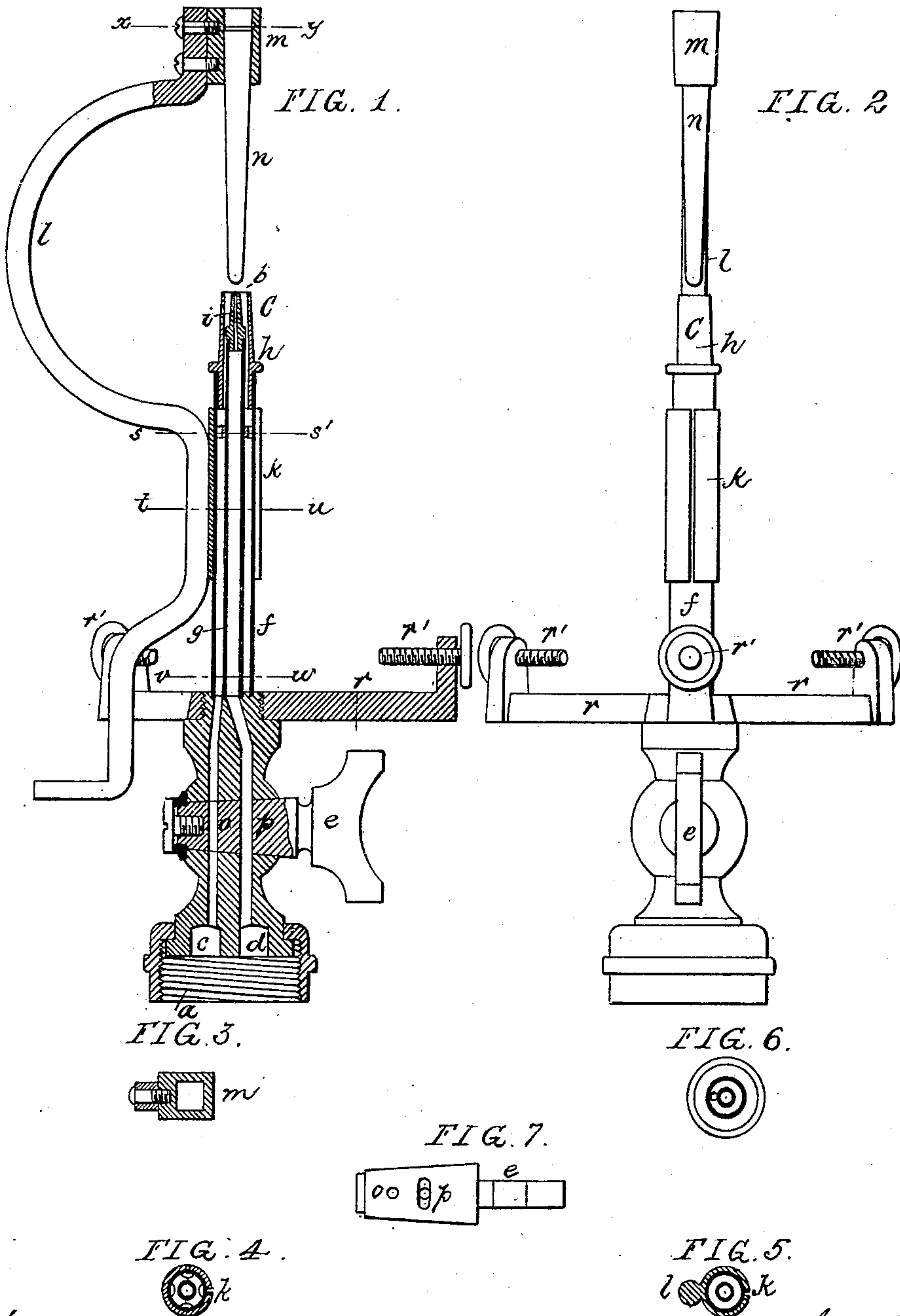
(No Model.)

2 Sheets—Sheet 1.

A. M. KHOTINSKY,
Lime Light Lamp.

No. 238,400.

Patented March 1, 1881.



Witnesses:

David S. Williams.
James F. Tobin.

Inventor:

Achilles M. Khotinsky
by his Attorneys
Howson and Son

(No Model.)

