

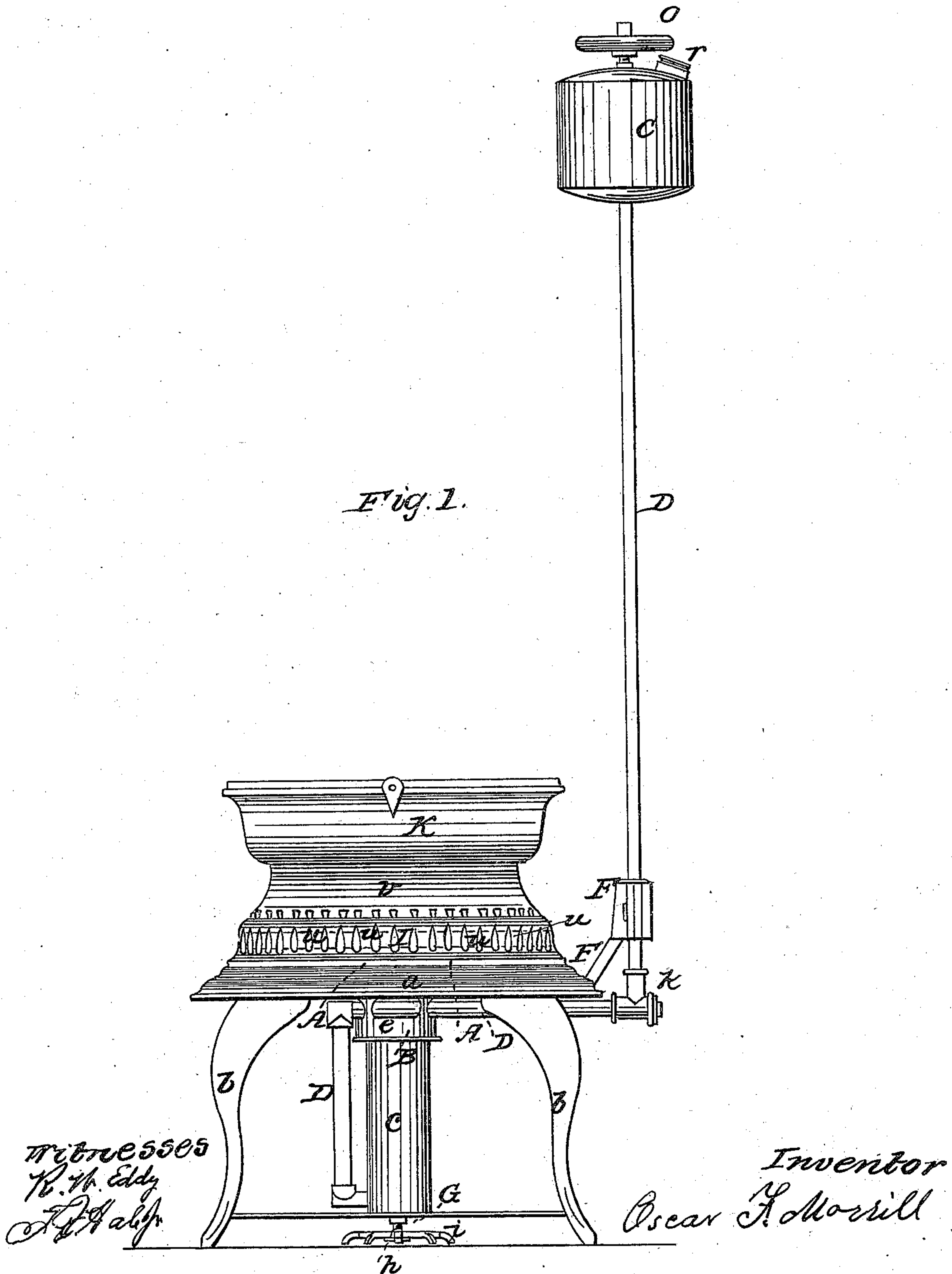
O. F. MORRILL.

2 Sheets—Sheet 1.

Vapor Stove.

No. 42,214.

Patented April 5, 1864.

