(No Model.)

L. W. EVERHART.

VAPOR BURNER.

No. 467,795. Patented Jan. 26, 1892.

Fig. 1.

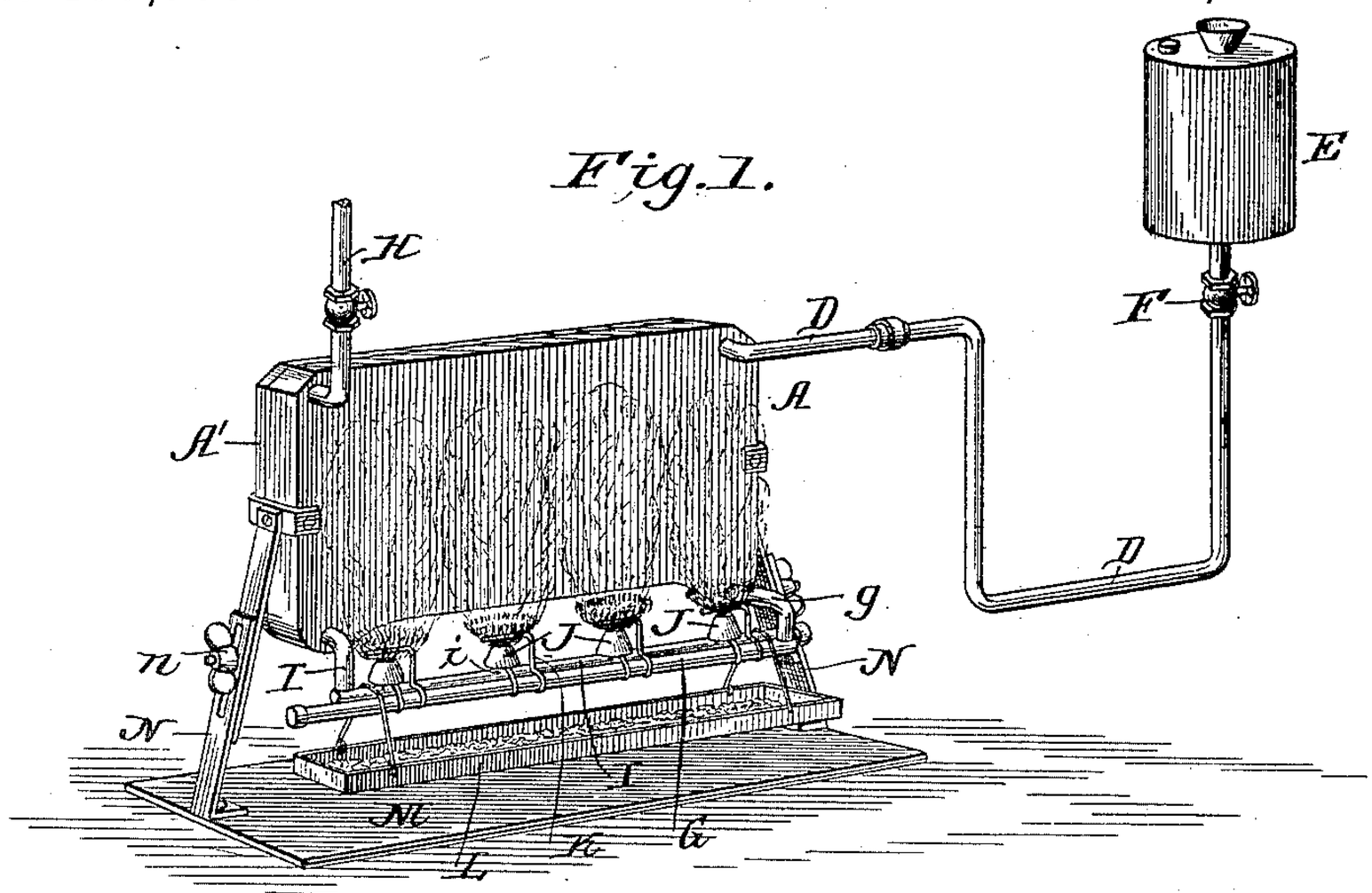


Fig. 2.