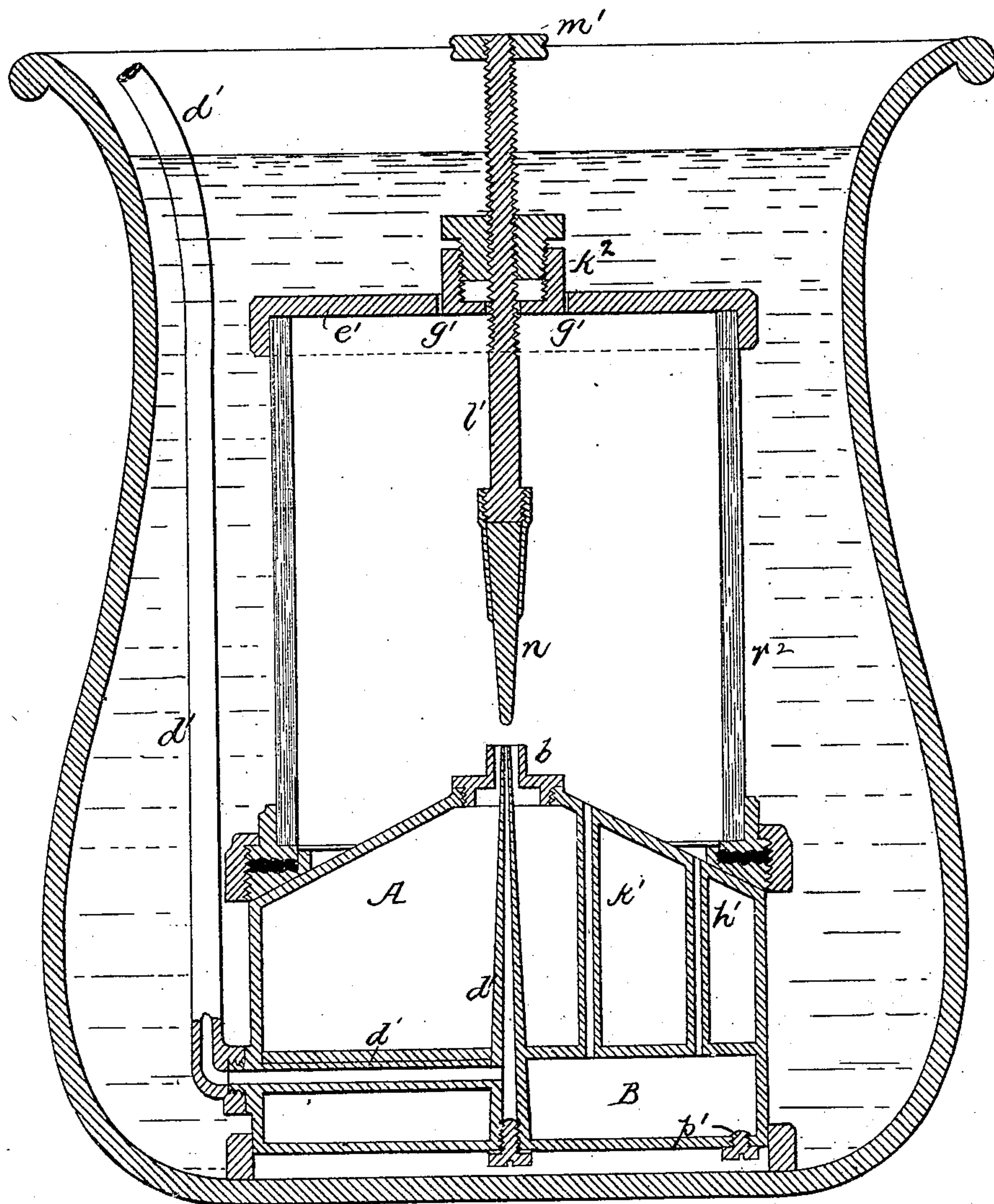
2 Sheets—Sheet 2.

A. M. KHOTINSKY,
Lime Light Lamp.

No. 238,400.

Patented March 1, 1881.

FIG. 8.



Witnesses:

David S. Williams.
James F. Tobin.

Inventor:

Achilles M. Khotinsky
by his attorneys
Howson and son

UNITED STATES PATENT OFFICE.

ACHILLES M. KHOTINSKY, OF ST. PETERSBURG, RUSSIA.

LIME-LIGHT LAMP.

SPECIFICATION forming part of Letters Patent No. 238,400, dated March 1, 1881.

Application filed January 12, 1881. (No model.)

To all whom it may concern:

Be it known that I, ACHILLES MATVEEVITCH KHOTINSKY, a subject of the Emperor of Russia and lieutenant of the Russian Imperial Navy, and residing in St. Petersburg, Russia, have invented certain Improvements in Lime-Light Lamps, of which the following is a specification.

My invention relates to certain improvements in the construction of what are termed "lime-light lamps," in which the light is produced by the incandescence of lime or other non-combustible material in the flame of ignited gases or liquids, such as carbureted hydrogen in connection with a current of oxygen.

The main object of my invention is to so construct the lamp as to increase its illuminating powers, further features of my invention relating to the details of construction, as more fully described hereinafter.

In the accompanying drawings, Figure 1, Sheet 1, is a vertical section of the lamp; Fig. 2, a front view; Fig. 3, a section on the line xy ; Fig. 4, a section of the tubes on the line $s s'$; Fig. 5, a section on the line tu ; Fig. 6, a section on the line vw ; Fig. 7, a view of the cock; and Fig. 8, a sectional view of a modified form of the lamp.

