

(No Model.)

Z. DAVIS.

VAPOR STOVE BURNER.

No. 384,511.

Patented June 12, 1888.

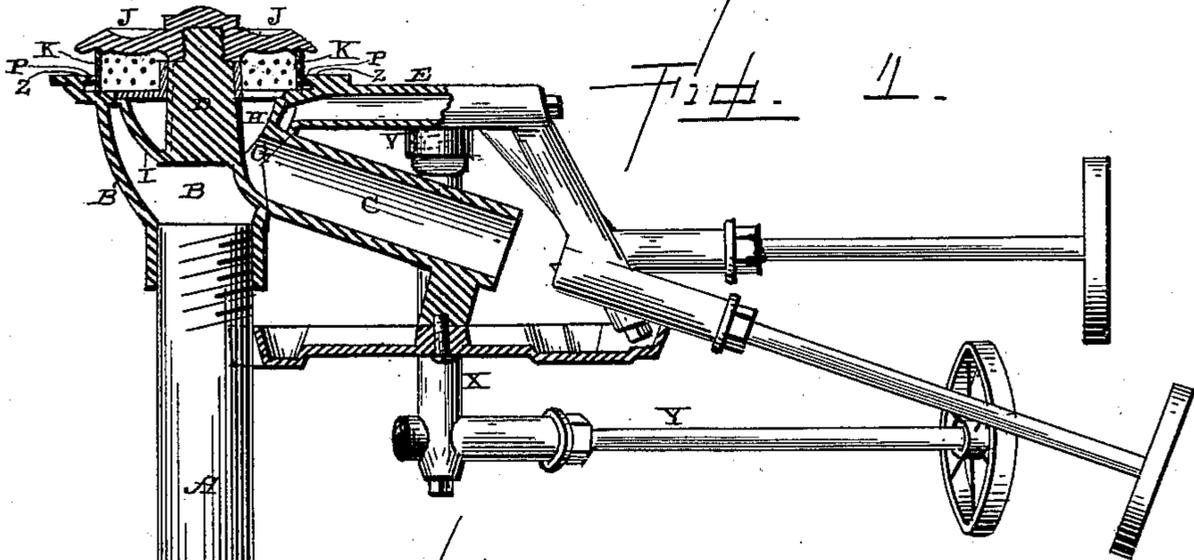


Fig. 1.

