(No Model.) 2 Sheets—Sheet 1.

W. M. ABBOTT.

VAPOR BURNER.

No. 459,694. Patented Sept. 15, 1891.

Fig. 1.

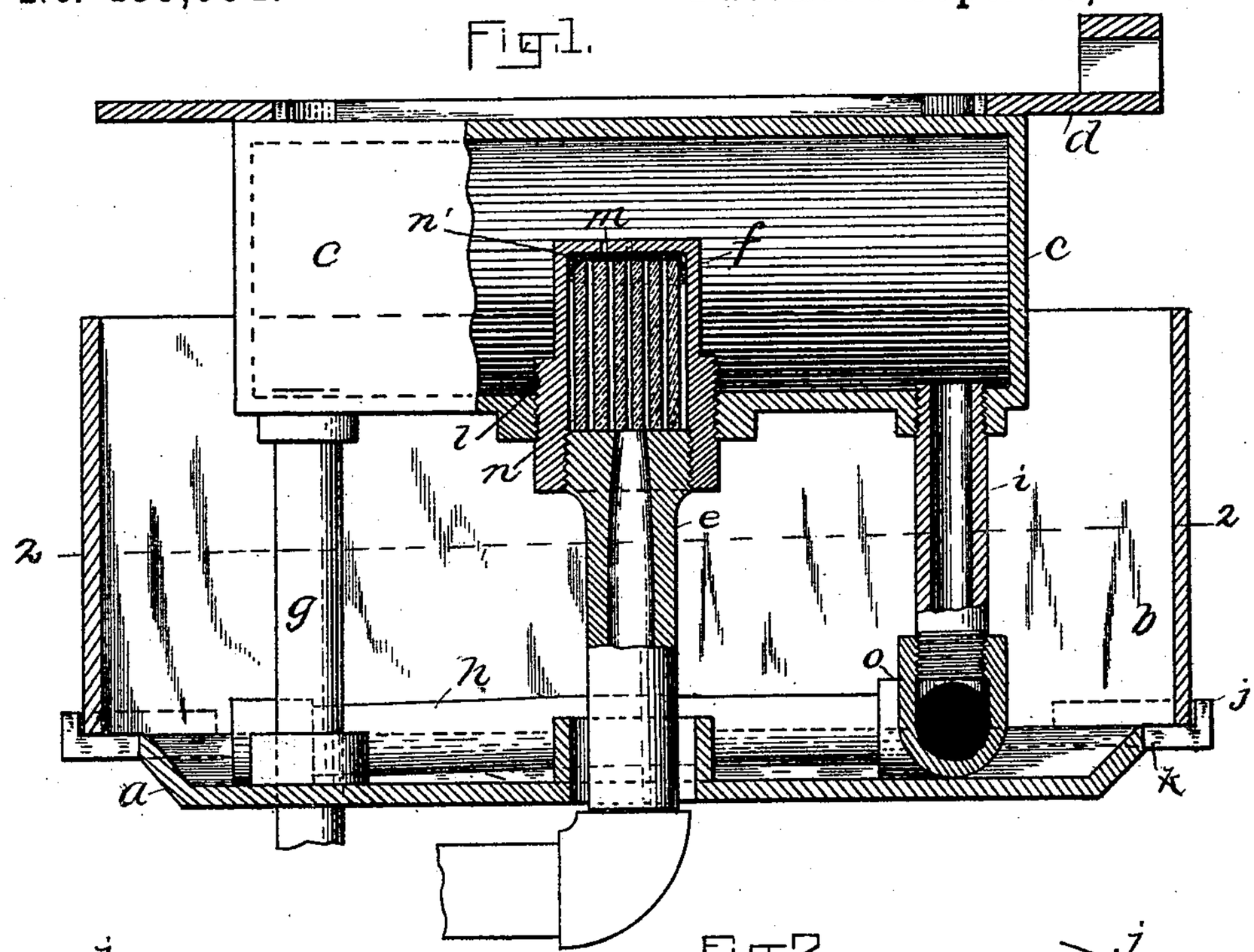


Fig. 2.

