

No. 672,666.

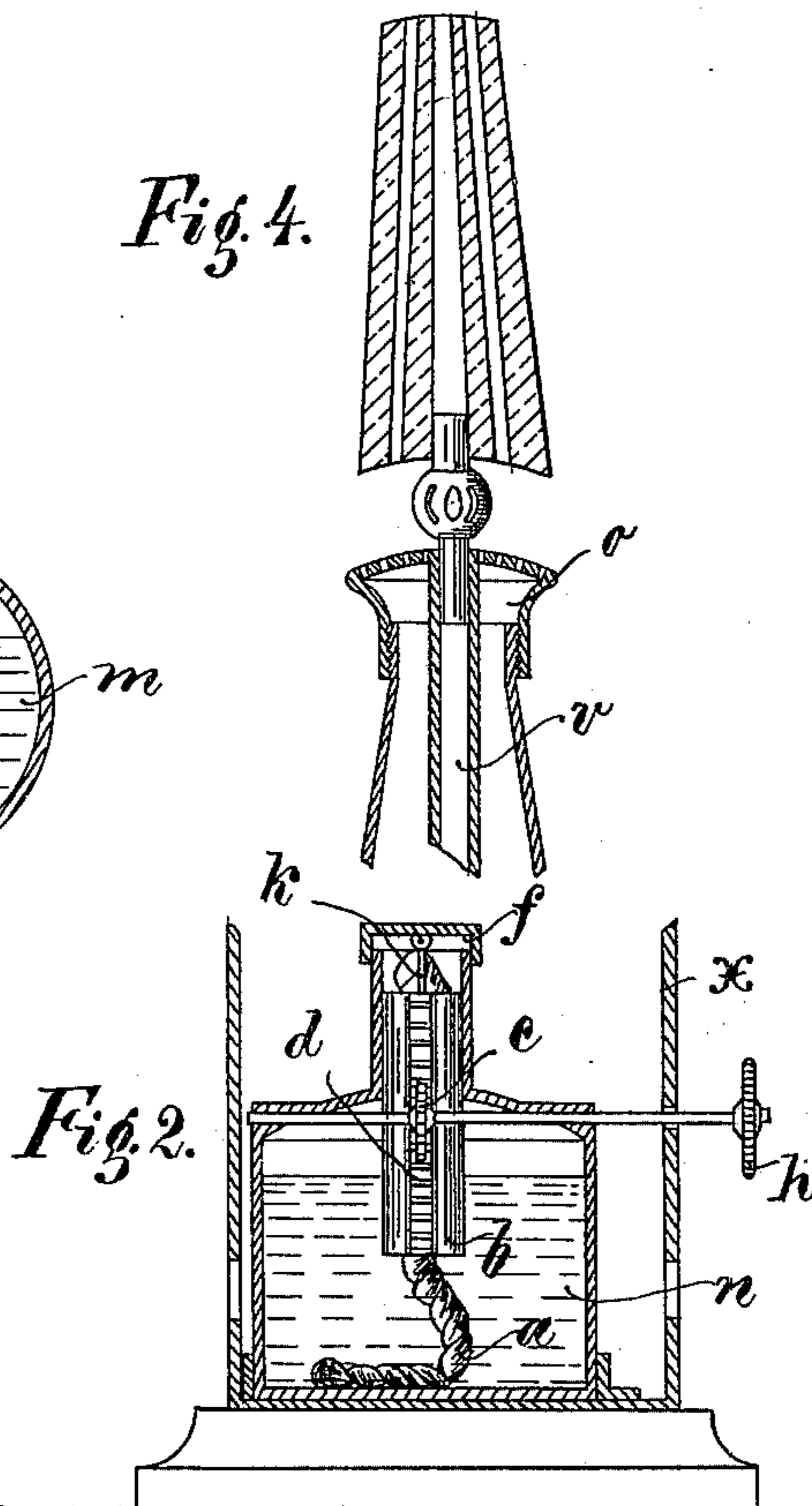