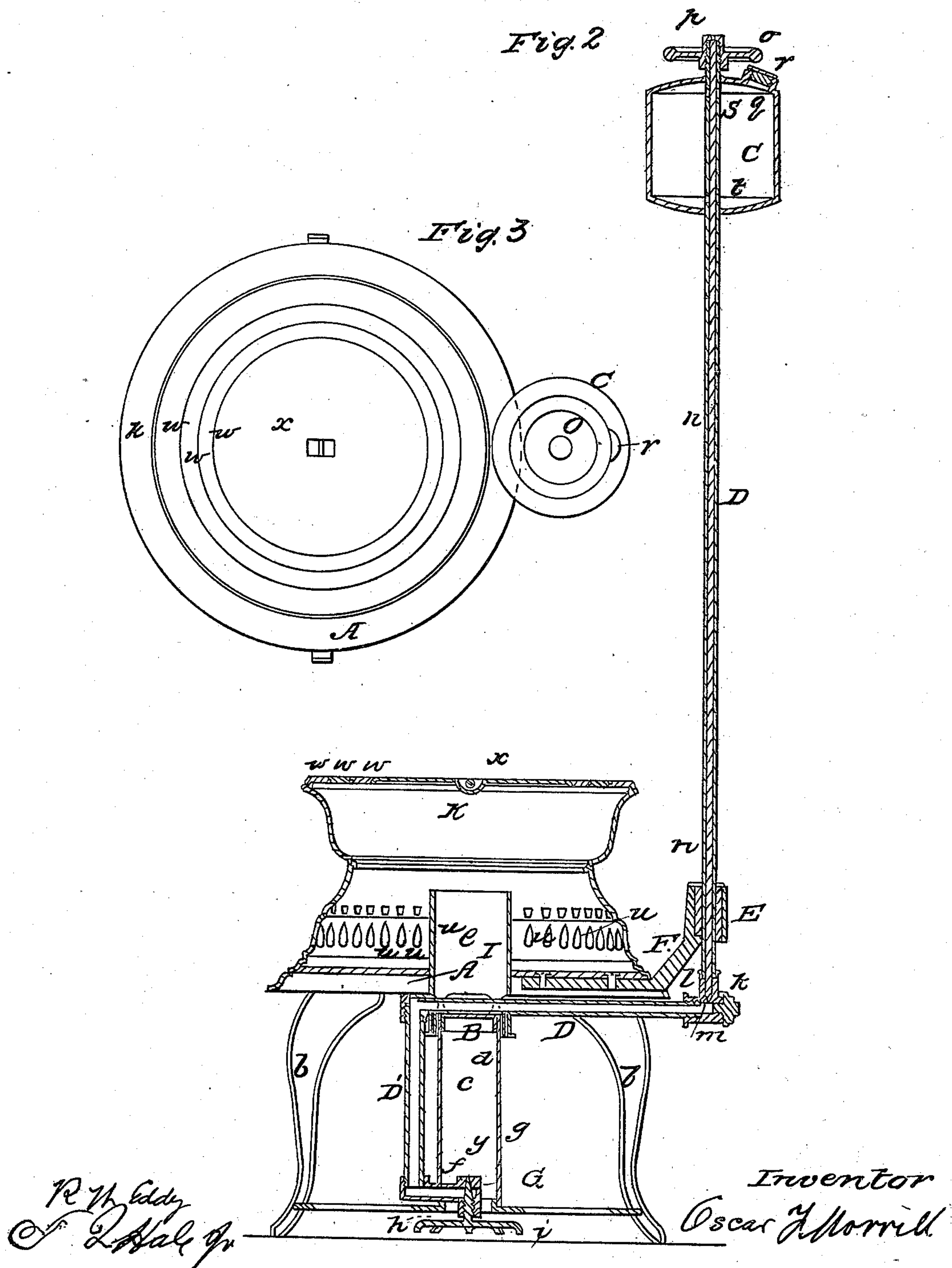


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# UNITED STATES PATENT OFFICE.

OSCAR F. MORRILL, OF CHELSEA, MASSACHUSETTS.

## IMPROVEMENT IN VAPOR-STOVES.

Specification forming part of Letters Patent No. 42,211, dated April 5, 1864.

*To all whom it may concern:*

Be it known that I, OSCAR F. MORRILL, a resident of Chelsea, in the county of Suffolk and State of Massachusetts, have made an invention of certain new and useful Improvements in Apparatus for Generating Heat for Culinary or Various other Purposes; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a side elevation, Fig. 2 a vertical section, and Fig. 3 a top view, of my said heat-generating apparatus.

In the said drawings, A denotes a stand, which consists of a circular disk or tablet, *a*, and a suitable number of legs, *b b*, extending therefrom. Within the stand there is arranged an aerovapor-burner, B, which consists of a tube, *c*, which is open at its lower end, and at its upper end is capped by a foraminous plate or wire gauze diaphragm, *d*, over which there is a perforated chimney, *e*, which extends through the part *a* concentrically and rises above it, as shown in Fig. 2. Raised some distance above this stand there is a reservoir or close vessel, C, for holding "petroleum naphtha" or "carbon spirits," or any liquid easily vaporizable and combustible, the said vessel C being supported by a conduit or tube, D, which not only passes entirely through and extends a short distance above the said vessel, but also extends downward from it toward the stand A and through a block of wood, E, (or some other suitable non-conductor of heat,) held in place by means of an arm or projection, F, fastened to and extending from the said stand. The purpose of the block E, which I term the "insulator," is to so insulate the conduit from the stand as to prevent the heat of the latter when the apparatus may be in use from being so absorbed by the conduit as to vaporize the liquid which may be flowing down the vertical part of it. From the said insulator the conduit extends horizontally underneath the tablet *a* and over the foraminous diaphragm of the burner, and thence down alongside of the exterior surface of the said burner, and thence is carried horizontally into the lower part of the burner and opens into a vertical jet tube or receiver, G. At its upper end the said receiver has a very small eduction-orifice, *f*, which is conical, to receive a conical

