

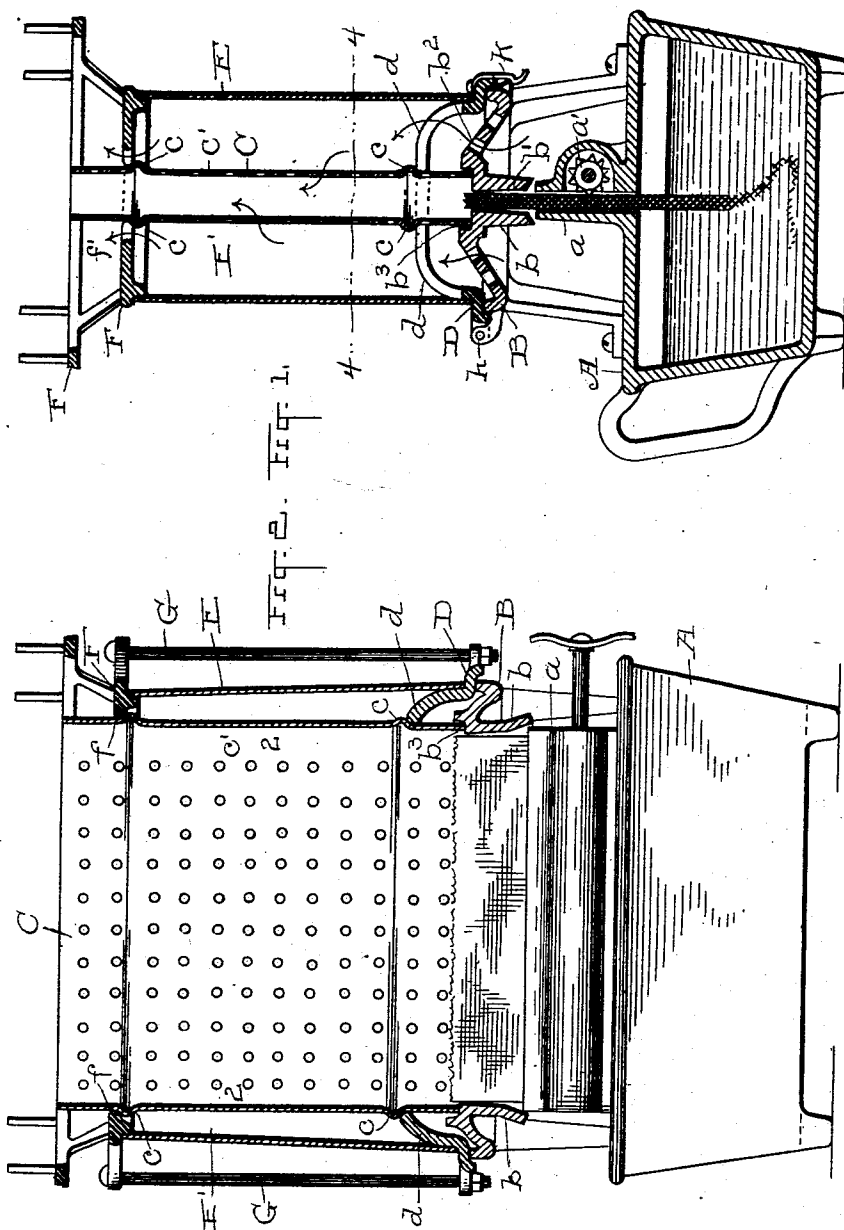
(No Model.)

2 Sheets—Sheet 1.

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

No. 570,854.

Patented Nov. 3, 1896.



ATTEST

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INVENTORS

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Atty

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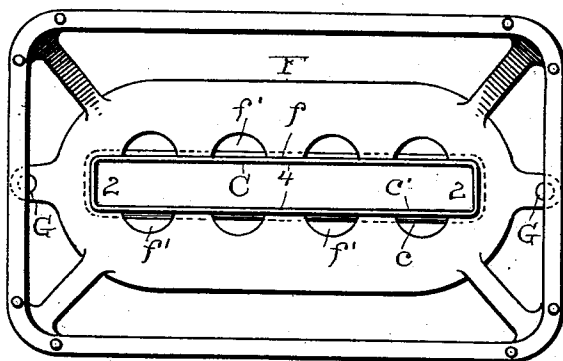


FIG. 3.