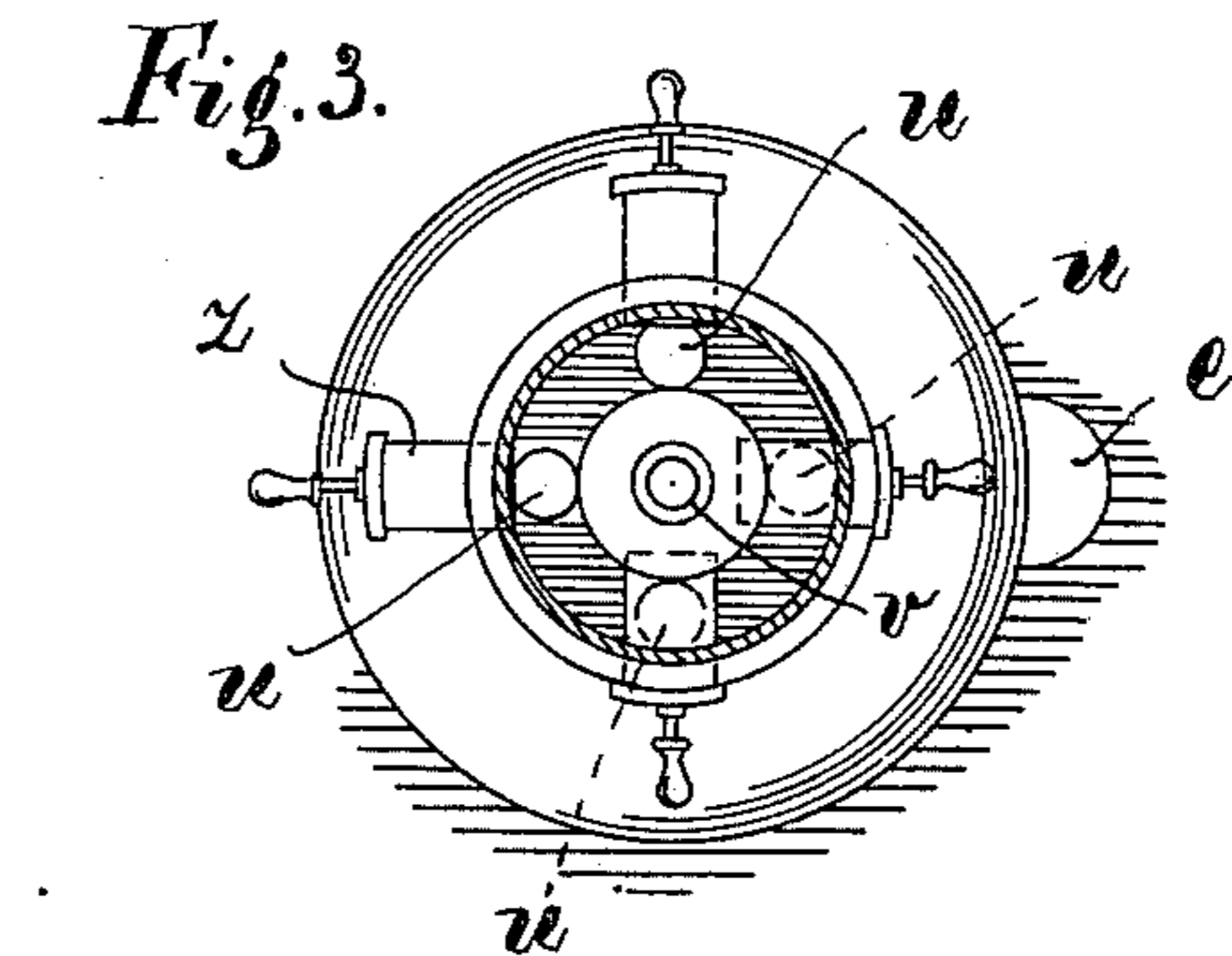