valve, *g*, whose stem is provided with an elevating screw, *h*, and a pronged wheel, *i*, arranged as shown in Fig. 2. The said screw is tapped into the receiver G, and when turned in one direction will elevate the valve toward its seat or the opening *f*. The screw, when revolved in the opposite direction, will depress the valve. At the bend *k* of the conduit D there is another such valve and valve-seat, the same being shown at *l* and *m* in Fig. 2, the stem *n* of the valve being extended up through and out of the standard or larger vertical part of the conduit, as shown in the drawings. Such stem is provided at its upper end with a hand-wheel, O, by which it may be revolved. The hub of the hand-wheel is recessed to fit around and screw upon the upper part of and constitute a cap to the conduit, as shown at *p* in Fig. 2. Furthermore, the reservoir C is furnished with a filling-orifice, *g*, provided with a screw cap, *r*, and there are two holes, *s t*, made through that part of the conduit D which is within the reservoir C, one of these holes, *s*, being near the top and the other, *t*, near the bottom of the reservoir. Surrounding the chimney is a separate casing, I, having numerous openings, *u u u*, made through its sides. It is through these holes that the spent volatile products or gases make their escape after having acted on the vessels or apparatus, which may be arranged over the chimney. The casing I has a contracted neck, *v*, made to receive or support another casing or boiler supporter, K, which rests upon it, and is formed as shown in the drawings. The said boiler-supporter K is provided with one or more rings, *w*, and a circular plate or cover, *x*. The second ring laps on the first ring, and in its turn is lapped on by the third ring, which is also lapped by the cover, the whole being arranged concentrically and formed as shown in the drawings, and particularly in Fig. 3. When the rings and cover are in place, they serve to cover the opening in the top of the boiler-supporter, and may be used for sustaining one or more sad-irons or other articles or vessels to be heated by the flame of the burner. By removing the cover from the inner ring we shall have an opening either for insertion of a kettle, broiler, or pan into the latter, or for the admission of heat directly to a pan or vessel when placed on the said



ring. So by removing the second or second and third rings from the rest of the apparatus larger openings may be formed for like purposes.

By means of two valves arranged and applied to the conduit D as described, we are enabled to regulate not only the discharge of liquid into the vaporizer or that part of the conduit which is horizontal and immediately over the burner, but we can also regulate the flowage or escape of the vapor that may be formed. With but one valve in the conduit the flame will often suddenly decrease in height, and is subject to much fluctuation; but I have found when a valve is used to regulate the flowage of the liquid into the vaporizer and another valve is also employed to regulate the discharge of vapor therefrom the height of the flame may be adjusted and the apparatus will operate to much better advantage than with but one valve. Furthermore, by having the conduit extend into and through and out of the reservoir in manner as specified, and providing the conduit with the extra hole s, arranged near the top of the reservoir, any vapor in the conduit will not be liable to be expelled from or driven out of the top of the reservoir, but when back flowage of the vapor, occasioned by the pressure of the gas or vapor in the conduit, may take place, such vapor will be driven back into the reservoir, where it will be condensed by the cool liquid therein.

The arrangement of the valve rod or stem n within the conduit D in manner as shown in Fig. 2 not only imparts strength to the conduit, but enables the hand-wheel to answer the twofold purpose of a cap to the conduit and a means of rotating the valve-stem. The hole s and the arrangement of the conduit and the reservoir also operate to prevent

expulsion of the liquid from the top of the conduit.

I would remark that instead of conveying the conduit down alongside the external vertical surface of the mixer or burner in manner as shown in Fig. 2, it may be run down through the diaphragm and alongside of the internal surface of the mixer or burner. By having the reservoir C elevated above the burner or fixed on a conduit arranged some distance above the stand I am enabled to obtain a head or pressure of the fluid in the conduit advantageous to its emission through the main valve-opening and into the vaporizer.

I would also remark that instead of carrying the conduit straight over the burner it may be curved more or less, so as to increase the heating surface of it.

I would also state that in consequence of the position of the hand-wheel and its valve-stem n there is not the danger of leakage of fluid that there would be with a faucet-valve arranged at the bend of the conduit.

Having thus described my said apparatus, what I claim therein as my invention is as follows:

1. The combination of the insulator E with the conduit D and the stand A of the apparatus.

2. The improved apparatus for supporting vessels or articles to be heated by the aerovapor-burner, the same consisting not only of the removable boiler supporter K with series of cap-rings and cover, but the stand A as made with the perforated casing I, the whole being arranged substantially in manner as described.

OSCAR F. MORRILL.

Witnesses:

R. H. EDDY,

F. P. HALE, Jr.