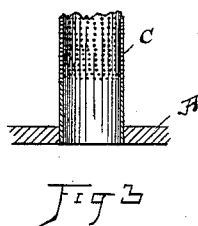
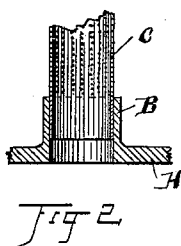
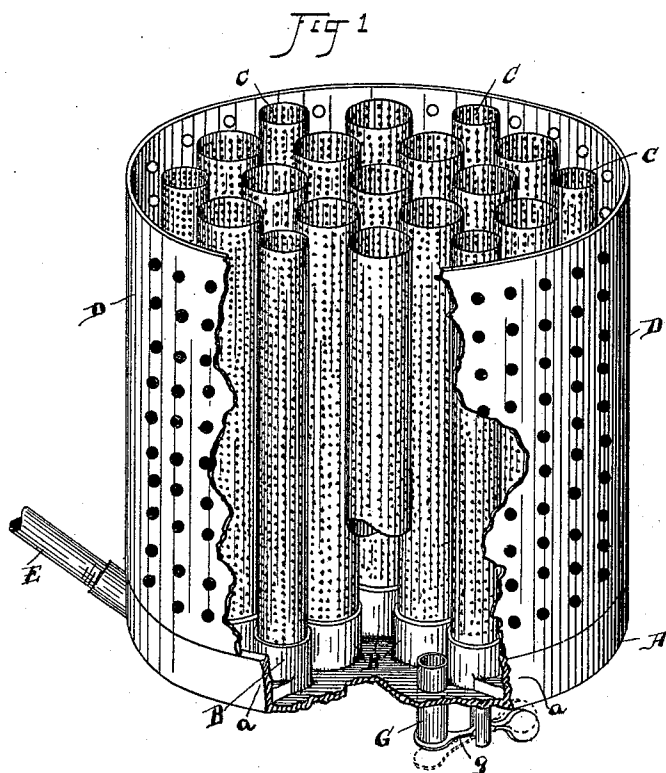


(No Model.)

W. R. JEAUVONS & J. A. LANNERT.
VAPOR BURNER.

No. 461,219.

Patented Oct. 13, 1891.



Witnesses
R. B. Mosier
Victor Schneider

Inventors
William R. Jeavons
John A. Lannert.
By his Attorney
H. T. Fisher

UNITED STATES PATENT OFFICE.

WILLIAM R. JEAVONS AND JOHN A. LANNERT, OF CLEVELAND, OHIO.

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 461,219, dated October 13, 1891.

Application filed December 19, 1890. Serial No. 375,182. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM R. JEAVONS and JOHN A. LANNERT, citizens of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Vapor-Burners; and we do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to vapor-burners; and it consists in the construction substantially as shown and described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view of the improved burner with a portion of the outer wall and the base broken away to disclose the interior construction. Fig. 2 is a central vertical section of one of the numerous short tubular projections on the bottom of the bowl or cup, forming the base. Fig. 3 is a modification, as hereinafter described.

A represents the bowl or cup of the burner, having a substantially vertical flange *a* about its outside of such depth as will afford a vapor-distributing chamber beneath the plane of the openings through which air is admitted to the burner, thus enabling the vapor, which is heavier than air, to distribute itself evenly to all parts of the said chamber over the base of the bowl without igniting in said chamber and to afford an equal distribution of vapor all around to support an equal flame about all the burner-tubes. The bottom of the bowl is studded with a number of hollow tubular projections B, having a limited space between them, as seen in Fig. 1, and rising substantially to the level of flange *a*. These projections are open throughout, so as to take in air from the bottom, and each one is provided with a perforated tube or chimney C, fixed firmly therein, all the said tubes rising to a common level. These projections may have more or less size in cross-section, and need not all be of the same size, as appears in the drawings. They should, however, have such space between them as will allow a free flow of the heavy unconsumed vapor to all parts of the bowl and to afford room for the flame that burns on the outside of these several tubes C. Around

the outside of the burner-tubes thus arranged is a perforated wall D, secured to or fixed upon the flange *a*, so that no air is admitted between said parts at their joint, thus compelling whatever air that enters from about the sides to pass in through the perforations in the tube D.

