

(No Model.)

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APPARATUS FOR ENRICHING GAS BY ADMIXTURE OF HYDROCARBON
VAPORS.

No. 249,063.

Patented Nov. 1, 1881.

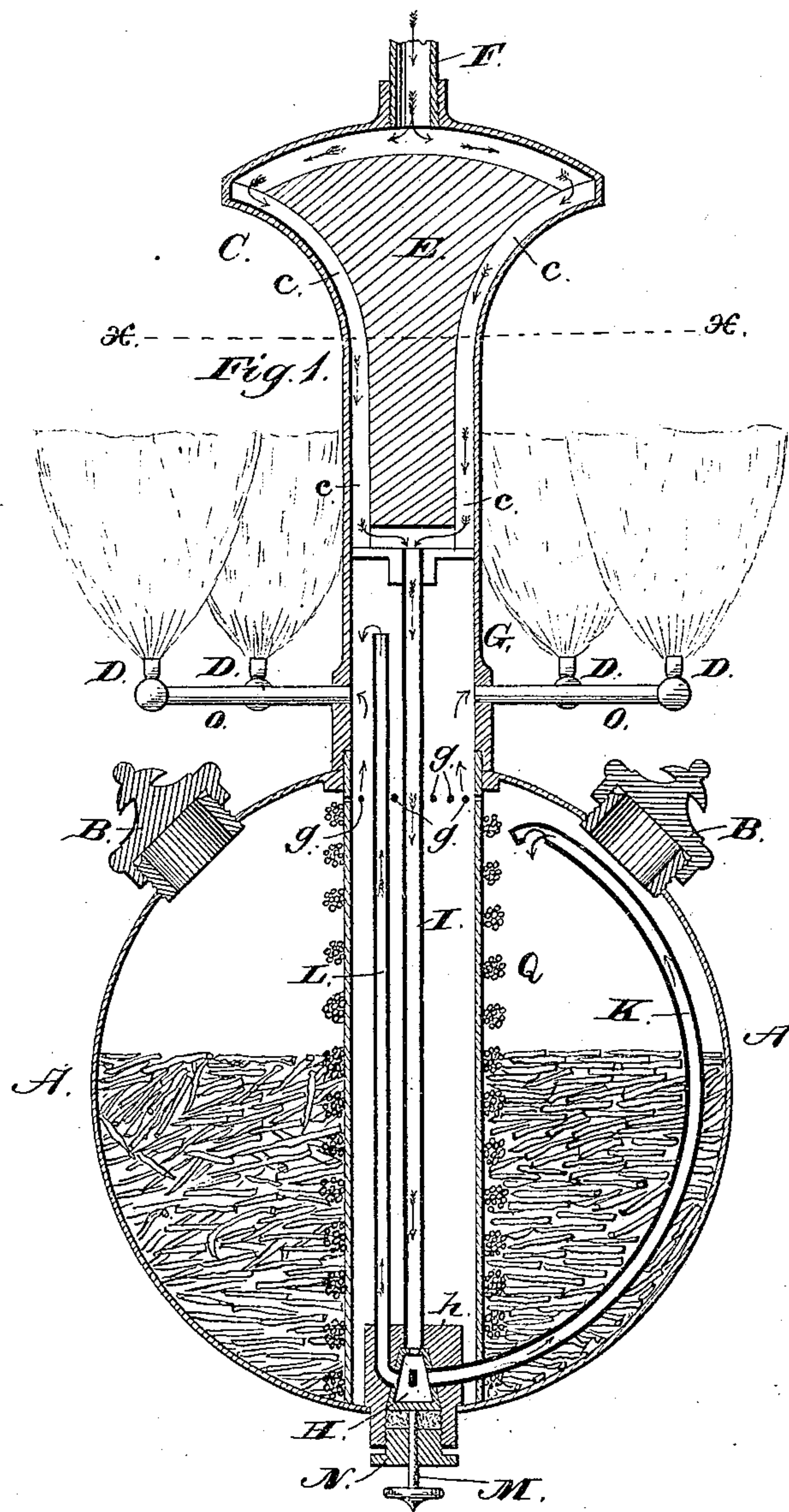


Fig. 2.

Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES LIVESEY, OF WESTMINSTER, COUNTY OF MIDDLESEX, ENGLAND.

APPARATUS FOR ENRICHING GAS BY ADMIXTURE OF HYDROCARBON VAPORS.

SPECIFICATION forming part of Letters Patent No. 249,063, dated November 1, 1881.

Application filed July 26, 1881. (No model.) Patented in Great Britain March 25, 1881.

To all whom it may concern:

Be it known that I, JAMES LIVESEY, a subject of the Queen of Great Britain, residing at Westminster, in the county of Middlesex, England, have invented new and useful Improvements in Apparatus for Enriching Gas by Admixture of Hydrocarbon Vapors, of which the following is a specification.

This invention relates to apparatus for enriching illuminating-gas by mixing with it the heated vapor of naphthaline or other hydrocarbon.

The object of my invention is to vaporize the hydrocarbon partly by heated gas and partly by a metallic heat-conductor passing through the carbureting material placed in the vessel; also, to provide means for regulating or controlling the carbureting of the gas, and for shutting off the supply of gas to the burner. These objects I attain by means of the apparatus hereinafter described, and illustrated in the accompanying drawings, in which—

Figure 1 is a section taken on a vertical central plane through my improved apparatus. Fig. 2 is a transverse section taken on the line *x x*, Fig. 1.

