

(No Model.)

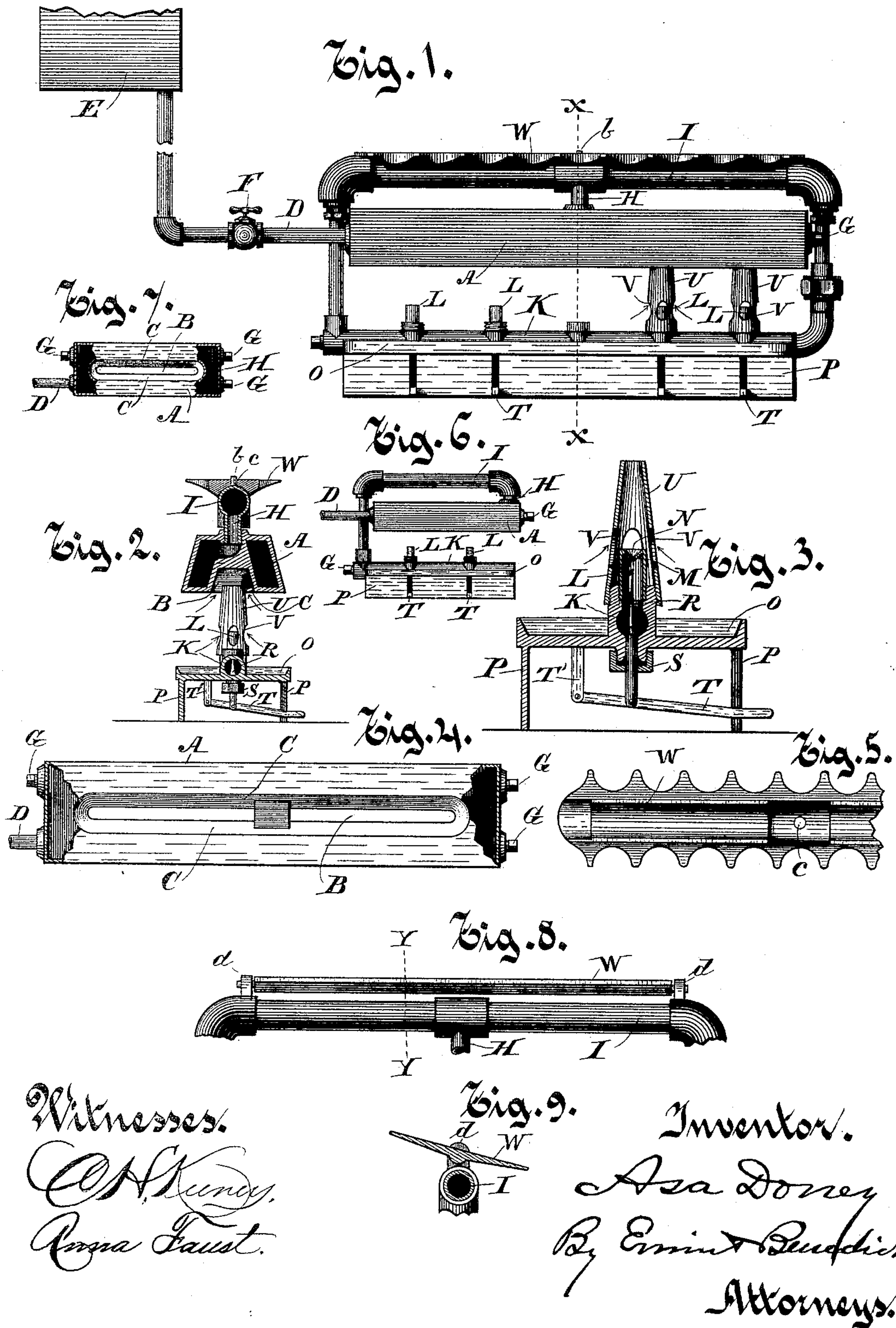
2 Sheets—Sheet 1.

A. DONEY.

DEVICE FOR VAPORIZING HYDROCARBON OIL AND BURNING THE SAME.

No. 410,639.

Patented Sept. 10, 1889.