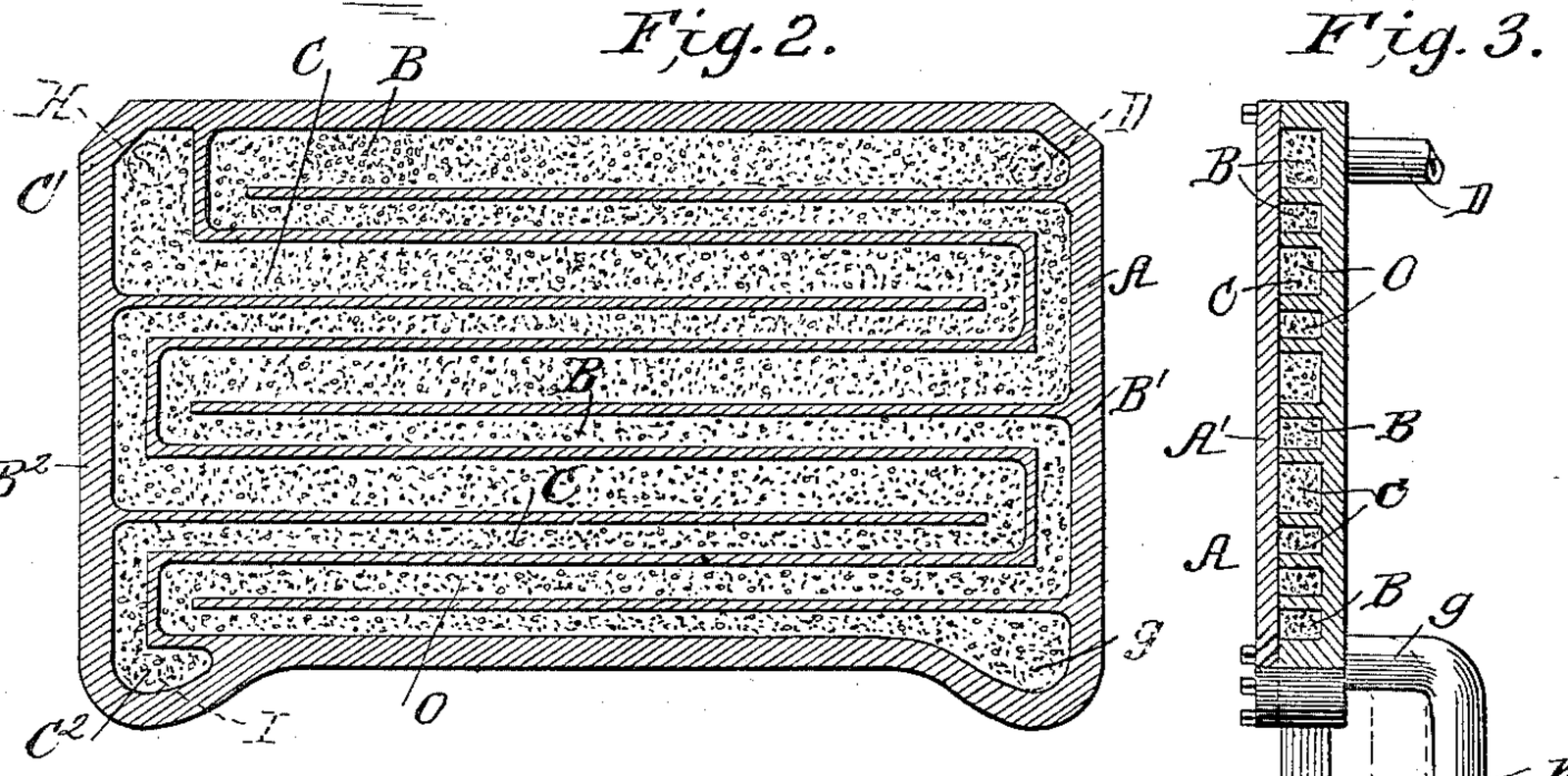


Fig. 3.

