H. C. WRIGHT.

VAPOR BURNER.

APPLICATION FILED SEPT. 16, 1909.

990,692. **Patented Apr. 25, 1911.**

Fig. 1.

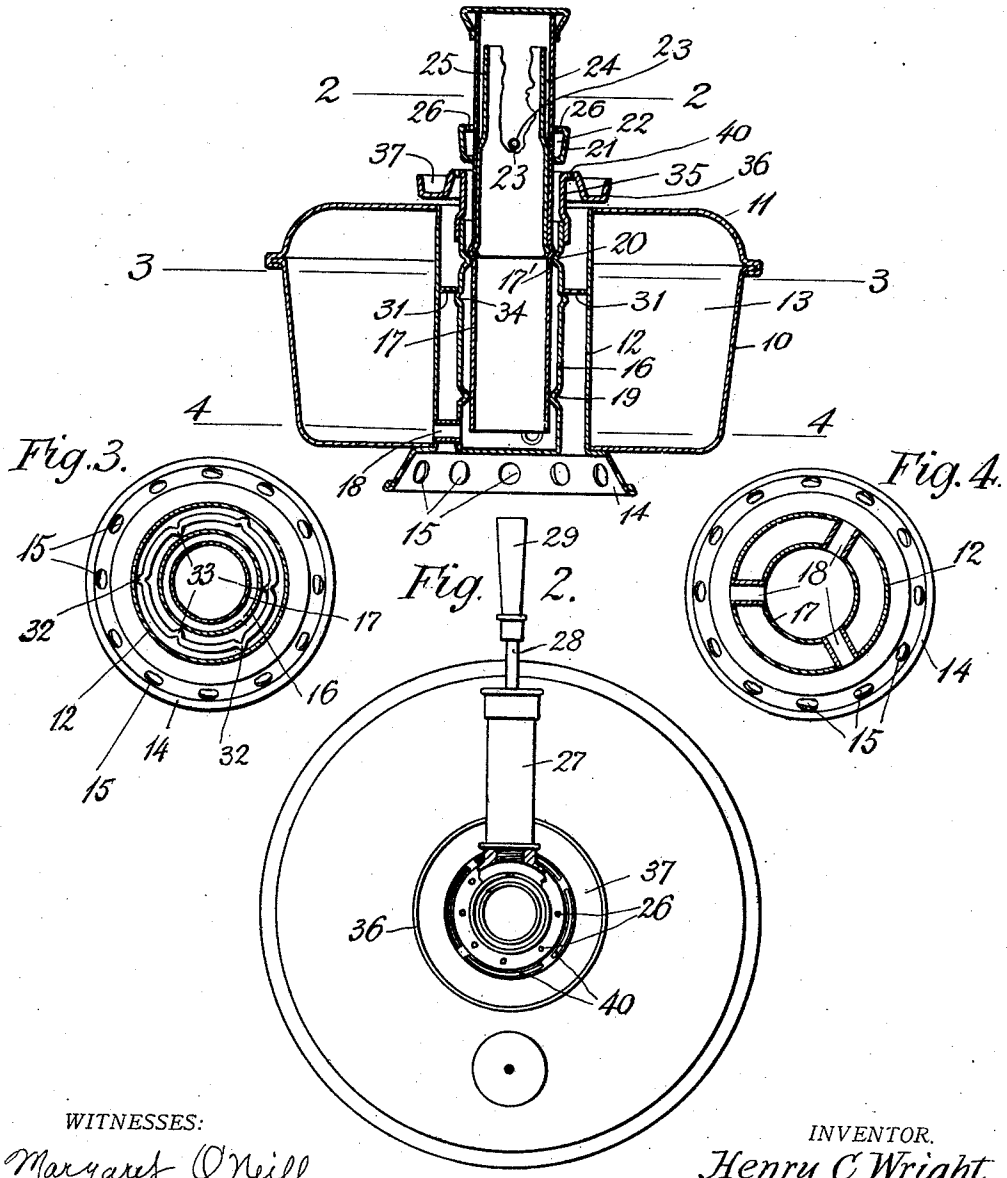

Fig. 3.

Fig. 4.

Fig. 2.

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VAPOR-BURNER.

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Application filed September 16, 1909. Serial No. 517,992.

To all whom it may concern:

Be it known that I, HENRY C. WRIGHT, a citizen of the United States, and resident of Bristol, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Vapor-Burners, of which the following is a full, clear, and exact specification.

This invention relates to vapor burners in which alcohol or similar liquid constitutes the fuel, and it has for one of its objects the provision of means whereby the font of the device may be isolated from the burner so as to reduce the transmission of heat from the burner to the font to a minimum and thus keep the font itself in as cool a condition as possible.