(No Model.)

2 Sheets—Sheet 2.

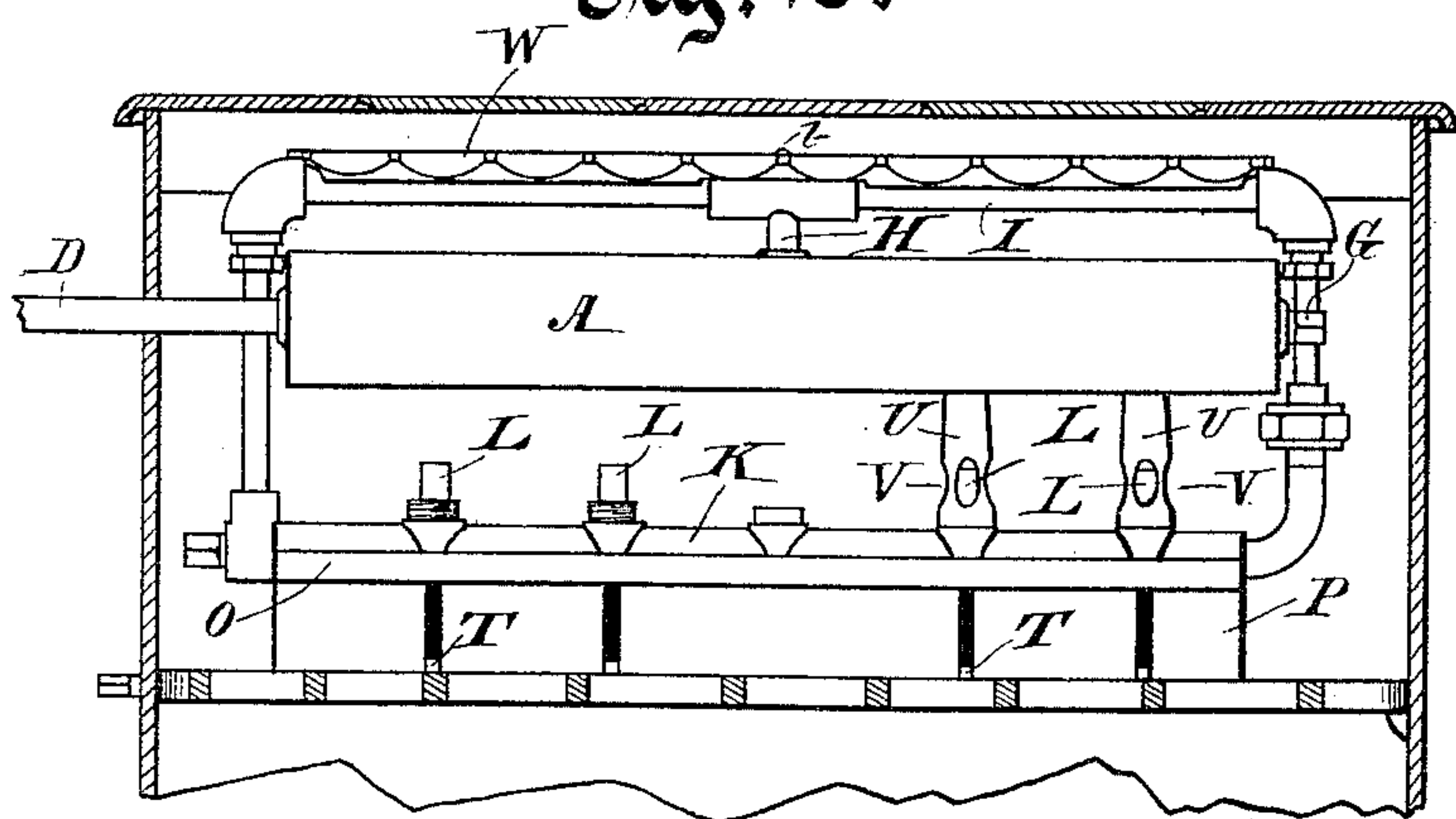
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Fig. 10.



Witnesses.

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UNITED STATES PATENT OFFICE.