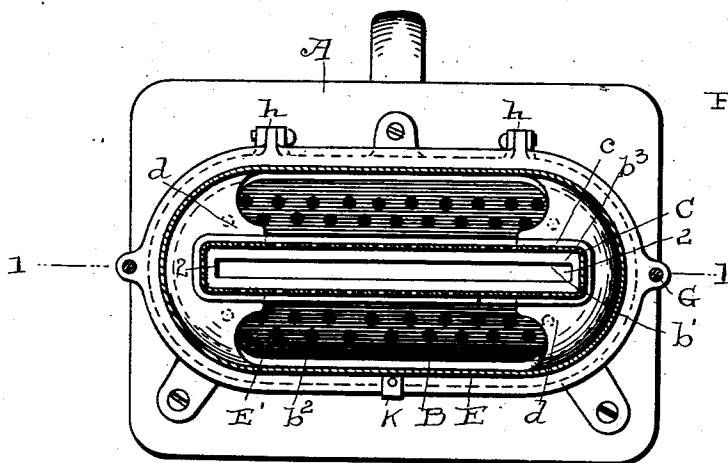


FIG. 4.

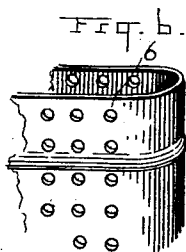


FIG. 6.

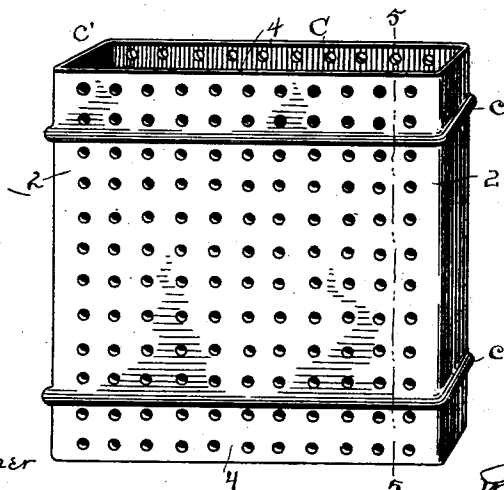


FIG. 5.

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UNITED STATES PATENT OFFICE.

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

VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 570,854, dated November 3, 1896.

Application filed June 23, 1896. Serial No. 596,619. (No model.)

To all whom it may concern:

Be it known that we, JOHN A. LANNERT and WILLIAM R. JEAUVONS, 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.

Our invention relates to the class of vapor-burners having a suitable combustion-chamber and in which the vapor for combustion is supplied by means of a wick. Several objectionable features are found in many forms of burners of this class, which this invention is designed to overcome, as, for example, the heating of the wick-tube to a dangerous degree, together with an uncontrollable variation in the height of the flame, which is notably affected by any change in the temperature of the wick-tube; second, the creeping of the oil over the perforated walls and parts while the burner is idle and occasioning an almost unbearable odor on again being heated; third, the defective flame which has followed when a flat wick and corresponding combustion-chamber were used, the flame not filling the chamber evenly from side to side, but shooting up to an extended point or tongue and issuing from the chamber in the center only; fourth, the disagreeable odor when the flame was turned out, because the heated condition of the wick-tube and part would for a considerable time vaporize a measure of oil from the turned-down wick and give the vapor off into the atmosphere.

The object of our invention is to provide a burner in which all of these and other like defects are obviated, and our invention therefore consists in the construction and combination of parts, as hereinafter more fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a central vertical sectional elevation of a vapor-burner constructed and arranged in accordance with our invention. Fig. 2 is a longitudinal section on the line 1 1 of Fig. 4. Fig. 3 is a plan view of the burner. Fig. 4

is a transverse section on line 4 4 of Fig. 1. Fig. 5 is a perspective view of the combustion-tube, and Fig. 6 is a perspective view of a fragment of a modified form of combustion-tube.

Like letters of reference indicate like elements in the several figures.

In Fig. 1 A is the oil-reservoir, and *a* the wick-tube, as usual. The wick is raised and lowered by spur-wheel *a'* in the usual manner.

b is what we prefer to term a "vaporizer," which is supported above the wick-tube proper, relatively about as shown and substantially insulated therefrom, thereby preventing the conduction of heat to the wick-tube, at least in any such degree as to bring said tube also to a vaporizing temperature, and incidentally producing a construction which prevents creeping of the oil over the burner. The said vaporizer *b* has a walled passage *b'* with substantially parallel sides, as shown, so that the wick, when withdrawn more or less into the said passage *b'* for the maintenance of a low flame, will still close the passage against the entrance of air. The lower part of the said passage is flared outwardly, substantially as shown, to facilitate the entrance of the wick.