A indicates the carbureting-vessel, made of spherical or other suitable form, and provided with apertures through which the hydrocarbon is introduced, said apertures being closed by suitable screw-caps, B.

The heater C consists of a metal shell that is expanded or made bell-shaped at its upper portion, in order to present an extended surface to the heat from the flames of a cluster of burners, D D, which are arranged below the same. The shell of this heater, which will generally be made of brass or copper, is preferably corrugated exteriorly, in order to present a greater surface to the action of the heat, and it is formed with interior longitudinal corrugations, *c c*, against which rests a metal shell, E, made to conform to the shape of the heater. In this way a series of small passages are formed which divide the gas entering the heater from the gas-supply pipe F into a number of small streams. By thus dividing and breaking up the gas into numerous small streams the gas will be better heated than if passed through the heater in a body.

G indicates a stout brass or copper conduct-

ing-tube, which extends from the heater down to the bottom of the carbureting-vessel, and H a hollow two-way plug or cock arranged within a metal seat, *h*, at the lower end of said tube. The heated gas from the heater passes down to this cock through a pipe, I, that is arranged within the heat-conducting tube, as indicated by the arrows. The ports or orifices of this two-way cock are so arranged that the gas can be passed either through the pipe K, which leads to the upper portion of the carbureting-vessel, and is formed at its upper part, so as to direct the gas downwardly, as indicated by the arrow, or that the gas can be passed through the pipe L, which extends up some distance within the heat-conducting tube G, or so that the gas can be admitted into both of these pipes at one and the same time. These two pipes are secured at the lower end of the metal seat *h*, in which the cock is located, so as to hold the same and maintain their lower ends in proper relation to the cock. The cock is operated by a stem that passes through some suitable packing, and also through a bushing, N, although, in place of the bushing, an ornamental cap can be employed. The stem or spindle of the cock is provided upon its end with a disk, knob, or any ornamental device for the operator to take hold of in operating the cock.

The heat-conducting tube is provided with a number of openings, *g g*, for admitting the carbureted gas from the carbureting-vessel into the same.

O O indicate the branch pipes that lead from the tube G to the burners, any desired number of which may be employed. A wick, Q, may be fitted around the heat-conducting tube within the burner, for the purpose of drawing up a portion of the melted hydrocarbon, so that such portion thereof as may be held by the wick above the body of the hydrocarbon within the vessel A will be exposed to the action of the heated gas within the vessel, and thereby rapidly vaporized. This wick, however, can be dispensed with, if desired. If, now, the gas be turned on the burners and lighted, the heat rising from the several flames will impinge against the heater and rapidly heat the same. The gas, flowing in small streams through the heater, will thus be heated, and the heat from the hot shell of the heater will be conducted,

by means of the copper tube G, down to the bottom of the solid hydrocarbon within the carbureting-vessel, thereby rapidly melting the hydrocarbon, while at the same time the hot gas, passing down through the pipe I, will enter the carbureting-vessel through pipe K when the cock is adjusted for such purpose. The hot gas impinging upon the surface of the hydrocarbon, together with the conducted heat before referred to, will vaporize the same, the commingled gas and vapor passing through the openings *g* into the pipe G, and thence to the burners.

As before stated, the uncarbureted gas can also, if desired, be admitted to the burner by adjusting the cock so as to allow the gas to pass into the pipe L when the cock is closed, so as to cut off the flow of gas from the pipe K, or the supply of gas to the burners can be entirely shut off by turning the cock for such purpose.

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

1. In an apparatus for enriching gas, the combination, with the carbureting-vessel, of the vertical metal combined gas-heating chamber and heat-conductor, directly connected with the source of gas-supply, whereby the inflowing gas is heated in its downward passage to the carbureting-vessel, and the heat from the gas-heating chamber is conducted to the lower portion of the hydrocarbon body, substantially as described.

2. The combination, with the combined gas-heating conductor and gas-heating chamber arranged above the burners, and directly connected with the source of gas-supply for heat-

ing the inflowing gas in its downward passage to the carbureting-vessel, of a pipe leading from the conductor and gas-heating chamber downward through the same to or near the bottom of the carbureting-vessel, two pipes within the carbureting-vessel, which lead from the lower portion of the pipe within the heat-conductor, one for conveying uncarbureted gas direct to the burners, and the other for conveying the gas into the carbureting-vessel, and a two-way cock for controlling the passage of gas through said pipes, whereby the heated gas from the gas-heating chamber can be conducted directly to the burners or into the hydrocarbon body, substantially as described.

3. The combination, with the carbureting-vessel, of the bell-shaped heater extended over the gas-burners, and provided with a series of small passages for dividing the gas into small streams, the metal heat conducting tube extending from the heater into the lower portion of the carbureting-vessel, the two-way cock arranged within said tube, the pipe K, for conducting the gas into the carbureting-vessel, and the pipe L, for conducting the uncarbureted gas to the burners, said heat-conducting tube being provided with passages for the admission of carbureted gas, and the pipe for supplying the burner, also opening into said tube, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES LIVESEY.

Witnesses:

EDWARD HEASMAN,
H. E. A. WALLIS.