ASA DONEY, OF CHICAGO, ILLINOIS, ASSIGNOR TO JEREMIAH B. SELBY, OF MILWAUKEE, WISCONSIN.

DEVICE FOR VAPORIZING HYDROCARBON OIL AND BURNING THE SAME.

SPECIFICATION forming part of Letters Patent No. 410,639, dated September 10, 1889.

Application filed August 13, 1888. Serial No. 282,636. (No model.)

To all whom it may concern:

Be it known that I, ASA DONEY, of Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Devices for Vaporizing Hydrocarbon Oil and Burning the Same; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters or figures of reference marked thereon, which form a part of this specification.

My invention, to be hereinafter distinctly claimed, relates to improvements in devices for vaporizing hydrocarbon oil and burning the same.

In the drawings, Figure 1 is an elevation of my newly-invented device, parts being omitted for showing other parts more fully. Fig. 2 is a transverse vertical section of the device shown in Fig. 1 on line X X. Fig. 3 is a vertical transverse section of one of the vapor-discharging tubes with a chimney thereon, the supporting-tray, and an aperture-closing needle and its operating mechanism. Fig. 4 is a view of the under side of the device for heating and vaporizing the oil, parts being broken away to show the interior. Fig. 5 is a view of the under side of a portion of the deflector. Fig. 6 is an elevation of a modified form of my device. Fig. 7 is a view from beneath of the modified form of vaporizer shown in Fig. 6, parts being broken away to expose the interior. Fig. 8 is an elevation of the pipe for superheating the vapor and of the deflector supported adjustably thereon. Fig. 9 is a vertical transverse section of that portion of the device shown in Fig. 8 on line Y Y. Fig. 10 is a vertical section of the fire-pot of a kitchen cooking-stove, showing how my device is used in connection with such a stove.

The same letters refer to like parts in all the views.

The vaporizer A is a long hollow cast-iron retort, of considerable height or thickness vertically, having a central longitudinal opening or slot B, the retort being thus separated into two parallel parts, which are each rhomboidal in transverse section, and the inner walls C C of these parts, which walls are opposite to each other and are the longer sides of the transverse rhomboidal form, are inclined in-

wardly upwardly toward each other from the bottom to the top of the retort, whereby a constantly-narrowing flue of considerable height is formed, terminating at the top surface of the retort in the long narrow aperture for the passage of the compressed vapor in a thin unvarying stream. The vaporizer A is provided with a pipe D, leading into it at one end from the oil-supplying reservoir E. The pipe D is provided with a stop-cock F for shutting off or letting on the supply of oil, as desired. The reservoir E may be located at some point considerably above the vaporizer A, so as to supply the oil thereto by gravity, or may be located in a room beneath, and the oil forced up by a pump or by compressed air. Other apertures are provided in the vaporizer A, either one of which may be used for attaching the supply-pipe D to the vaporizer, and when not so used are closed by stop-nuts or plugs G G G. A pipe H is secured to the upper side of the vaporizer A, forming a duct leading therefrom into the superimposed superheating vapor-tube I. The vapor-tube I extends horizontally the entire length of the vaporizer A, immediately above the slot B, and turns downwardly at one or both ends into the vapor-discharge pipe K, which extends horizontally the entire length of the vaporizer A and immediately beneath the slot B. A series of vapor-discharge tubes L L are inserted at short distances from each other in apertures therefor in the upper surface of the vapor-discharge pipe K. These short tubes L L each terminate at its upper end in an inwardly-projecting cone M, provided with a small central aperture N, through which the vapor escapes. An igniting pan or tray O is located on both sides of the pipe K, which tray and pipe K are preferably constructed integrally of cast metal, the tray being also preferably provided with downwardly-extending flanges P P, on which the device is supported. A needle R, adapted to enter the central aperture of the cone M and clear it out or close it, as desired, extends downwardly through an aperture therefor in the lower side of the pipe K and through a stuffing-nut S, and at its lower end is pivoted to a lever T, which lever T at one end is pivoted to a bracket T', rigid to the tray O. The nee-

dle R has a vertical movement, and is operated by means of the lever T either to clear out or close the aperture in the cone M. The tube H is preferably connected only with one side of the vaporizer A, as shown in Fig. 2, which is the side that is opposite to that into which the pipe D leads, whereby the fluid or vapor produced must pass entirely through the side of the vaporizer into which it first comes from the pipe D and around into the other side of the vaporizer before it can pass out through the duct H, thereby exposing it for as long a time as possible to the heat of the fire.