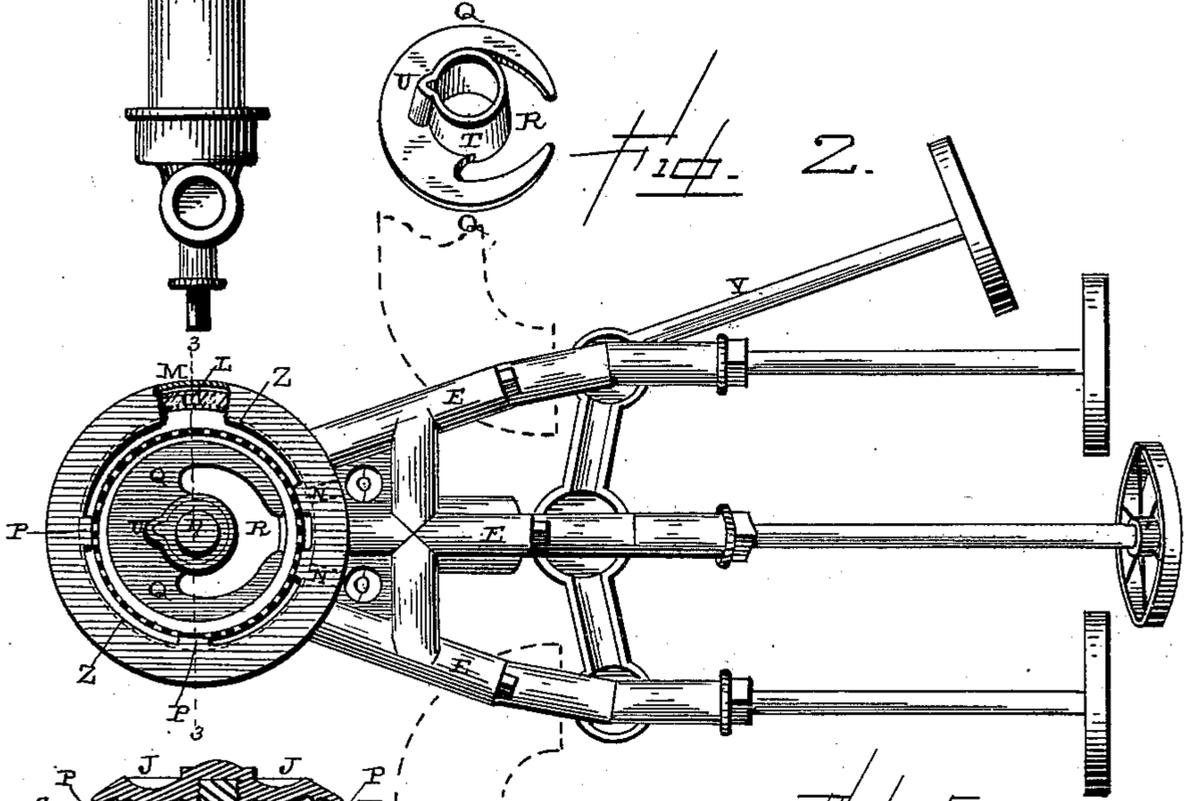


Fig. 2.

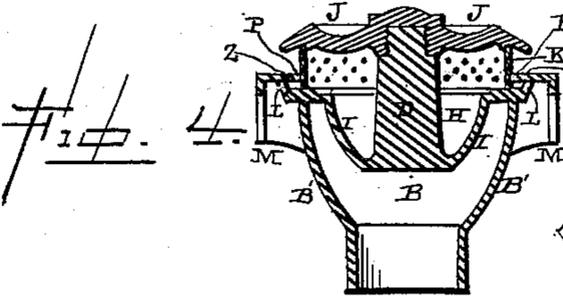


Fig. 4.

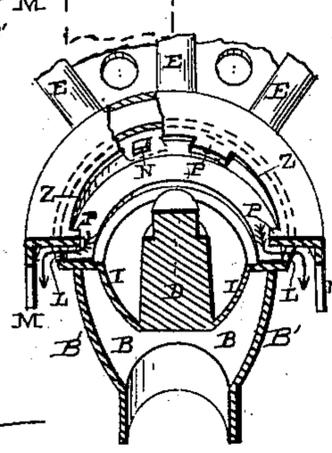


Fig. 5.

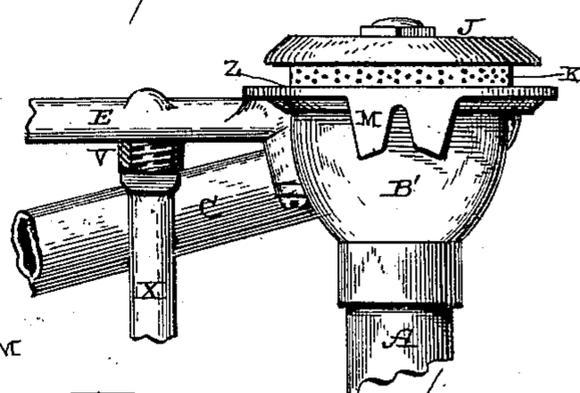


Fig. 6.

Witnesses.

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# UNITED STATES PATENT OFFICE.

ZEBULON DAVIS, OF CLEVELAND, OHIO.

## VAPOR-STOVE BURNER.

SPECIFICATION forming part of Letters Patent No. 384,511, dated June 12, 1888.

Application filed July 25, 1887. Serial No. 245,237. (No model.)