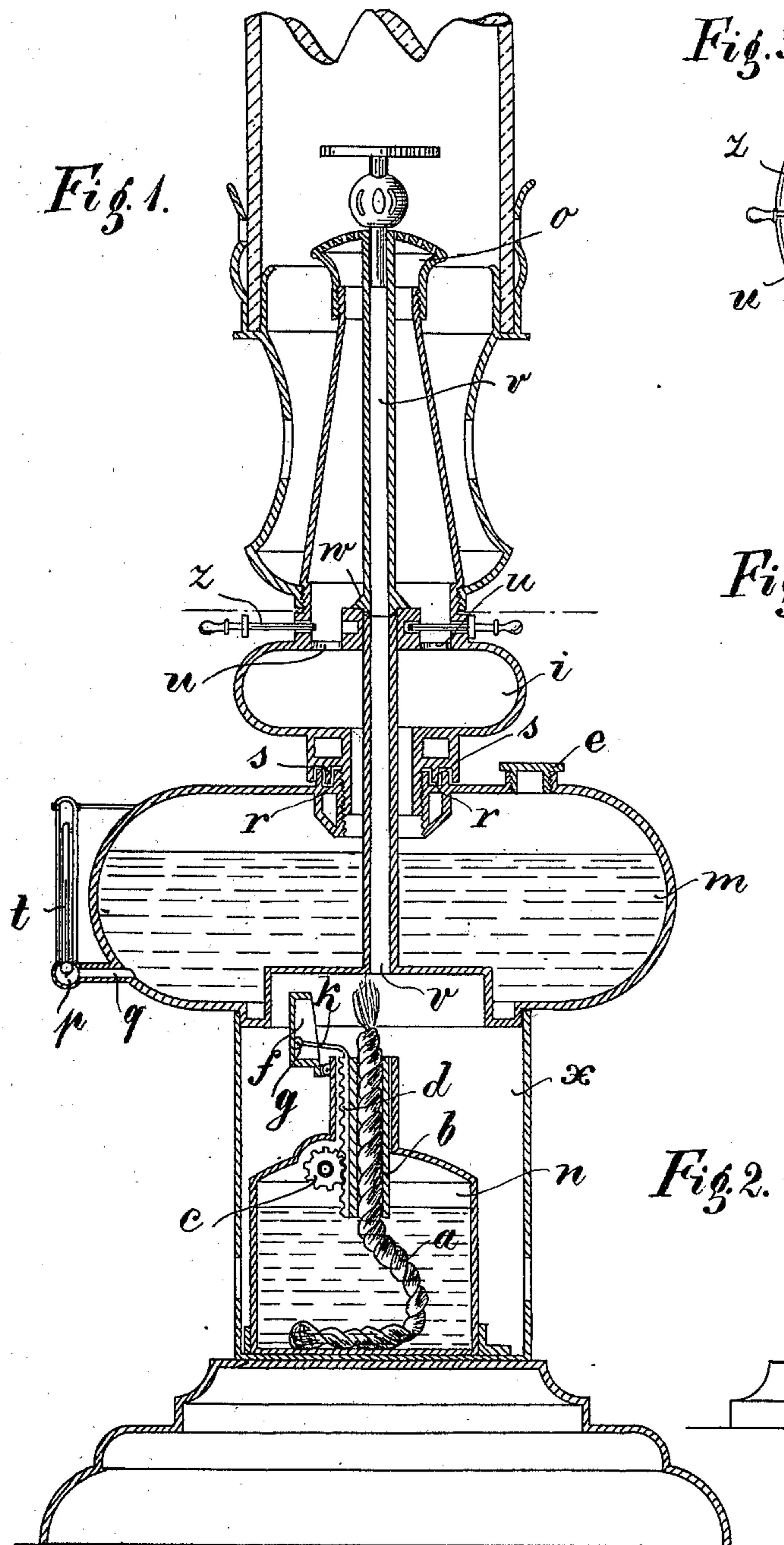
Patented Apr. 23, 1901.

