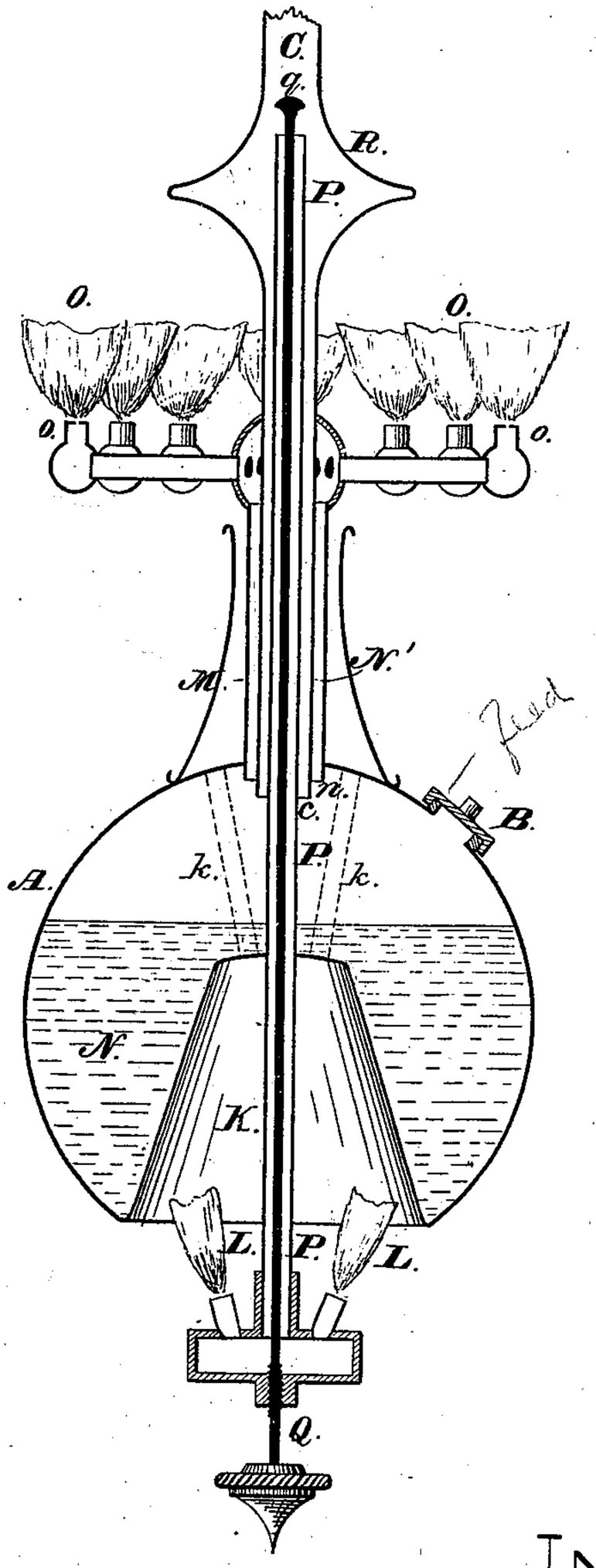
J. LIVESEY & J. KIDD.

Apparatus for Enriching Gas.

No. 227,549. Patented May 11, 1880.



WITNESSES:

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Att'y.

UNITED STATES PATENT OFFICE.

JAMES LIVESEY AND JOSHUA KIDD, OF LONDON, ENGLAND.

APPARATUS FOR ENRICHING GAS.

SPECIFICATION forming part of Letters Patent No. 227,549, dated May 11, 1880.

Application filed February 25, 1880. Patented in England July 2, 1879.

To all whom it may concern:

Be it known that we, JAMES LIVESEY and JOSHUA KIDD, citizens of England, residing at London, in the county of Middlesex, England, have invented certain new and useful Improved Apparatus for Enriching Gas, with automatic heat-regulator, for which we have received Letters Patent in England, No. 2,682, dated July 2, 1879; 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 apparatus for enriching gas by mingling with it the vapor of the hydrocarbon naphthaline, the said apparatus being provided with means of regulating the heat applied to vaporize the naphthaline, as we will describe, referring to the accompanying drawing, which represents a vertical section of our improved apparatus.

A is a carbureting-vessel, which may be of spherical or other convenient form. It has in its upper part a feed-aperture, through which fragments or pellets of naphthaline are introduced into the vessel, and this aperture is provided with a screw-cap, B, by which it can be tightly closed.

A heat-chamber, K, is formed in the lower part of the vessel, this chamber being heated by gas-flames L below it, so that the naphthaline N within the vessel A becomes fused and vapor is evolved from it.

The products of combustion from the flames L may, after rising in the chamber K, find their way out at its lower mouth, or they may rise by chimney-tubes *k k* to an annular exit-passage, M, above the vessel.

The gas-supply pipe C extends down into the upper part of the vessel A, to which it opens at *c*. Outside of it is a tube, N′, which, opening at *n* from the vessel A, leads to the burners O the gas enriched by the hydrocarbon vapor generated in A.

Within the tube C is a tube, P, conducting gas down to the heating-burners L, and inside this tube is a rod, Q, which terminates at the top in a button, *q*, immediately above the mouth of the tube P.

The rod Q is at its lower end screwed through the supply-chamber of the burners L L, so that the button *q* can be adjusted nearer to or farther from the mouth of the tube P.

When the apparatus is in action the tube P is expanded by the heat more than the rod Q, and the more heat there is the greater is the difference of the expansion of the tube and the rod, and consequently the nearer does the mouth of the tube P approach the button *q*, which acts as a valve, throttling the supply of gas to the flames L. Thus this valve *q* being, by screwing the rod Q, adjusted, in the first instance, so as to permit passage by the tube P of sufficient gas to the flames L for giving the heat required for vaporization of the naphthaline in quantity suitable for enriching the gas, when the heat increases the valve *q* reduces the supply to the flames L, and so causes reduction of the heat; or, when the heat decreases, the valve *q* increases the supply to the flames L, and so causes increase of the heat, which is thus automatically maintained uniform, or nearly so.

It is of advantage to give the supply-tube C an enlargement, such as R, which may be hollow, as shown, or may be a solid piece of metal attached to the tube C, so as to receive heat from the flames O.

The gas supplied by the tube C is thus warmed before it reaches the carbureting-vessel A, and its warmth is of advantage to the enriched gas rising to the burners by the pipe N, by preventing condensation of the hydrocarbon vapor which is mingled with it.

Having thus described the nature of our invention, and the best means we know of putting it in practice, we claim, in apparatus for enriching gas—

1. The combination of a carbureting-vessel, a gas-supply pipe extending through the top of the same, a tube arranged within the gas-supply pipe and extending through the carbureting-vessel, and carrying at its lower end a gas-burner, (one or more,) and a metallic rod passing through the said tube and having a suitable means for controlling the admission of gas to the tube and its burner by the expansion and contraction of said rod, substantially as described.

2. The combination of the tube P and adjustable internal rod, Q, and its valve *q* with the burners L and carbureting-vessel A, substantially as and for the purposes herein set forth.

In testimony whereof we have signed our names to this specification, in the presence of two subscribing witnesses, this 19th day of January, 1880.

JAMES LIVESEY.
JOSHUA KIDD.

Witnesses:
JNO. P. M. MILLARD,
CHAS. BERKLEY HARRIS.