*To all whom it may concern:*

Be it known that I, ZEBULON DAVIS, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful  
5 Improvements in Vapor-Stove Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference  
10 being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in vapor-burners.

The objects of my invention are to provide  
15 a vapor-burner in which a post or standard rises directly from the generating-chamber for the purpose of receiving the cap of the burner, to have a portion of the burner-flame serve as a subsidiary jet without in any manner decreasing  
20 the amount of heat from the burner, and to cause an equal distribution of the vapor inside of the burner, so that the gas will burn evenly from all sides alike.

Figure 1 is a side elevation of a vapor-burner embodying my invention, partly in section. Fig. 2 is a plan view of the same, the cap of the burner being removed. Fig. 3 is a perspective of a plate which is placed inside  
25 of the burner to cause an equal distribution of the vapor. Fig. 4 is a vertical section of the burner, taken at right angles to Fig. 1. Fig. 5 is a detached side view of the burner, taken from the opposite side from what is shown in Fig. 1. Fig. 6 is a vertical section shown in  
30 perspective of the burner, taken upon the line 33 of Fig. 2.

A represents the stand-pipe, and B the vaporizing-chamber formed in the casting B', which is screwed upon its top. This casting  
35 B' is cast with a core in a single piece complete, with the opening G, the post D, and vapor-conducting pipes E. The induction-tube C is made of cast-iron and fastened to the side of the casting in any suitable manner opposite the opening G. The top I of the chamber  
45 B is made concavo-convex, as shown, and also forms the bottom of the chamber H, into which the vapor is projected. By depressing this part I, as shown, the top of the chamber  
50 B is contracted, so that the vapor, after the burner becomes heated, is held between two highly-heated surfaces, and thus not only is a greater amount of the fuel vaporized, but a more perfect vaporization takes place than

would be the case if the part I were not depressed, as is here shown. 55

Rising from the top of the part I is the post or standard D, which is screw-threaded at its upper end, so as to have the top J of the burner screw upon it, and thus clamp and  
60 hold the perforated ring K, through which the vapor burns, rigidly in position upon the top of the vaporizing-chamber B. The top J becomes intensely heated by the flames and transmits a portion of its heat through the post or  
65 standard D to the part J, and thus converts the part I into a vaporizing-surface at the same time that it serves to prevent any of the vapor entering the chamber H through the induction-tube C from becoming condensed. 70

In the top of the casting in which the chamber B is formed there is a suitable recess, down into which the lower edge of the ring K is placed. Around the outer upper edge of this  
75 recess is formed a projecting flange, Z, under which a small portion of the flame burning on the outside of the perforated ring K catches for the purpose of heating the top of the chamber. In order to convert both the concave  
80 portion I of the casting in which the chamber B is formed and the outer walls of the chamber into vaporizing-surfaces, there are formed small openings L through the top of the retort, and through which openings are projected  
85 portions of the flame burning on the outside of the perforated ring K.

To hold that part of the flame which passes through the opening in contact with the outer surface of the chamber B, there are formed around these openings L, upon opposite sides  
90 of the chamber, as shown in Fig. 4, suitable inclosing-walls, M, which serve to prevent any escape of heat, and which absorb the heat of the flames which pass through the openings L, and thus heat the chamber B at its top and  
95 on its outer side, so as to assist in the vaporization of the fuel. Any heat which does escape from in between the inclosing-walls M rises directly upward against the cooking-utensil over the top of the burner, and hence  
100 no part of the flame issuing from the perforated ring K is lost; also, formed through that side of the top of the chamber B which is next to the conducting-pipes E are formed two openings, N, (shown in dotted lines in  
105 Fig. 2,) and through which openings N are also projected portions of the flames which issue from the perforated ring K, and these

flames issue just under the web O, which unites the three delivery-tubes E together, and thus serve to keep the tubes E hot and to prevent any condensation of the vapor while passing through them. In order to keep the ring K at a suitable distance from the openings L N, small projections or lugs P are formed upon the inner edges of the flange Z on top of the chamber B, and these lugs P serve to center the ring in position and to keep it from closing over against any of the openings, so as to prevent a free passage of flame through them.