The burner is provided with a screw-coupling, a , by which it may be connected to a union-piece having two tubes, one for supplying the combustible gas and the other the oxygen. The combustible gas enters the burner through the opening c and through the opening o of the cock e to the space between the inner tube, g , and outer tube, f , of the burner. The oxygen enters at d , and through the opening p of the cock to the interior of the inner tube, g , and thence to the upper end, b , of the burner, where it meets the combustible gas issuing through the annular opening formed by the inner and outer tubes. The tube f has a detachable tip, h , and the inner tube, g , has a corresponding detachable tip, i , to facilitate the cleansing of the tubes. Adapted to the tube f is a spring-collar, k , which can be adjusted to different positions on the tube, and which carries a bent rod, l . To the upper end of this rod is secured a socket or holder, m , for the reception of the stick or pencil n , of lime or similar material. This stick is ar-

ranged in the direction of the axis of the flame and of the current of oxygen, or at an angle to such axis not exceeding ten degrees. In such position the incombustible material is constantly embraced by the flame and licked, as it were, on all sides by the same, and becoming incandescent, gives forth a brilliant light. The material of which the stick or pencil is to be made may be various earths, more especially alkaline earths—as, for instance, oxides of calcium, barium, strontium, magnesium, aluminium, zirconium, and similar metals—any one of them separately, or two or more of them mixed together.

The flame may be a single one issuing from a single orifice, or it may consist of a number of jets issuing from apertures of rectilinear, curvilinear, or annular form. Corresponding to the form of the flame, the incombustible material may be of cylindrical, conical, pyramidal or prismatic form with plain or curved sides. In all cases this material is always placed in the direction of the axis of the flame or at an angle to such axis not exceeding ten degrees, as described above.

By sliding the collar k on the tube of the burner, the incombustible pencil n may be adjusted nearer to or farther from the tip of the burner. A spider, r , provided with set-screws r' , is secured to the burner to support and hold the globe.

When the cock e is opened a mixture of combustible gas and oxygen is formed at the tip b of the burner, and this mixture, when ignited, gives an almost colorless but very hot flame, which surrounds the incombustible pencil and quickly heats it to incandescence, giving a steady and brilliant light. A burner of this description provided with an aperture for the oxygen of 0.015 of an inch in diameter will consume in an hour about one-half cubic foot of oxygen and a like quantity of lighting-gas, furnishing light of an intensity equal to that of twenty to twenty-five ordinary candles. Such a burner may be arranged either vertically or in an inclined position.

The modified form of lamp shown in Fig. 8 is intended for use under water, or in mines, or other places containing explosive gases or gases not permitting combustion. In this case the flame is produced by some burning-fluid,

such as petroleum, contained in the reservoir A and rising by capillary attraction through a wick, (not shown in the drawings,) to the aperture or tip *b*. The supply of oxygen for the flame enters through the tube *d'*. Directly in the line of this flame is arranged the incombustible pencil *n*, as before described with reference to the lamp shown in Fig. 1, the pencil in this case being carried by a screw-rod, *l'*, passing through a stuffing-box, *k*², on the cover *e'* of the glass cylinder or globe *r*². The lower end of this glass globe is adapted to a collar secured, by a screw-ring and packing, to the upper part of the reservoir A. The screw-rod *l'* is provided with a thumb-nut, *m'*, by which the rod may be adjusted.

Through the reservoir A pass two vertical tubes, *h'* and *k'*, the former allowing the condensed moisture formed on the interior of the glass globe to flow down into a receptacle, B, below the reservoir, while the tube *k'* allows the air displaced to rise into the space above. The bottom of the receptacle B is provided with a screw-plug, *p'*, which can be removed from time to time to get rid of the liquid collected therein.

In the cover *e'* are formed small openings *g' g'*, which will allow of the escape of the products of combustion, but will not permit any

outside gas or liquid to enter the interior of the lamp when the latter is in use. In the drawings, the lamp is shown as placed in a reservoir of some liquid.

I claim as my invention—

1. A lime-light lamp provided with a pencil or other form of incombustible material, having its axis in the direction of the axis of the flame, or nearly so, as and for the purpose set forth.

2. A lime-light lamp having a burner-tip provided with a central opening for the supply of oxygen, and a surrounding annular opening for the combustible fluid, in combination with a pencil of incombustible material having its axis in line, or nearly so, with the axis of the central opening, substantially as described.

3. The combination of the burner with the holder for the incombustible material, said holder consisting of a bent rod and a split collar adapted to the tube of the burner, substantially as set forth.

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

ACHILLES MATVEEVITCH KHOTINSKY.

Witnesses:

NICHOLAS TSCHÉVALOFF,
LEWIS VOSS.