A. BOTZIAN.  
VAPOR BURNER.

(Application filed Nov. 16, 1899.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses—  
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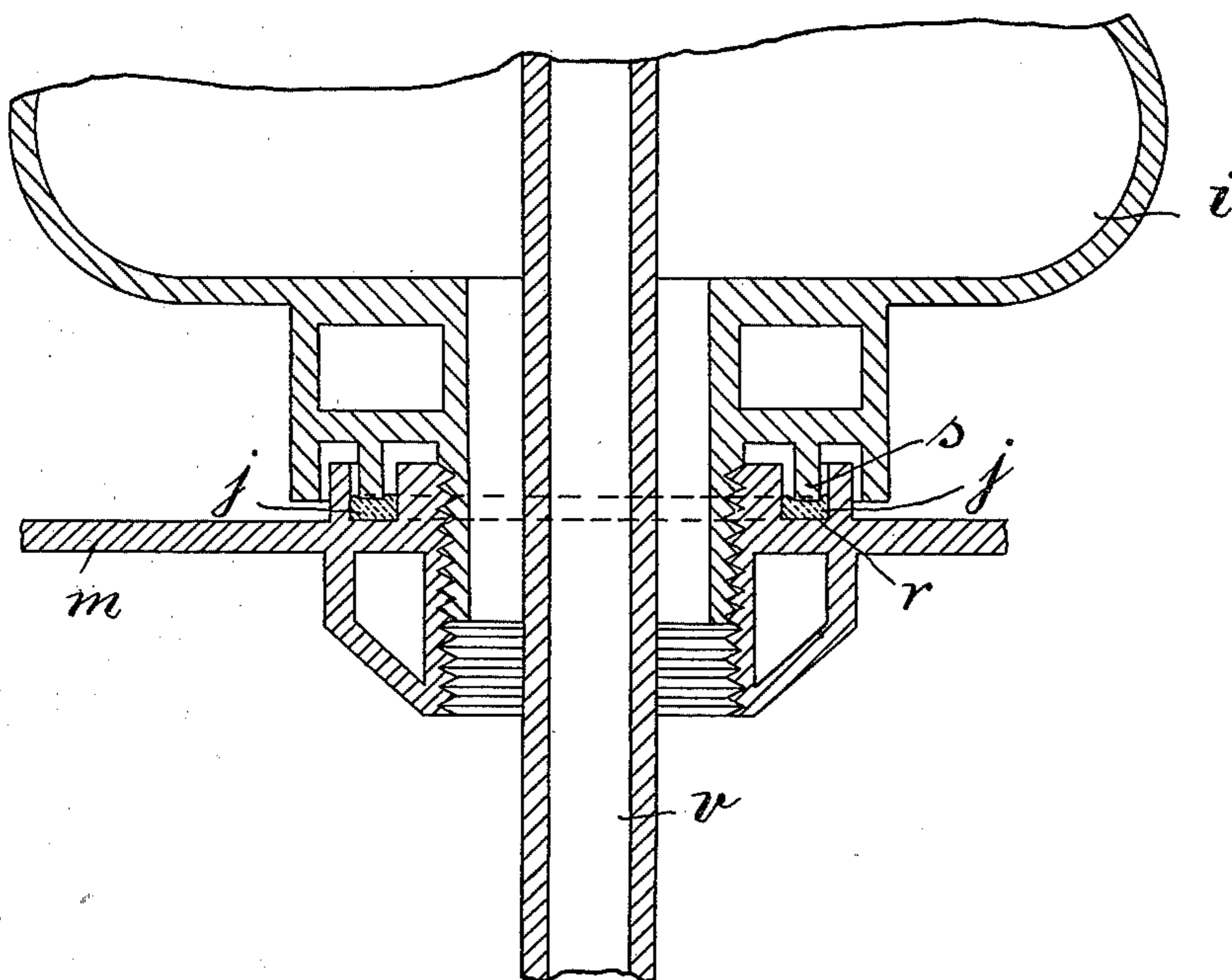
A. BOTZIAN.  
VAPOR BURNER.

(Application filed Nov. 10, 1899.)

(No Model.)

2 Sheets—Sheet 2.

*Fig. 5.*



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# UNITED STATES PATENT OFFICE.

ANTONIUS BOTZIAN, OF LICHTERFELDE, GERMANY.

## VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 672,666, dated April 23, 1901.

Application filed November 16, 1899. Serial No. 737,169. (No model.)

*To all whom it may concern:*

Be it known that I, ANTONIUS BOTZIAN, Ph. D., surgeon-dentist, a subject of the Emperor of Germany, and a resident of No. 4 Carlstrasse, Lichterfelde, near Berlin, in the Empire of Germany, have invented a certain new and useful Improved Lamp for Liquid Hydrocarbons and Spirit, of which the following is a clear, full, and exact description.

10 This invention relates to a lamp for liquid hydrocarbons and spirit for producing intense flames for direct light or as incandescent factor for incandescent mantles or other incandescent bodies, according to which the liquid hydrocarbons—as, for instance, petroleum, benzene, &c.—and spirit are, on a suitable temperature being attained, vaporized in a closed receptacle by a special adjustable heating-flame, from whence a regulated delivery of the gases to the burner-head takes place, while the liquid in the receptacle is maintained at a constant temperature. For this purpose there is provided in the central part of the lamp a closed receptacle or boiler provided with a gas-collector, in which receptacle the liquid is vaporized by a regulatable or adjustable heating-lamp located below same. The vapors issue from the gas-collector through openings closable by slides or the like into a pipe communicating with the interior of the gas-dome, from whence they are fed to the burner-head and burned.

On the accompanying drawings such a such a lamp is shown by way of example.

35 Figure 1 shows the same in longitudinal section. Fig. 2 shows the heating-lamp in section, the regulating apparatus of the same as seen at the front. Fig. 3 shows the gas-collector with the adjustable openings as seen from above. Fig. 4 shows the burner-head with a mounted solid incandescent body in longitudinal section. Fig. 5 shows the connection between the dome in which the gas is collected and the boiler on a larger scale.