To prevent the vapor which is projected through the induction-tube C from being forced unevenly through the farther side of the burner, a plate, Q, which is cut away upon one side, is passed down over the top of the post D, and this plate forms the top of the chamber H. The vapor, as it passes through the opening G, strikes against the post B and passes around its side and rises up against the under side of the solid portion of the plate Q. From this solid portion of the plate Q the vapor passes back toward the side of the chamber H at which it entered, and then rises through the opening R and spreads evenly through the burner. As the gas rises evenly into the space or chamber inside of the perforated ring K, it burns from all sides of the ring K with equal force. Were no plate Q used the gas would be projected through the ring K on the opposite side of the induction-tube C, and thus burn with a blowing sound from this side, while but very little flame would issue from any of the other sides. Rising from the top of this plate Q is a collar, T, which is provided with a groove, U, upon one side, which collar and groove fit down over the post D, as shown in Fig. 2, the post being provided with a rib upon one side for the purpose of preventing the plate from turning around, and thus getting out of position.

Through the underside of the pipe E, through which the vapor is conducted to one of the needle-valves, is made a screw-threaded opening, V, and this opening is kept closed by a suitable plug when only three burners are desired.

The precise location of the opening V is immaterial, for it may be made under any one of the pipes, just as may be preferred.

When it is desired to add an additional burner, either for the oven or for any other part of the stove, a detachable conducting-pipe, X, is screwed into the opening after the plug has been removed, and which pipe X carries a needle-valve, Y, of its own. This detachable pipe X may be left in position upon the burner; but in order to prevent any mistake in operating the wrong valve when no fourth burner is needed, this pipe X will be removed and the opening again closed by a plug. By the use of a removable conducting-pipe, X, any stove having a central generating-burner can have an additional burner added to it whenever so desired.

Heretofore when a vapor-stove having a central generator was made but for three burners there was no way of increasing its capacity by the addition of another burner; but where an opening is made in the manner here shown a removable pipe, X, can be inserted and removed at will, thus increasing the capacity of the stove by the addition of another burner. Of course the number of openings made and the number of additional pipes X that are used can be increased indefinitely.

Having thus described my invention, I claim—

1. The combination, with the stand-pipe, of the casting B', secured to its top and having the depressed top or portion I and the post or standard D cast therewith, the cap J, secured upon the post, and the ring K, which is secured upon the top of the casting by the cap, the casting having the two chambers B H formed therein, substantially as described.

2. The combination, with the stand-pipe, of the casting B', secured upon its top and having the depressed portion or top I, so as to separate the vaporizing and commingling chambers, and the inclosing-walls M, formed as a part thereof, and the ring and cap J, suitable openings, L, being made through the top of the casting outside of the ring, so as to conduct vaporizing-flames inside of the walls M, substantially as set forth.

3. The casting B', provided with a recess in its top, so as to receive the lower edge of the ring, and provided with the horizontal projections extending inwardly from its inner edge to center the ring, and having openings L through its sides for the escape of the vaporizing-flames, in combination with the ring and cap, substantially as specified.

4. In a vapor-burner, the combination of the casting B', having the commingling-chamber formed in its top, with the plate Q, placed over the top of the chamber and having an opening in one side, with the ring K and cap placed above the plate, substantially as shown.

5. The combination of the casting B', having a recess in its top to receive the ring, and a horizontal flange, Z, extending around the upper edge of the recess outside of the ring, with the ring and cap, substantially as set forth.

6. The combination of the casting B', having a recess in its top to receive the lower edge of the ring, a horizontal flange, P Z, extending around the upper edge of the recess outside of the ring, and openings L through the casting for the escape of vaporizing-flames, with the ring and cap, substantially as specified.

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

ZEBULON DAVIS.

Witnesses:

A. S. PATTISON,  
L. F. GARDNER.