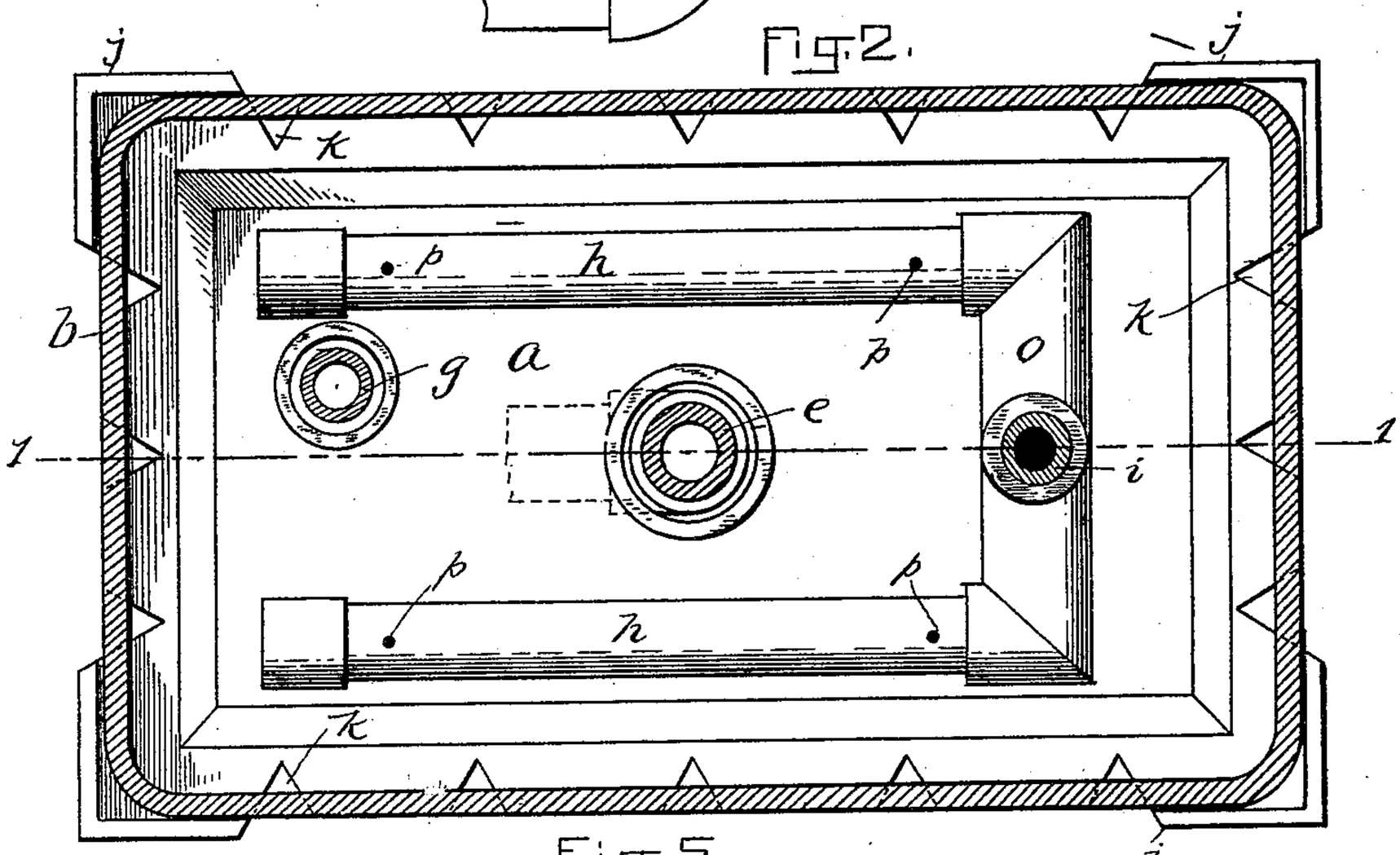
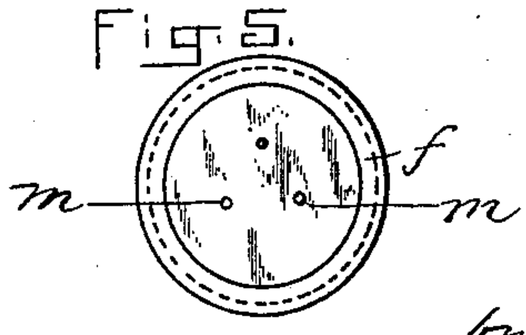


Fig. 3.



WITNESSES:
C. G. Bartlett
A. D. Harrison.

INVENTOR:
W. M. Abbott.
by Wright, Brown & Crossley.
Attys.

(No Model.) 2 Sheets—Sheet 2.

W. M. ABBOTT.

VAPOR BURNER.

No. 459,694. Patented Sept. 15, 1891.

Fig. 3.