The part B is provided on top with a seat *b²* for holding the combustion-tube C in proper position about the passage or wick-opening *b'*, and also is provided with air-openings, as shown at *b³*, Figs. 1 and 4, for supplying a limited quantity of air to the air-chamber E', formed by casing E about the combustion-tube.

If preferred, the plate or part B might be flat, or substantially flat, and the walled passage *b'* might extend more or less above its immediately-surrounding surface, and other modifications of this part might be made and still not materially change its character in the burner. As shown, said part *b* forms the bottom for the combustion-chamber and for the surrounding air-chamber as well, but is substantially out of heat-conducting connection with the wick-tube. This is a great advantage in operation, because thereby the said part does not lose heat by conduction to the wick-tube proper, and hence becomes more quickly heated to vaporizing condition and at-

tains to a higher and more constant temperature than would occur otherwise, and rendering the vaporizing conditions about the exposed end of the wick more constant than is possible where the heat may be subtracted from this point by easy conduction and diffused over larger surfaces. It will also be clear that in devices where the wick-tube heats excessively, as occurs where a perforated combustion-chamber is used, considerable vaporization will occur in the wick-tube, and under some conditions of use, as in baking, where the parts become highly heated, the flame will continue to burn even with the wick turned down far into the tube; but by the arrangement of the vaporizer as herein described all trouble and danger from this source is avoided, because, though the vaporizer becomes highly heated, as desired, to promote vaporization of the oil, the comparatively cool wick-tube below, into which the wick is turned when the burner is extinguished, at once stops vaporization.

The frame part D is seated on the outer edge of plate B and is hinged thereto, as shown at *h*, and held down by catch *k*. The part D carries the casing E, and the top casting F surmounts the said casing, and the bolts G connect the top casting F with the bottom part D.

A portion of the frame D projects inwardly, as shown at *d*, Figs. 2 and 4, to form a support for the combustion-tube C at its lower portion, said tube having a bead or beads *c*, or the like, to engage with said frame.

The top casting F engages the upper portion of the combustion-tube in a like manner at *f f*, and thus the tube *c* is securely held in the chamber E' against displacement.

We have discovered that in this form of burner, if the combustion-tube be constructed about its narrow sides or edges, as indicated by 2, so as to supply relatively less air to the combustion-chamber than is supplied over an equal area on the broad side 4, the flame will fill the chamber evenly from edge to edge across the said chamber and produce the best possible results, whereas, if the air supply be the same substantially over the entire surface of the tube, the flame will develop largely at the center of the chamber and shoot up in a long tongue. This of course is very objectionable, and is wholly overcome by limiting the air supply at the edges of the tube, as at 2 in Fig. 5, and at the corresponding edge 6 in Fig. 6. The edge of the burner or combustion-chamber, as it is understood in this instance, lies outside the dotted line 5 5, Fig. 5. This edge comprises one row of perforations at each side and a plain edge proper, and obviously, if the portion of the tube between the dotted lines on both sides were flattened out, it would show only about two-fifths as many openings as the corresponding area on the broad side 4. It is somewhere about this proportion that should be observed in the air supply at edge and side to get the result

already described. The same effect might be obtained by varying the size of the air-holes and by other ways that might be suggested.

The top casting F projects over the top of the air-chamber E' and is provided with openings *f' f'*, Figs. 2 and 3, to permit a limited quantity of air to pass through. The function of this plate is to retard the free flow of air from the air-chamber E', so that some measure of air will be forced through the perforations into the combustion-chamber at its upper portion. The openings *f' f'* permit currents of air through chamber E', and thus serve to keep the walls of the combustion-chamber at a lowered temperature. To contribute to this end, the openings *f' f'* are formed close to the combustion-walls. The said openings being close to the combustion-walls direct the escaping heated air to the flame issuing from the combustion-chamber, thus contributing to more perfect combustion. These openings may be larger or smaller, but their total open area should be in certain ratio to the area of opening through the wick-plate, the character of the flame and the temperature of the chamber-walls being the criterion by which to adjust the air inflow and outflow. These openings *f' f'*, if desired, may take the form of a continuous slot of proper width or other equivalent form.

