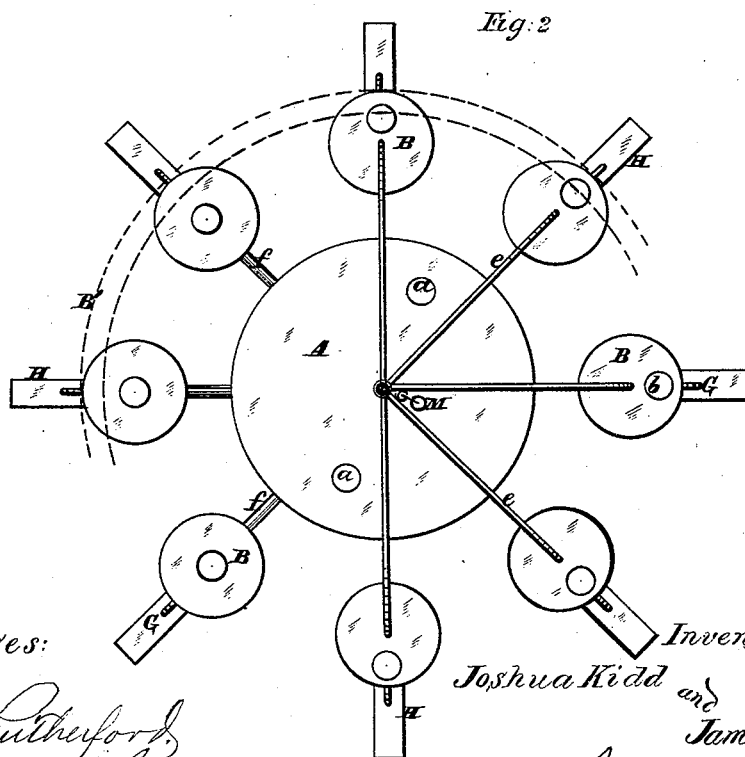
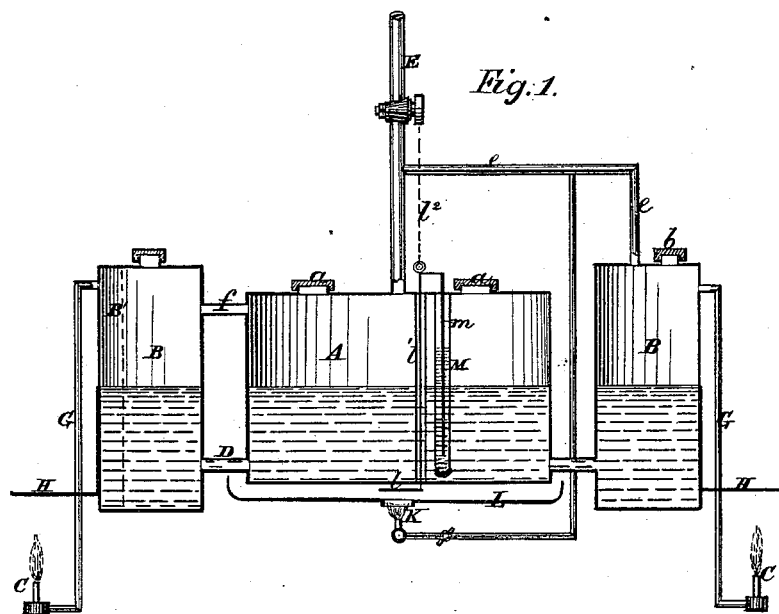


J. & J. KIDD.
 Apparatus for Enriching Illuminating Gas.
 No. 217,800. Patented July 22, 1879.



Witnesses:

*W. A. Lutherford,
 W. B. Hale*

Inventors:

*Joshua Kidd and
 James Kidd,
 by James L. Norris.
 Attorney.*

UNITED STATES PATENT OFFICE.

JOSHUA KIDD AND JAMES KIDD, OF WANDSWORTH, COUNTY OF SURREY,
ENGLAND.

IMPROVEMENT IN APPARATUS FOR ENRICHING ILLUMINATING-GAS.

Specification forming part of Letters Patent No. **217,800**, dated July 22, 1879; application filed
March 11, 1879; patented in part in England, July 26, 1877.

To all whom it may concern:

Be it known that we, JOSHUA KIDD and JAMES KIDD, both of Eglantine Road, Wandsworth, in the county of Surrey, England, have invented an Improved Apparatus for Enriching Illuminating-Gas; and do hereby declare that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein we have set forth the nature and principles of our said improvement, by which our invention may be distinguished from others of a similar class, together with such parts as we claim and desire to secure by Letters Patent—that is to say:

Our invention relates to apparatus whereby hydrocarbon materials—such as heavy oils, naphthaline, and the like—are slowly vaporized, and their vapors are mingled with gas for the purpose of enriching it, so as to increase greatly its illuminating power; and the invention especially relates to that class of apparatus which employ a heated hydrocarbon-chamber and a carbureting-vessel connected with the hydrocarbon-chamber by upper and lower pipes, and provided with a pipe leading to a burner, said hydrocarbon-vessel being adapted to be heated to vaporize the oils and mingle their vapors with gas.