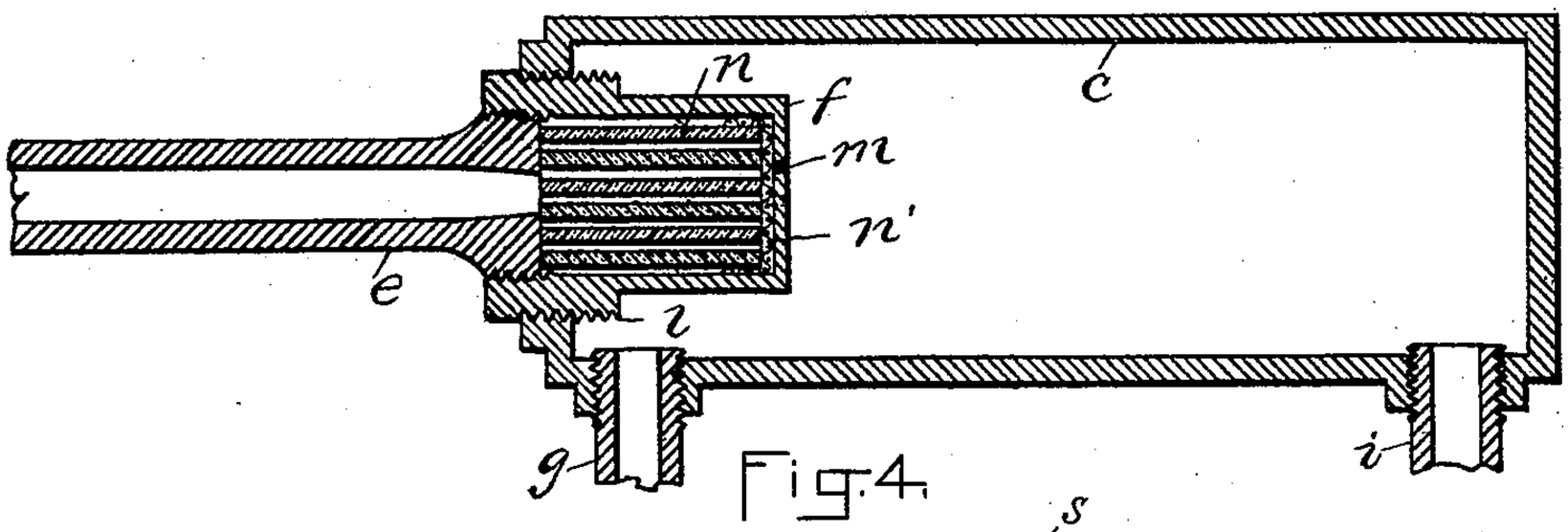
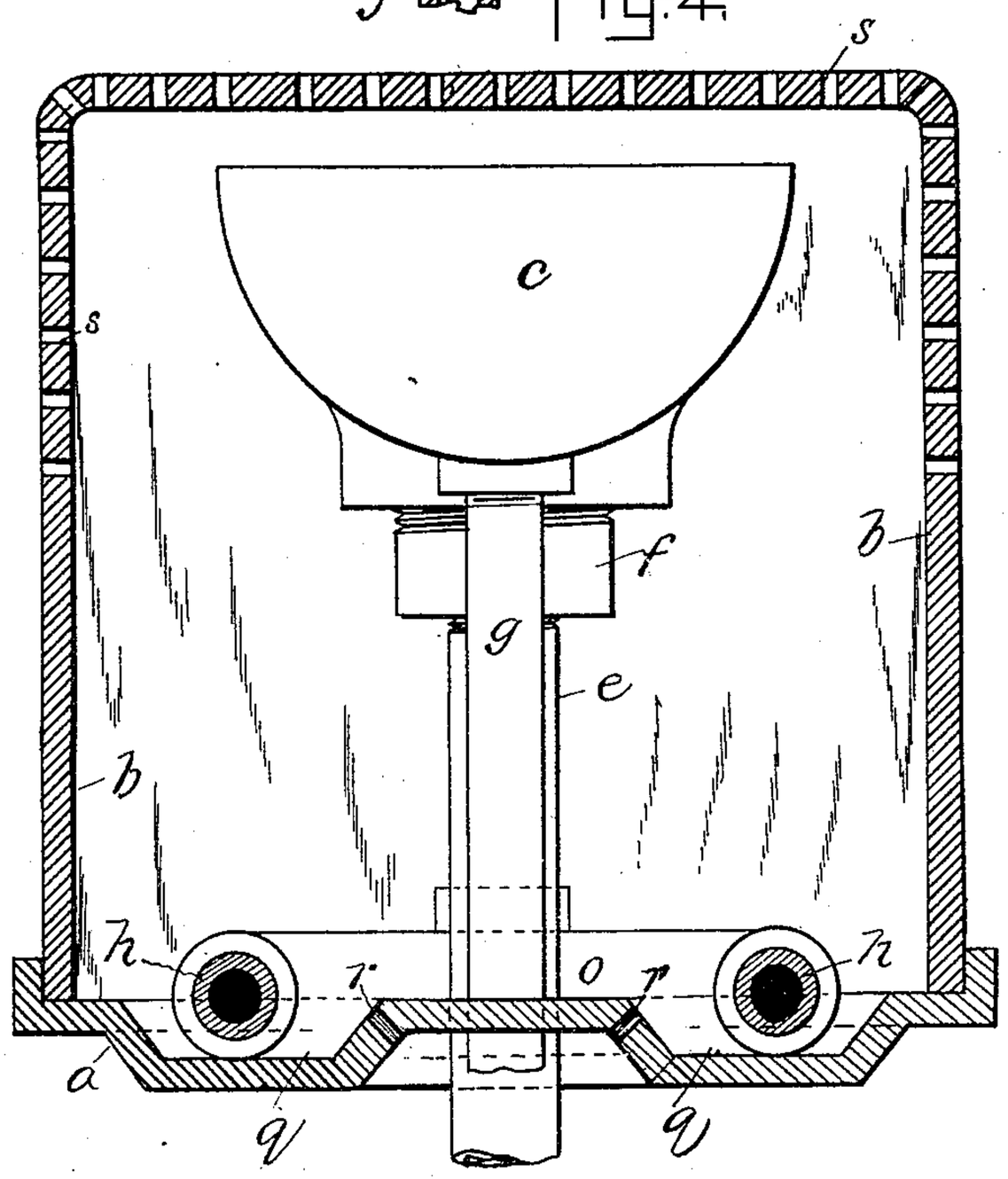


