

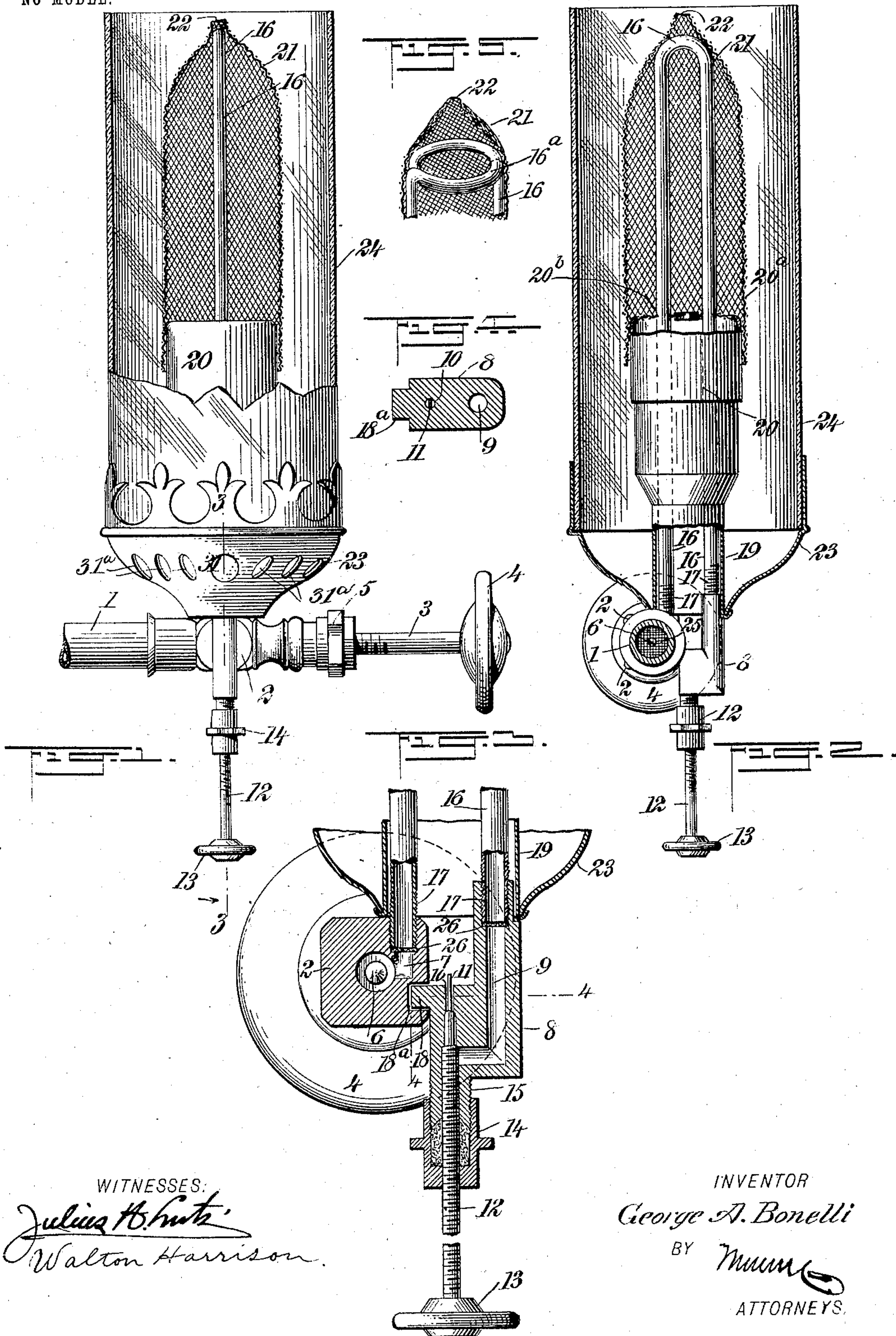
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PATENTED DEC. 29, 1903.

G. A. BONELLI.
INCANDESCENT VAPOR BURNER.

APPLICATION FILED OCT. 10, 1902.

NO MODEL.



WITNESSES:

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GEORGE A. BONELLI, OF KINGMAN, ARIZONA TERRITORY.

INCANDESCENT VAPOR-BURNER.

SPECIFICATION forming part of Letters Patent No. 748,342, dated December 29, 1903.

Application filed October 10, 1902. Serial No. 126,700. (No model.)

To all whom it may concern:

Be it known that I, GEORGE A. BONELLI, a citizen of the United States, and a resident of Kingman, in the county of Mohave and Territory of Arizona, have invented a new and Improved Incandescent Vapor-Burner, of which the following is a full, clear, and exact description.

My invention relates to a combined hydrocarbon-gas generator and gallery and mantle support, and further relates to an improved form of hydrocarbon-valve for use more particularly with the generator and to certain details of construction hereinafter described.

My invention is used in connection with burners for heating, illuminating, &c.

I will describe a combined hydrocarbon-gas generator and gallery and mantle support embodying my invention, and then point out the novel features in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation, partly in section, showing my device in use. Fig. 2 is a vertical section taken at right angles to Fig. 1. Fig. 3 is a fragmentary section, somewhat enlarged, upon the line 3 3 of Fig. 1 looking in the direction of the arrow. Fig. 4 is a detail section upon the line 4 4 of Fig. 3, and Fig. 5 is a fragmentary section showing a modified form of the generator-tube.