Fig. 4.

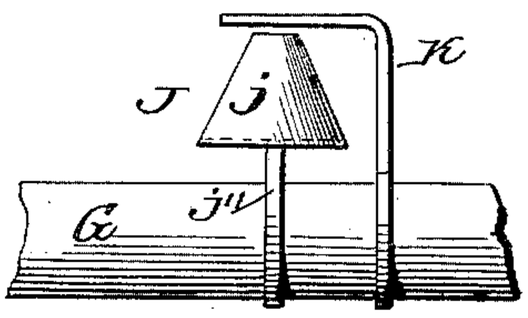
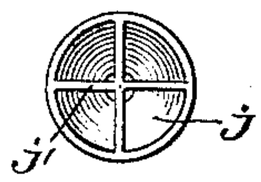


Fig. 5.



WITNESSES:

Fred G. Dieterich

W. D. Blondel

INVENTOR:

Logan W. Everhart.

BY Munn & Co

ATTORNEYS

UNITED STATES PATENT OFFICE.

LOGAN W. EVERHART, OF CHANUTE, KANSAS.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 467,795, dated January 26, 1892.

Application filed July 20, 1891. Serial No. 400,167. (No model.)

To all whom it may concern:

Be it known that I, LOGAN W. EVERHART, residing at Chanute, in the county of Neosho and State of Kansas, have invented certain new and useful Improvements in Vapor-Burners, of which the following is a specification.

My invention relates to improvements in petroleum-burners, and more particularly to a retort having attached burners which may be readily placed in the fire-pot of a stove, range, or boiler-furnace for cooking and water-heating purposes; and it has for its object to provide a simple and removable gaseous-fuel generator of this class which can be manufactured at a small cost, which will be very effective for its desired purpose.

A further object is to provide a retort which is also arranged for the vaporization of water, which is permitted to flow in passages formed therein, and which exit into a discharge-pipe arranged adjacent to the vapor-discharge pipe, whereby the steam shall issue in jets into the vapor-jets and thereby intimately commingling the said vapor and steam with the external atmosphere, so as to cause a good suction-draft and produce an intense and smokeless flame.

With these general objects in view and others hereinafter apparent and further set forth my invention consists in the peculiar combination and novel arrangement of the several parts, all of which will hereinafter be fully described in the annexed specification and particularly pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved vapor-burner. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is a cross-section, and Figs. 4 and 5 are detail views hereinafter referred to.

In the accompanying drawings, A indicates the retort or generator, which is made of cast-iron and formed, preferably, of the shape shown, the interior of which is cast with alternately-arranged sinuous passage-ways B C, the one B beginning at the upper and ending at the lower corner of one end B′ of the retort, while the other C begins at the opposite upper corner C′ and ends at the lower corner C^2 of the end B^2 of the retort, said passage-ways being arranged in a manner most clearly illustrated in Fig. 2 of the drawings, by reference to which it will be seen that at the beginning of the passage B is entered the oil-supply pipe D, which connects with the supply-tank E and which is provided with the ordinary globe or needle valve F, and with the lower end of said passage B communicates the end *g* of the vapor or burner pipe G, which is disposed below and curved outward, so it will project beyond the front wall of the retort, such pipe being provided with the usual exhaust-perforations *g′*.

H indicates a water-pipe, which enters the upper end of the passage C, which pipe is also provided with the ordinary cut-off valve, as shown, and I indicates a steam-discharging pipe, which communicates with the lower or discharge end of passage C and which extends parallel with and in an opposite direction to the pipe G, said pipe I being formed with a series of exhaust-ports *i i*.