Fig. 4.



WITNESSES

C. L. Bartlett

A. D. Harrison.

INVENTOR

W. M. Abbott.

by Wright, Brown & Quinby

Attys.

UNITED STATES PATENT OFFICE.

WARREN M. ABBOTT, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE DOMESTIC HYDROCARBON HEAT COMPANY, OF KITTERY, MAINE.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 459,694, dated September 15, 1891.

Application filed July 18, 1890. Serial No. 359,211. (No model.)

To all whom it may concern:

Be it known that I, WARREN M. ABBOTT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Vapor-Burners, of which the following is a specification.

This invention has special relation to vapor-burners of the kind shown and described in United States Letters Patent No. 373,874, granted to me November 29, 1887, though parts and features of the improvements are applicable to vapor-burners of other forms.

It is the object of my invention to provide improvements whereby access may be more readily had than heretofore to the water-chamber in the retort or mixing-chamber in order to repair or rearrange the water-chamber or its equipments.

It is also the object of my invention to provide improvements whereby the water in the water-chamber may be more thoroughly vaporized or nebulized before issuing from the water-chamber than heretofore.

It is also the object of my invention to provide such improvements as will secure a uniform supply of vapor to the burners, whether the device should be in level position or moved "out of level."

It is also the object of my invention to provide other improvements in vapor-burners incidental to the foregoing, as will the more readily appear from the description hereinafter given.

Reference is to be had to the annexed drawings, and to the letters of reference marked thereon, forming a part of this specification, the same letters designating the same parts or features, as the case may be, wherever they occur.

Of the accompanying drawings, Figure 1 is a vertical central sectional view, parts being represented in elevation, of my improved vapor-burner, the section being taken on the line 1 1 of Fig. 2. Fig. 2 is a horizontal section of the same, taken on the line 2 2 of Fig. 1. Fig. 3 shows in sectional view a modified manner of connecting the water-chamber with the retort or mixing-chamber. Fig. 4 is a cross-section showing a modified form of drip-pan, jacket, and deflector. Fig. 5 is a top plan view of my improved water-chamber.

In the drawings, referring to Figs. 1, 2, and 5, *a* designates the drip-pan; *b*, the jacket seated thereon; *c*, the retort or mixing-chambe ; *d*, the deflector or spreader arranged upon the retort; *e*, the water-supply pipe; *f*, the water-chamber in the retort, with which the pipe *e* communicates; *g*, the oil-supply pipe communicating with the retort; *h h*, the burners, and *i* the pipe communicating between the retort and burners for the purpose of supplying the latter with vapor.