Our present invention consists, mainly, in the combination of a hydrocarbon-chamber provided with an automatic heat-deflector with one or more carbureting-chambers, each connected with the hydrocarbon-space of said hydrocarbon-chamber, and with a gas-supply, and each provided with a burner-tube leading from its gas and vapor burner, as will be more fully hereinafter described.

Figure 1 of the accompanying drawings represents a vertical section, and Fig. 2 a plan, of such an arrangement.

A is a central vessel, forming a reservoir, containing a considerable store of the hydrocarbon, which is fed into it by apertures *a*, that are closed by suitable stoppers or screw-caps.

B B are smaller carbureting-vessels, one for each burner C or group of several burners. These carbureting-vessels B communicate near

their lower parts with the central reservoir, A, by pipes D.

The gas-supply pipe E leads into the top of the vessel A, and also into the tops of the vessels B, either by branch pipes *e*, as shown on the right-hand sides of the figures, or by communicating-pipes *f* at the upper parts of the vessels A and B, as shown on the left-hand sides of the figures.

From each of the carbureting-vessels B a pipe, G, descends to the burner or set of burners C, and above the flames of these burners are fixed metal plates H, projecting from the sides of the vessels B.

The contents of the reservoir A are moderately heated by a flame, K, as shown, for which, when the situation of the chandelier admits of it, other means of heating might be substituted. For example, if the chandelier, instead of being suspended from a ceiling, stood on a pedestal, the vessel A might have a steam-casing, or steam might be passed through a pipe or coil of pipe within the vessel, the object being to give the contents of A only sufficient heat to keep them fluid, so that the vessels B may receive a free supply of hydrocarbon from the reservoir. The hydrocarbon thus fed to the vessels B receives, by conduction from the heated plates H, sufficient heat to vaporize it slowly, and the vapor generated in each vessel mingles with the gas supplied to it by the branch *e* or pipe *f*. The mixture of gas and vapor descends by the pipe G to the burners at C, where it burns with a flame of great luminous power.

The pipes G are specially arranged within the influence of the heat of the flames, by which they are kept sufficiently hot to prevent condensation of the hydrocarbon vapor on its way to the burners.

When, instead of a large number of burners or groups of burners constituting a luster or chandelier, only a single burner or small group of burners is required, then the central reservoir, A, may be dispensed with; and the apparatus will then consist of one of the carbureting-vessels B, with its gas-supply pipe *e*, its descending pipe G, its burners C, and its heat-conducting plate H, the vessel being in this case fed by a stoppered or capped hole, *b*.

As an obvious modification of the arrangement of chandelier shown in the figures, a single narrow annular vessel, (a portion of which is indicated by the dotted lines B',) or several annular segmental vessels, may be substituted for the separate vessels B, such annular vessel or vessels communicating at several points in the circumference with the vessel A by lower pipes, D, and upper pipes, f. When this form is adopted a great number of burners may be arranged around the annular vessel or vessels, each burner or some of the burners having above it heat-conducting plates H, operating as above described.

When a solid hydrocarbon, such as naphthaline, is employed, we arrange the apparatus so that on first lighting the gas the vessel A receives considerable heat to fuse its contents, the heat being thereupon reduced. For this purpose we provide between the flame K and the bottom of the vessel an intercepting-plate, L, with a hole through it immediately over the flame K. This hole is covered by a disk or shutter, *l*, which is suspended by a wire, *l'*, passing freely through a tube, and connected by a short piece of chain, *l''*, or slotted rod to an arm of the gas-cock lever. To the same wire is attached another wire or rod, M, which is inserted in a tube, *m*, open at the top and closed at the bottom, this tube being immersed in the material contained in A, and having within it a portion of the same material or other material that fuses at nearly the same temperature.

When the gas is turned off by the cock in the pipe E the wires *l'* and *m* are both raised, the disk *l* being thus lifted off the hole in L and leaving it open. On again turning on the gas the wire *m* is supported by the solid material in which it is immersed, the piece of

chain *l''* merely hanging slack. When by the heat from the flame K passing freely through the hole in L the contents of A become fused, the material in the tube M also becomes fused, and the wire *m* in it being no longer supported, it descends with *l'* and the disk *l*, thus closing the hole in L, after which the vessel A receives only the heat radiated from L, which is sufficient to maintain its contents in the fused condition.

Having thus described the nature of our said invention and the best means we know for putting it in practice, we would have it understood that we make no general claim for enriching illuminating-gas by mingling with it the vapors of hydrocarbons; but, as constituting apparatus for that purpose, we claim—

1. The combination, with the hydrocarbon-chamber A, provided with a heater and automatic heat-deflector, of one or more carbureting-chambers, each connected with the hydrocarbon-space of said hydrocarbon-chamber and with a gas-supply, and each provided with a burner-tube leading from its gas and vapor burner, substantially as described.

2. The combination, with the vessel A and burner K, of the intercepting-plate L, disk *l*, wires *l'* and *m*, and stop-cock in E, substantially as and for the purpose herein set forth.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses this 13th day of February, 1879.

JOSHUA KIDD.
JAMES KIDD.

Witnesses:

CHAS. BERKLEY HARRIS,
17 Gracechurch Street, London, E. C.
JNO. DEAN,
17 Gracechurch Street, London, E. C.