When in operation, the tubes C become intensely heated, and heat is communicated to the bowl A and supply-pipe E to continue the vaporization. The oil is therefore all vaporized in or near the mouth of the supply-pipe when the burner has become properly heated. By the peculiar arrangement of the vapor-chamber with the air-supply the vapor is distributed throughout the burner, so that there is equal flame at all points. Combustion begins above the first series of perforations, which are about on a level with the top of the bowl. Thus it occurs when vapor is ignited, because of the increased volume of the gases by partial combustion, the contracted space in the chamber, and the retardation of the flame by air impinging through the perforations, that there is resistance to more vapor rising at this point. It therefore follows that the accumulating vapor flows to points in the chamber of less resistance and thereby distributes and equalizes itself. As combustion does not occur below the first series of perforations, it leaves the depth of the chamber free for the movement of unconsumed vapor. The air supplied to the combustion-chamber is limited by perforated walls at all points, the air entering through the perforation in a lateral manner. The perforated tubes are arranged so that the numerous incoming air-currents oppose each other, as is obvious in Fig. 1. This keeps the flame from drifting to other points and also stiffens and retards the flame, producing perfect combustion. By the retardation of the flame the clear unconsumed vapor that is under it is forced to points of less resistance, as before stated, and thus the arrangement of the several elements causes an even distribution of vapor below the perforations and an even volume of flame throughout the entire area of the combustion-chamber, which is wholly above the first perforations. Again, by not having a cover to form a vapor-distributing chamber but leaving said chamber

open on top, the heat from the flame can radiate directly on the bottom of the vapor-trough, thus heating it to greater intensity and increasing the efficiency of the burner.

5 The shape of the bowl and of the tubes may, of course, be considerably varied without departing from the spirit of the invention, and the outside wall might be substituted by the lining of the fire-box of a range,
10 stove, or furnace when the burner is used in that connection; but to get satisfactory results and perfect combustion of the vapor the outer wall should be provided with openings above the base to admit air.

15 Now in order that the outer wall need not be removed to start the burner we provide a short tube G, extending through the bottom of the bowl into the same about half the depth of the tubular projections, and this tube is provided with a weighted valve *g* on the outside,
20 which is normally closed. When it is desired to light the burner, gasoline is allowed to run into the channels on the bottom of the cup. As gasoline is very volatile, some vapor is
25 given off at normal temperature and is readily ignited. This done, the valve or its equivalent at the bottom of the lighting-tube is opened, and a match is applied either to the vapor that may escape down from the tube
30 or is inserted through the tube to light on the inside. This done, the valve automatically closes and remains closed, so as to admit no air while the burner is in use.

35 In Fig. 3 we show a modification of the invention, in which the tubular projections B are omitted, and the pipes or tubes C are set into the bottom of the bowl and are imperforate to about the level of the outer flange *a*. The imperforate part of said pipes or tubes
40 operates the same as the projections B, in so far as forming a vapor space or chamber be-

neath the perforations is concerned, and hence is an equivalent construction.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A vapor-burner having a vapor-diffusing channel of greater height than the width of the channel and closed at its bottom and sides and open across its top, and an air-passage
50 inside of the inner wall of the channel and perforated wall extensions from the sides of said channel, substantially as described.

2. A vapor-burner bowl having two or more walled air-passages through its bottom, the
55 lower portion of said walls closed and forming the sides of vapor-diffusing channels and the upper portions perforated, said vapor-diffusing channels communicating with one another, substantially as described.

3. A vapor-burner bowl having a series of walled air-passages scattered over the bottom of the bowl, the lower portion of said walls closed and forming channels for the diffusion of vapor over the bottom of the bowl and the
65 upper portion of said walls perforated for the diffusion of air between said walls, said vapor-diffusing channels having greater height than width, substantially as described.

4. In a vapor-burner, the burner-bowl having a channel for the oil and vapor, and a lighter-tube communicating with said channel from the outside of the bowl, and means to close said tube, substantially as described.

Witness our hands to the foregoing specification this 17th day of December, 1890.

WILLIAM R. JEAVONS.
JOHN A. LANNERT.

Witnesses:

N. L. McLANE,
H. T. FISHER.