The invention has, furthermore, for its object the provision of a draft-tube which is opened at the top and bottom and through which cool air will be drawn by the flame issuing from the burner somewhat in the nature of the ejector principle.

Other objects of the invention will hereinafter appear and the means for their attainment be particularly pointed out in the claims.

The invention has been illustrated in the accompanying drawings in which similar characters denote similar parts, and in which—

Figure 1 is a vertical cross section of a vapor burner or lamp embodying my invention. Fig. 2 is a top view thereof, the burner being sectioned on line 2, 2 of Fig. 1. Figs. 3 and 4 are horizontal sections of the draft-tube (without the font), Fig. 3 being such section taken on line 3, 3 of Fig. 1, and Fig. 4 is a section on line 4, 4 of Fig. 1.

Briefly stated my improved device comprises a wick-tube adapted to receive wicking of any desired form having in its upper portion an inset of slightly reduced diameter to form what may be termed a gas receiving-chamber within the wick-tube and in constant communication with the interior of the jet-ring also carried by said wick-tube and through which the gas may escape and be lighted. The principal idea of the device lies in the fact that the heat generated by the burning vapor or gas will result in increasing the temperature of the burner itself to a very high degree, this increase being taken advantage of to vaporize the alcohol or other fuel carried into the upper portion of the wick-tube by a wick of any desired form as above stated. Under ordinary conditions it has been found that the heat thus generated in the wick-tube is disadvantageously transmitted on to the font which consequently becomes hot, vaporizing the alcohol contained therein very rapidly and to a greater extent than is desirable, and which also renders the entire device difficult of manipulation. In my improved device as herewith presented especial pains have been taken to keep the wick-tube itself entirely free from contact with the font and to isolate the same from contact with alcohol therein; while at the same time no obstruction whatever is laid to the passage of the alcohol from the font into the lower end of the wick-tube. Furthermore, it is a well known fact that when a burner is lighted, considerable air-draft will be established thereby, and this fact is taken advantage of to replace the air in the "draft-tube" by the sucking action established by the burning vapor, this air being, furthermore, mingled with the flame so that the latter will become intensely hot. In other words, experience has demonstrated that a vapor lamp constructed in accordance with the present invention will have considerable blast imparted to the flame, this circumstance resulting naturally in producing the greatest heat-generating conditions possible. While the present device may be employed in connection with a holder so as to be free from contact with or support on the table, I preferably provide means whereby the burner, as such, may be placed on the table without in any way interfering with the admission of air into the lower open end of the draft-tube.

Referring to the drawings, 10 denotes the font having a cover hermetically sealed thereto. Also tightly united with the cover and the font, is a comparatively large tube 12 which constitutes an air-tube leaving a closed annular chamber 13 in the font, and having its bottom preferably extending below the bottom of the font so as to provide a foot-flange 14 having a series of perforations 15 through which the bottom of the air-tube 12 may communicate with the atmosphere even if the device is standing on a table.

Disposed within the air-tube 12, is a holding-tube 16 for locating and holding the

wick-tube, which is designated herein by 17, in proper position relative to the font. The bottom of the holding-tube 16 stands in permanent communication with the interior of the font 10, by means of one or more conduits 18 (see Fig. 4) through which alcohol may be permitted to flow from the font into said holding-tube 16. The latter is closed at its bottom and is provided with inwardly-projecting annular ribs 19 and 20 adapted to engage the exterior surface of the wick-tube 17 which is preferably provided with an exterior rib 17' to contact with the interior rib 20 and thus prevent the wick-tube from dropping below the liquid point.

The wick-tube 17 carries at its upper portion a jet-ring 21 forming an annular chamber 22 into which gas may pass through an aperture 23, from a gas receiving space 24 established between the inner side of the wick-tube 17 and the outer surface of an inset 25 which practically constitutes a reduced portion of the wick-tube and serves for the purpose of preventing the wick from expanding and filling the inner portion of the wick-tube at that portion thereof.

The jet-ring 21 has a series of jet openings 26 through which gas may escape to be ignited, when permitted to do so by a suitable valve disposed within a shell 27 which may be secured to the jet-ring or wick-tube in any desired manner, the valve having a stem 28 provided with a handle 29 whereby the latter may be operated to open and close the aperture 23 (see Fig. 1) in the wick-tube proper. The top of the wick-tube is closed by a top-plate which is sealed thereto and thus establishes a closed gas chamber in the top of said tube.