The drip-pan *a* is provided at points, preferably at the corners, with a flange *j*, which extends upwardly outside of the lower edge of the jacket *b*, so as to maintain the latter in place on the pan, which is serrated or notched at its edge, as at *k*, said notches affording means for supplying air to the burners.

The water-chamber *f*, instead of being constructed integrally with the pipe *e* and provided with a cap, is made as a separate part, screw-threaded exteriorly at its base, as at *l*, and provided with perforations in its upper end, as at *m*. This construction enables the water-chamber to be tapped into the base of the retort, as shown in Fig. 1, and the water-pipe *e* to be tapped into the lower end of the water-chamber, so that in order to gain access to the water-chamber it is not necessary to disconnect the same from the retort, (a thing very difficult of accomplishment, since the chamber quickly becomes "burned on" the retort,) but the end mentioned may be accomplished by simply unscrewing the pipe *e* from the chamber *f*.

The chamber *f* may be provided with asbestus *n* or other suitable material and covered with a piece of wire-gauze or other foraminous material *n'*, which provision serves to assist in breaking the vapor escaping from the water-chamber into a cloud or nebula, thus best adapting it to commingle with the oil-vapor.

The vapor formed in the retort *c* is conveyed to the burners *h* through the pipe *i*, communicating with one end of the retort, which pipe is connected at a central point with a cross-pipe *o*, connecting at its ends with the burners, as is best seen in Fig. 2.

By having a single pipe to supply the burners with vapor from the retort and construct-

ing and arranging it as shown and described I am enabled to uniformly supply the burners with vapor and render it unobjectionable to have the burner placed in other than a level position.

The burners *h* are connected with the cross-pipe *o*, so that they may be moved axially, this construction and arrangement being provided in order to vary the direction of the flame, which is governed by the course of the vapor issuing from the apertures *p* in the burners, and so project the flame with greater or less directness against the retort *c*. In the present instance the burner-pipes have a screw-threaded connection with cross-pipe *o* similar to that by which pipe *i* is connected with the cross-pipe *o*.

Instead of connecting the water-chamber *f* with the bottom of the retort, so as to stand vertically therein, as shown in Fig. 1, it may be connected with the end of the retort and be made to take a horizontal position, as shown in Fig. 3, in which case the oil-supply pipe *g* and vapor-supply pipe *i* may be connected with the bottom of the retort or be otherwise suitably connected and arranged.

In instances where it desirable to admit air to the burners from the center of the device the drip-pan *a* is provided with depressions *q* along lines adjacent and in proximity to the burner-pipes *h*, and the inner walls of such depressed portions are provided with air-inlets *r*, as is shown in Fig. 4. By thus arranging the air-inlets the flames are more equally and uniformly supplied with air, and they are forced against or toward the walls of the inclosing covering. In this case the air may or may not be admitted at the outer edges.

Instead of providing a jacket and deflector constructed as separate parts formed and arranged as shown in Figs. 1 and 2, I may construct the jacket as a cover for the burners, retort, and their adjuncts, having its upper portion provided with numerous apertures *s*, the cover being so arranged that its lower edge will rest upon the drip-pan, as is also shown in Fig. 4, the object of said cover being to inclose the retort and form a seat or bearing for anything that is to be heated.

It is obvious that various changes may be made in the form and arrangement of parts shown in the drawings without departing from the nature and spirit of my invention.

Having thus explained the nature of my improvements and described ways of constructing and using the same, I declare that what I claim is—

1. In a vapor-burner, the combination, with the retort having oil supply and discharge pipes and burners, of the water-chamber opening into said retort and provided with exit-apertures, asbestus or similar material in the water-chamber, and a sheet or covering *n'* of foraminous material between the asbestus and said exit-apertures, as set forth.

2. The herein-described improved vapor-burner, comprising the retort and its adjuncts, the parallel burners *h*, connected to said retort, and the drip-pan provided with a series of obliquely-arranged air-inlet holes or ports between the burners, as set forth.

3. The herein-described improved vapor-burner, comprising the retort and its adjuncts, the burners connected therewith, the drip-pan, and the removable cover entirely inclosing said retort and burners and adapted to rest at its lower edge upon and supported by the drip-pan and provided in its upper part with apertures, as and for the purpose set forth.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 15th day of July, A. D. 1890.

WARREN M. ABBOTT.

Witnesses:

ARTHUR W. CROSSLEY,

A. D. HARRISON.