The hydrocarbon-pipe 1 is connected with a casing 2, which is provided with the valve-stem 3, having a hand-wheel 4 and turning in a stuffing-box 5 for operating the valve 6. The passage 7 (shown more particularly in Fig. 3) is connected with the valve 6 and is supplied with hydrocarbon liquid by the same. Another casing 8 is provided with cylindrical passages 9 and 10. Disposed within the passage 10 is a flat plate or needle 11, (shown more particularly in Figs. 3 and 4,) and mounted upon the screw-stem 12, so as to be revoluble by means of the hand-wheel 13. The screw-stem 12 engages a stuffing-box 14, mounted upon a threaded stem 15. A vapor-tube 16 is connected with the passages 7 and 9. This vapor-tube 16 may be substantially U-shaped, as indicated in Fig. 2, and provided with threaded ends 17, upon which the

two casings 2 and 8, respectively, are screwed, as indicated in Fig. 3. The vapor-tube and each of the other parts may be made of any suitable material. The casing 8 is provided with a lug 18, which engages an aperture 18^a in the casing 2, thereby holding the two casings together. Upon a tubular support 19 is mounted a gallery 20, provided with a gauze screen 20^a, which is provided with holes 20^b, through which the tubular support passes. A hollow mantle 21, provided with a central opening 22, is hung loosely upon the vapor-tube 16 in such a manner that the upper end of the tube 16 partially obstructs the opening 22 in the mantle. The chimney-support 23 sustains the chimney 24 in the usual manner. A disk of gauze 25 may be placed in the tube 21 adjacent to the valve-casing 2. The lower ends of the vapor-tube 16 preferably engage packings 26, whereby the tube is rendered gas-tight, as indicated in Fig. 3.

In the structure shown in Fig. 5 the vapor-tube 16^a is spiral, whereas in the other figures it is substantially U-shaped. I do not limit myself to either or both of these particular forms, for obviously the generator-tube may have quite a number of different forms, all coming within the scope of my invention.

The operation of my device is as follows: The liquid hydrocarbon having passed into the passage 7 and vapor-tube 16 by opening the valve 6 by means of the hand-wheel 4, the heat from the mantle 21 causes vapor to be generated within the tube 16, and this vapor is highly heated by passing through the long and sinuous path formed by the vapor-tube. The vapor passes nearly to the top of the mantle and down again, entering the casing 8 by means of the passage 9, thence passing upward through the passage or orifice 10 to a point below and concentric with the tubular member 19, as indicated in Fig. 3. Within the orifice 10 the vapor encounters the flattened needle 11 and is obstructed upon both sides thereof, issuing from the upper end of the orifice 10 and immediately commingling with more or less air. The admixture of air and vapor thence passes upward through the tubular member 19 to the mantle 21, causing combustion and maintaining the heat in the generator-tube 16, so that the process is continuous.

Ventilation is afforded by means of the holes 31^a in the usual manner.

I find that the flat form of the needle 11 causes the admixture of vapor and air to be more thorough. In other words, this form of needle enables more oxygen to accompany the vapor as it proceeds through the gallery to the mantle. The flattened needle is also self-cleaning.

As above explained, the opening 22 in the top of the mantle being obstructed by the upper end of the vapor-tube 16 causes the hydrocarbon vapor to pass through the meshes of the mantle and to burn readily. The spiral form 16^a of the generator-tube, (shown in Fig. 5,) is preferable in cases where coal-oil is to be vaporized for the reason that this oil requires a much higher degree of heat than gasolene in order to convert it into a dry vapor which will burn comparatively free from smell.

With my invention the mantle may be readily placed in position by even an inexperienced person. To hang the mantle upon its support is often a delicate task and many mantles are destroyed while being placed in position. With my device the danger of breaking the mantle from this cause is reduced to a minimum. It will be noted further that with my device the mantle may be suspended in such a position as to be perfectly concentric with the gallery and is therefore in a sense adjustable.

My generator-tube may be used in connection with any ordinary gallery used upon burners for city gas.

By means of my invention thorough combustion is assured, together with absolute safety. No odor is produced. The heat is so intense that the vapor is very dry.

With my invention it is quite easy to place the mantle correctly in position, as the normal position of the mantle is its position of greatest equilibrium and is such that the mantle is disposed directly over the flame. The saving of mantles alone is a considerable item. With other mantle-supports it sometimes happens that the number broken in mounting exceeds the number worn out by proper use. As my mantle is self-adjustable, little or no skill is required in placing it in position.

The lightness and simplicity of the generator render it easily and quickly heated, and the cooling effect of the vaporization prevents

the heat from reaching the melting-point.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. An incandescent vapor-burner, comprising a casing provided with an aperture, a second casing provided with a lug for engaging said aperture, thereby detachably securing said casings together, a generator-tube connected with both of said casings, means for admitting a hydrocarbon liquid to one of said casings, the other of said casings being provided with a vapor-jet orifice, a needle-valve arranged to control said orifice, a mantle disposed within the path of said vapor for heating said generator-tube, a mixing-tube and burner-cap, and means for admitting air to said mantle.

2. An incandescent vapor-burner, comprising a casing provided with an aperture, a second casing provided with a lug for engaging said aperture and locking said casings together, a substantially U-shaped generator-tube connected at its ends with said casings respectively, a mantle hung directly upon said generator-tube, a mixing-tube and a burner-cap, a needle-valve mounted upon one of said casings for discharging hydrocarbon vapors into said mantle, mechanism for admitting hydrocarbon liquid to the other of said casings, and means for admitting air to said mantle.

3. An incandescent vapor-burner, comprising a casing provided with an aperture and free to serve as a support, a second casing provided with a lug for engaging said aperture, thereby detachably securing said casings together, a generator-tube connected with each of said casings, a mantle disposed adjacent to said generator-tube, means for admitting a hydrocarbon liquid to one of said casings, a valve connected with other of said casings for discharging hydrocarbon vapor, said valve having the form of a flattened needle fitted into an aperture within said last-mentioned casing, and means for admitting air to said mantle.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE A. BONELLI.

Witnesses:

WALTER BROWN,
H. L. DICKSON.