In operation the casing carrying the combustion-chamber is tilted on hinges *h* to afford access to the wick, which must be turned up through the vaporizer *b* for ignition, and when the parts are restored to place for use the catch *k* comes into engagement. The burner being lighted and the parts returned to place a blue flame occurs in the combustion-tube and emerges evenly from the top thereof as the chamber becomes fully heated. With low flame the wick rests within the passage of the vaporizer *b*, about one-fourth of an inch below its top, so that the wick has no outside exposure. In turning the fire completely out the wick is withdrawn entirely from the vaporizer *b* into the wick-tube *a*, which, by reason of its being substantially separated from the vaporizer, does not become unduly heated even after a long use of the burner. Furthermore, the possibility of the oil creeping over the burner parts and producing disagreeable odors first or last is cut off, and the oil is positively confined where no odors can be generated.

What we claim, and desire to obtain by Letters Patent, is—

1. In a vapor-burner, a wick-tube and a vaporizer above said tube adapted to receive the wick and substantially insulated from said tube, substantially as set forth.

2. In vapor-burners, a wick-tube, and a vaporizer constructed to receive the top of the wick and arranged above said tube in such position as to prevent extreme heating of the tube from the vaporizer, and means to withdraw the wick from the vaporizer into said tube, substantially as set forth.

3. A vapor-burner having a suitable combustion-chamber, a wick-tube, and an oil-vaporizer between said chamber and tube and substantially insulated from said tube, substantially as set forth.

4. A vapor-burner in which a wick is used, comprising a vaporizer constructed to receive the top of the wick when combustion takes place, a wick-tube, means to carry the wick into and out of the vaporizer, and a combustion-chamber, substantially as set forth.

5. In a vapor-burner using a wick, a vaporizer adapted to receive the top end of the wick when combustion takes place, and means to carry the wick into the vaporizer and to withdraw it wholly therefrom, substantially as set forth.

6. In a vapor-burner, a vaporizer having an opening to receive the wick flared outwardly at its bottom, and a wick-tube substantially insulated from said vaporizer, substantially as set forth.

7. In a vapor-burner, a wick-tube, a combustion-tube, and a member above said wick-tube having a walled passage for the wick and a seat for the combustion-tube and means to withdraw the wick from the passage in said member, substantially as set forth.

8. In the burner described, the combination with the wick-tube and the perforated combustion-tube, of a vaporizer provided with a wick-passage and a seat about its top for the combustion-tube, said wick-tube and vaporizer being substantially out of heat-conducting contact with each other, substantially as set forth.

9. In a vapor-burner, a combustion-tube provided with perforations so arranged with reference to the flame that more air relatively is supplied to the sides than to the edges of the flame, substantially as set forth.

10. In a vapor-burner, a perforated combustion-tube having relatively broad sides and narrow edges, and a larger area of air-openings in the middle portion than at the edges thereof, whereby the inflow of air at the edges is limited, substantially as set forth.

11. In a vapor-burner, a perforated combustion-tube of greater width than depth and having imperforate portions at the immediate

edges of the tube extending from top to bottom, whereby air is excluded at said edges, substantially as set forth.

12. In a vapor-burner of the kind described, the wick-tube, the perforated combustion-tube seated above said wick-tube, the casing forming an air-chamber about said combustion-tube, and a cover closing the top of said air-chamber having one or more openings for the passage of a limited quantity of air, substantially as set forth.

13. The burner described having a perforated combustion-tube, a casing about said tube forming an air-chamber between said parts, and a plate over the top of said chamber about said combustion-tube having a passage for the escape of air from said chamber, substantially as set forth.

14. The combination of the perforated combustion-tube, the casing about the same, a perforated part forming a support for said tube and casing, and a plate across the top of said casing having an opening for the combustion-tube, and an outlet for air from the chamber between said casing and tube, substantially as set forth.

15. The perforated combustion-tube and the casing about the same, in combination with a perforated part forming a bottom for said tube and casing and a plate about the top of said top constructed to check and limit the outflow of air from the air-chamber, substantially as set forth.

16. The perforated combustion-tube and casing about the same, in combination with plate D provided with projections to support said tube against lateral movement, substantially as set forth.

17. The perforated combustion-tube and the casing about the same, in combination with a perforated part forming a bottom for said tube and said casing, substantially as set forth.

Witness our hands to the foregoing specification this 20th day of June, 1896.

JOHN A. LANNERT.

WILLIAM R. JEAVONS.

Witnesses:

H. T. FISHER,

H. E. MUDRA.