By reference to Fig. 3 it will be observed that the pipes G and I are arranged close together and have their exhausts *g′* and *i* arranged angularly, so as to discharge toward each other and under peculiarly-constructed burners J, each of which consists of a cone-shaped cap *j*, formed with a cross of wire *j′*, said burners being held to the pipes by the bracket-pieces *j″*, an additional deflector consisting of a narrow strip of metal K being provided for each burner, which is secured to the pipes and projects over the burners, as clearly shown in Fig. 4 of the drawings.

L indicates a drip or igniting pan, which is hung from the pipes G and I and is provided with a suitable absorbent material—such as asbestus—to catch the fluid, it being hung in a manner that no matter at what angle the retort may be held it will automatically set itself under the said pipes G and I.

M indicates a base, which is connected with the retort by the standards N, which are made adjustable, as at *n*, whereby the retort can be readily adjusted vertically in different-height fire-boxes.

The cap-plate A′ is arranged to be detachably secured to the base or body portion of the retort, so as to provide an easy and quick means for cleaning the retort and to prevent leakage. A thin sheet of asbestus or clay-

wash is arranged between said cap-plate and the base.

The inside or passage-ways of the retort are filled with coarse sand or gravel O, which serves to regulate the flow and pressure of the oil and water and also provides a greater heating-surface.

From the foregoing description, taken in connection with the drawings, it will be seen that when it is desired to start the burners the valve P is first opened and a small quantity of oil allowed to pass through the retort out into the pipe G and onto the asbestus in the drip-pan, which is then lighted to heat the retort.

It should be here stated that, owing to the peculiar way in which the pipe G is arranged relatively to said retort, the flame and heat from the burners will pass up over the entire front face of said retort, thereby heating a large area of the same at one time. Now when the retort has been sufficiently heated the flow of oil is again turned on, which, flowing through the now thoroughly-heated sinuous passage, forms into and passes off into the pipe G as vapor. The water is then turned on, which, passing into the heated retort, quickly forms steam, which in its circulation within the retort becomes superheated or dry steam and passes off into the pipe I and out through the orifices *i* in fine jets and is mixed with the vapor, the vapor and steam discharging up against the cone-shaped caps *j*, where it is spread or divided, and, meeting again at the apex of the cone, passing out through the top, where it is again divided or spread by the strips K, against which it strikes. The rapid passage of the mixed jet of vapor and steam through the cone causes a draft or suction through the same from the bottom upward, causing the air to be drawn up into the cone and there mixed with the mixed gas and steam vapor, giving an intensely hot and smokeless flame, which passes up directly in front of the generator or retort A, as before stated.

Instead of filling the sinuous passages with coarse sand or gravel, I may fill them with wire cut in lengths and laid in the said passages.

The simplicity of construction of my improved generator makes it very easy to clean in case it should become clogged either in the retort proper or in the perforated pipes.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A vapor-generator comprising a retort of a shape substantially as shown, formed with independent sinuous passages B and C, running in reverse directions, their upper ends having inlet-openings and their lower ends discharge-openings, the oil and water supply pipes D and H, connected with the oil and water inlets, respectively, and the jet-pipes G and I, connected, respectively, with the oil and water discharge openings, extended laterally therefrom and having their jet-openings arranged so that the flame is distributed over the vertical face of the retort to heat all of the sinuous passages at once, as and for the purpose described.

2. The combination, with the retort A, formed with a body portion having a series of independently-arranged sinuous passages having a gravel or analogous filling, of a removable cap-plate, the oil and water supply pipes connected with such passage-ways, as shown, the pipes G and I, forming the discharges for the said passages, such pipes extended laterally from under the retort and formed into oppositely-extending jet-pipes, such pipes provided with jet-openings adapted to lead the vapor-flame up over the vertical face of the retort, whereby to heat all of the passage-ways at once, and the steam and vapor mixing burners J, held over the jet-pipes, substantially in the manner and for the purpose described.

LOGAN W. EVERHART.

Witnesses:
W. H. PARKER,
G. W. FARRELLY.