It will be understood that to put this device into operation a little oil is allowed to flow into the tray O, which oil is then set on fire, and the flames coming up against and around the vaporizer A cause the oil, which is permitted to flow into it through the pipe D in a limited supply, to be vaporized, which rises and flows through the pipe H and pipe I into the tube K, and is discharged through the orifices in the tubes L L up through the slot B, and being set on fire above the vaporizer A burns with a constant and steady flame up against and around the tube I, whereby the vapor in the tube I is so considerably superheated as to still further vaporize it and intensify the flame and heat of the burning. The beveled walls C C of the slot B act as a flue, into which air is drawn and mingles with the vapor, and is carried out above the vaporizer through the slot, providing for the combustion of a supply of oxygen.

To increase the supply of oxygen and to create a stronger draft, I sometimes use a chimney U, constructed in the form of a frustum of a cone, the lower end of which is secured to the device about the tube L, the top being carried up some little distance above the top of the tube L. These chimneys are each provided with a series of apertures V V, whereby a supply of air is furnished, and thereby an additional quantity of oxygen is brought into contact and mingles with the vaporized oil, when it is carried up through the slot B and the combustion thereby greatly increased. A deflector W, consisting of a plate of metal, is supported upon the tube I, and is adapted to deflect the flame or break it up, as desired. The deflector shown in Figs. 1 and 5 is provided with notched edges, whereby the flame as it passes it is broken up and spread out. This deflector may for ordinary purposes rest on the tube I and be held in position by a pin b, rigid on the tube I, which pin enters the aperture c in the deflector; but for spreading out the flame or for deflecting it to front or rear against a water-back I use a deflector having a straight edge like the one shown in Fig. 8, which is supported at its ends in

brackets D D therefor, rigid on the tube I. This deflector may be tilted up or down in these brackets D D, as indicated in Fig. 9, whereby the flame may be thrust outward or upward, as desired.

What I claim as new, and desire to secure by Letters Patent, is—

1. A vapor-burning device consisting of an oil-vaporizing chamber having a central longitudinal slot, the opposite side walls of which slot incline inwardly toward each other from the bottom of the chamber to the top, forming a constantly-narrowing flue and terminating at the top of the chamber in a long narrow opening for the passage of the vapor, vapor-discharge pipe having a series of burner-tubes L, located in a line immediately below the slot in the chamber, in combination with a longitudinal superheating vapor-tube located above and in line with the slot in the chamber, which superheating vapor-tube is connected by pipes directly with the vaporizing-chamber and with the vapor-discharging pipe, whereby the entire product of the vaporizing-chamber passes through the superheating vapor-tube to the vapor-discharging pipe, substantially as described.

2. In a device for vaporizing and burning carbon oil, an oil-vaporizing chamber provided with an oil-supplying pipe, said chamber having a central longitudinal slot, the walls of which incline inwardly from the bottom to the top of the chamber, forming a constantly-narrowing flue for the passage of vapor, and terminating at the top of the chamber in a long narrow aperture, in combination with a discharge-pipe leading from the chamber and passing above in line with and at a short distance from the slot in the chamber, which pipe continues and extends below the chamber and the slot therein, a series of vapor-discharging tubes in said pipe below the slot in the chamber and thereon frustum-of-cone chimneys, each provided with a side aperture or apertures, which chimneys are adapted to lead the discharged vapor and the air introduced through the side apertures upward into the flue formed by the inclined walls of the slot in the chamber, by which device the entire supply of oil vaporized and burned is led into the vaporizing-chamber and through the superimposed superheating-pipe and is discharged into and is burned above the slot in the chamber, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

ASA DONEY.

Witnesses:

C. T. BENEDICT,
C. C. H. KEENEY.