45 The lamp consists, essentially, of a receptacle or boiler *m*, provided with a gas-collector *i*, a heating-lamp *n*, and a burner-head *o*. The boiler *m* carries at the side a thermometer *t*, on whose scale are marked the high degrees most preferable for any combustible and lighting system, the bulb *p* of such ther-

mometer being in contact with the liquid in the boiler by means of a socket-piece *q*.

*e* is the filling or feed opening, which is hermetically sealed after the liquid has been poured into the boiler.

On the upper part of the boiler is located the gas-collector *i*, which prevents drops of the liquid heated in the boiler from being carried upward together with the flow of gas. The gas-collector *i* is screwed on the boiler and tightened outwardly by packing of asbestos or lead *j*, Fig. 5, inserted in the annular groove or recess *r*, and by the ring *s*, Fig. 5, located on the gas-collector. In the upper part of the gas-collector are located two or more openings *u* of different size, which when required can be opened or closed preferably by slides *z*. For conducting the heat to the top and feeding air for the thin flame to the burner-head *o* there is provided a chimney *v*, consisting of two parts and extending in the center from the bottom of the boiler through the gas-collector to the burner-head, such parts being packed and screwed together above the gas-collector at *w*. The burner, cylinder, and shade-holder are provided on the gas-collector in the usual manner. For a direct intense gas-flame for illuminating purposes there is used, as shown, Fig. 1, a sleeve or socket fitting within the chimney-orifice and provided at the bottom with holes for the admission of air and carrying above a round disk. For incandescent mantles or other incandescent bodies there is likewise inserted a sleeve or socket provided with holes and carrying the other usual devices—as, for instance, the support for the incandescent mantle or body—for producing the thin flame, Fig. 4.

The heating-lamp *n* is located below the boiler *m*. In order to be in direct contact with the bottom of the boiler and for enabling a more advantageous generation of gas, the heating-lamp *n* is preferably located somewhat laterally in a casing *x*, provided with holes in order to conduct the heat to the chimney and feed the air through the latter for the gas-flame. The heating-lamp is preferably regulated by the small toothed pinion *c*, connected to the regulating hand-wheel *h*, the former engaging in a rack *d*, which is secured to a tube *b*, sliding in the

lamp-neck by which is held the wick *a*, consisting of spun glass, and therefore burning without charring. A lid *f* is connected to the upper part of the lamp-neck by hinges *g*,  
 5 such lid being also connected to the tube *b* by a wire *k*. In order to light the lamp or set same in operation, the heating-lamp *n* is first ignited. The liquid combustibles contained in the receptacle *m* are now heated  
 10 and vaporized until a suitable temperature is attained and indicated on the thermometer. The holes *u* are now opened by the slides, and the generated gases issue from the gas-dome and pass to the burner-head, and  
 15 are consequently burned. Now by regulating the heating-flame and the slides the liquid is brought to the desired temperature, which can be read on the scale of the thermometer, whereupon by a uniform burning  
 20 of the lamp *n* the proper supply of heat is fed to the liquid, whereby a constant temperature of the latter, and consequently an intense light, is obtained. By turning the small hand-wheel the flame of the heating-  
 25 lamp can be extinguished. After the extinguishing of the flame the gas-outlet openings *u* are closed by the slides.

Having now particularly described and ascertained the nature of the said invention, I

declare that what I claim, and wish to secure 30 by Letters Patent, is—

1. In a lamp burning liquid-hydrocarbon compounds, a boiler for containing said compounds, an adjustable heating device for said boiler, a gas-drum to receive the vapor 35 generated by said boiler, a burner connected therewith, and a chimney or flue extending from the said heating device for carrying heated air and the products of combustion from the said heating device to the said 40 burner, substantially as set forth.

2. In a lamp burning liquid-hydrocarbon compounds, a boiler for containing said compounds, an adjustable heating device for said boiler, a gas-drum to receive the vapor 45 generated by said boiler, a burner connected therewith, a chimney or flue extending through the boiler and delivering heated air or heated gases from the said heating device centrally to the burner, and mechanism for 50 controlling the flow of gas in the said burner, substantially as set forth.

Signed this 2d day of November, 1899, at Berlin, Germany.

ANTONIUS BOTZIAN.

Witnesses:

WOLDEMAR HAUPT,  
 HENRY HASPER.