While it is evident that when the wick-tube is in position in the holding-tube 16, it will be held in a comparatively rigid manner, yet the holding-tube 16 itself is only held by the small conduits 18 above mentioned. Now, in order to steady the upper portion of the holding-tube I provide a spacer-ring 31 having exterior and interior contact points 32 and 33 for engaging the inner surface of the air-tube 12 and the outer surface of the holding-tube 16, respectively, said spacer-ring being held against falling by an enlargement or bead 34 provided therefor on the holding-tube 16. Secured to the upper end of the holding-tube 16, is a cap-piece 35 having an outward flange 36 so shaped as to form a trough 37 into which alcohol may be placed and ignited in order to heat the wick-tube in a preparatory manner, to start the generation of gas therein.

By referring to Fig. 1 it will be seen that the bottom of the trough 37 is comparatively close to the top of the cover 11, without however touching it, and, furthermore, that at the point of junction between the cap shell 35 and the flange 36, a series of openings 40 are provided (see also Fig. 2) so that when the gas issuing from the apertures 26 in the jet-ring is lighted, a certain amount of draft is established which will suck or draw the air in the air-tube 12 upward through the apertures 40, thus tending to cool not only the conduits 18 but also to remove any warm air which may be created by virtue of the heat transmission from the burner to the holding-tube 16 and to the spacer 31.

The construction above described will produce a comparatively strong blast which naturally aids in the combustion and the generation of heat by the burner.

Many changes may be made in the organization and construction of the component parts of my improved device without departing from the spirit of the invention and I wish it to be distinctly understood that any suitable spacer may be substituted for that shown and described herein or that the construction of the "priming trough," together with its holding shell may be varied in many ways.

I claim:—

1. The combination, with a font, of an air-tube open at its bottom and sealed to the bottom of said font, a holding-tube having an inward projection and closed at its bottom and in communication with the interior of said font, and a wick-tube having an outward projection and disposed within said holding-tube and having its interior in constant communication with that of the holding-tube.

2. The combination, with a font, of an air-tube open at its bottom and sealed to the bottom of said font, and a holding tube disposed within said air-tube, means for establishing communication between said holding-tube and the interior of said font, means for positioning said holding-tube in and relatively to said air-tube, and a wick-tube removably disposed within and relatively to said holding-tube and in communication with the interior thereof.

3. The combination, with a font, of an air-tube open at its bottom and sealed to the bottom of said font, and a holding-tube having its lower end in communication with the interior of said font, an annulus having contact points for engaging the exterior of said holding-tube and the interior of said air-tube, respectively, and means for positioning said holding-tube in and relatively to the interior of said air-tube, a wick-tube in said holding-tube and having its bottom open to establish communication between said wick-tube and the holding-tube, said burner-tube being free from contact with said air-tube and said font.

4. The combination, with a font, and an air-tube open at both ends and sealed to the top and bottom of said font, of a holding-

tube disposed within said air-tube, a conduit leading from the interior of said holding-tube to the interior of said font, a burner-tube in said holding-tube, a priming member held on the top of said holding-tube and free from contact with said font and the air-tube, and means for positioning said holding-tube within the air-tube.

5. The combination, with a font, a cover therefor and hermetically sealed thereto, and an air-tube open at both of its ends and sealed to said cover and the bottom of said font, respectively, of a holding-tube having its bottom closed and extending through said air-tube, means for steadying the holding-tube in the air-tube, a priming member on the holding-tube and shaped to form an annular trough, said priming member being free from contact with the font, its cover, and the air-tube, and having apertures to permit the passage of air from the air-tube therethrough, and a burner-tube comprising a jet-ring having its outer wall disposed adjacent to said apertures.

6. The combination, with a font, a cover therefor and hermetically sealed thereto, and an air-tube open at both of its ends and sealed to said cover and the bottom of said font, respectively, of a holding-tube having its bottom closed, and extending through said air-tube, means for steadying the holding-tube in the air-tube, a priming member on the holding-tube and shaped to form an annular trough, said priming member being free from contact with the font, its cover and the air-tube, and extending beyond the confines of the air-tube, and a wick-tube removably held in the holding-tube and comprising a jet-ring disposed adjacent to and above said priming member.

7. The combination, with a font, of an air-tube open at its bottom and sealed to the bottom of said font, and a holding-tube disposed within said air-tube and having an annular bead, a conduit between the holding-tube and the interior of said font, a spacer-ring resting on said bead for positioning the holding-tube in and relatively to said air-tube, and a wick-tube disposed within said holding-tube and in communication with the interior thereof.

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Witnesses:
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