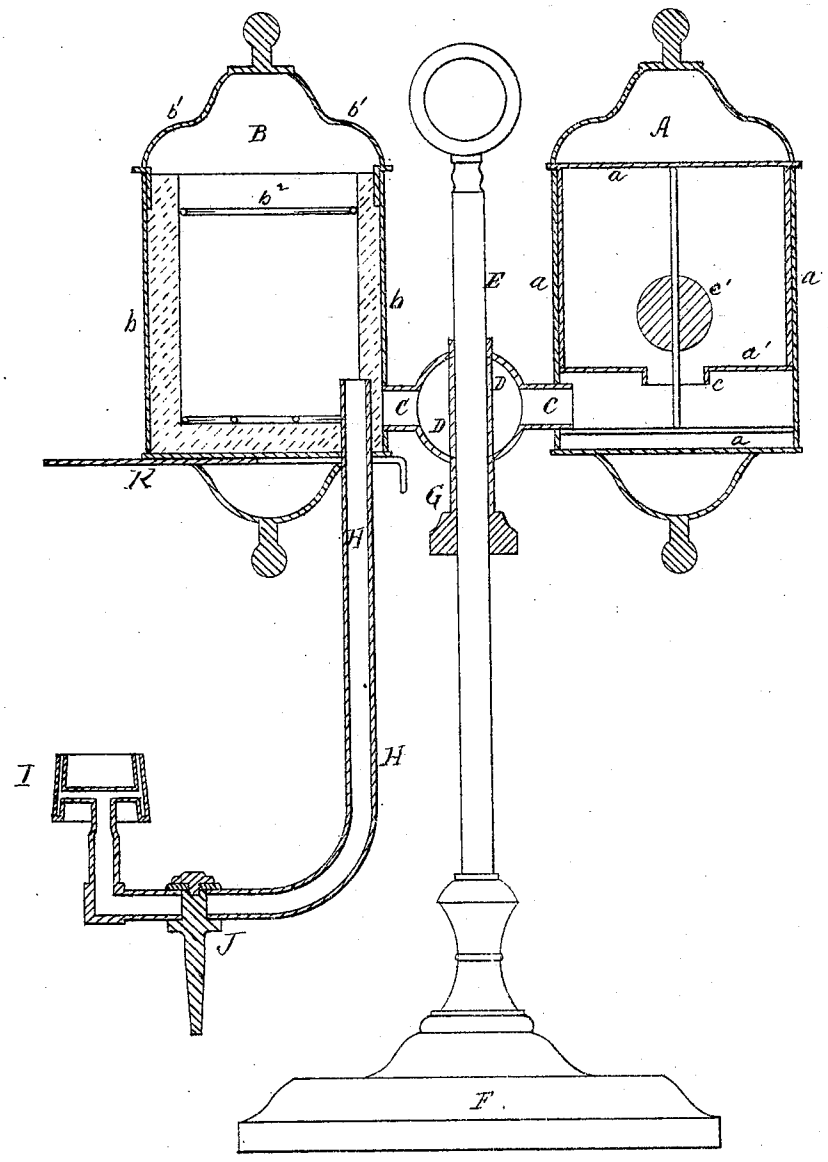
A. W. PORTER & JAMES S. GRAY.

Improvement in Carbureting Lamps.

No. 123,929. Patented Feb. 20, 1872.



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UNITED STATES PATENT OFFICE.

ALONZO W. PORTER AND JAMES S. GRAY, OF NEW YORK, N. Y.

IMPROVEMENT IN CARBURETING-LAMPS.

Specification forming part of Letters Patent No. 123,929, dated February 20, 1872.

SPECIFICATION.

To all whom it may concern:

Be it known that we, ALONZO W. PORTER and JAMES S. GRAY, of New York, in the county and State of New York, have invented a new and useful Improvement in Apparatus for Carbureting Air; and we do hereby declare that the following is a full, clear, and exact description thereof.

Our invention relates to that class of carbureting-lamps which operate upon the gravity principle, the carbureting-chamber being placed above the point where the gas is burned, and the carbureted air allowed to descend to the burner, where it is ignited.

It has been found advantageous in this class of lamps to assist the formation of vapor in the carbureter by means of heat; but it has also been found impracticable to apply heat where the carbureter and hydrocarbon-reservoir are in one or the same vessel or chamber, as is the case in all the lamps hitherto constructed, owing to the danger attendant upon the heating of a large body of volatile hydrocarbon.

The object of our invention is to overcome these difficulties and to provide a simple and efficient means of applying the heat to this class of lamps; and my invention consists, first, in the employment of two separate vessels or compartments for the reservoir and carbureter, the reservoir being so constructed and arranged as to supply the oil automatically to the carbureter in small quantities, as desired, and the carbureter so constructed and arranged in connection with the burner as to be heated when desired; second, in the employment of a sealed reservoir for oil, so constructed and arranged as to have no connection with the atmosphere, except through the carbureter, being "vented" through apertures in the top of said carbureter, whereby the danger attending the use of quantities of volatile hydrocarbon-oils in open vessels is avoided; third, in an improved sliding or adjustable heater, in combination with the carbureter, whereby the heat in any desirable quantity may be transmitted from the flame of the lamp to the carbureter; fourth, in a new and improved arrangement of the capillary material in the carbureter, whereby it can be bound or lashed to the hot side of the carbureter, bringing it in intimate contact therewith, in order that it may be more readily heated to vaporize the oil; and, fifth, in the combination of our improved carbureter and oil-reservoir with the standard and stand, so as to form a lamp similar to the ordinary student's lamp.

The drawing represents a sectional view of our apparatus.

A represents the oil-reservoir, and B the carbureter, connected to and communicating with each other by the tubes C C, attached to the hollow globe D, which slides upon the upright standard E, attached to the stand F. Said globe is secured at any point upon said standard by means of a set-screw in the tube G, which passes through said globe and is secured to it, so that the lamp may be raised or lowered, as in the student's lamp. The oil-reservoir consists of a cylindrical or other-shaped vessel, *a*, of metal or other suitable material, open at the top, as shown, and containing a removable vessel, *a'*, hermetically closed, except at the bottom, where there is an opening through a short tube, *c*, closed by a ball-valve, *c'*, or its equivalent. The vessel *a'* is secured to the mouth of the vessel *a* by means of a screw-thread, lugs, or equivalent means, and is made to seal said vessel hermetically when in place by means of packing or its equivalent. Said vessel *a'* is of such length that its lower end will nearly reach the bottom of said vessel *a* when in position, and the stem of the ball-valve will rest upon the bottom of the vessel *a*, lifting the valve from its seat. The carbureter B consists of a vessel, *b*, similar to the vessel *a*, but hermetically sealed at the top, with the exception of four small apertures, b^1, through said top. A suitable quantity of fibrous or capillary material is secured to the bottom and sides of said carbureter by means of the light wire frames b^2, which press it firmly against said bottom and sides, as shown. The pipe C from the oil-reservoir enters the carbureter just above its bottom, and the service or delivery pipe H extends from a point just above where the pipe C enters through the bottom of said carbureter to a suitable point below, where it is bent outward, and terminates at a point just outside of the edge of the carbureter, and to its end is secured an argand or other suitable burner, I. A stop-cock, J, is placed at any convenient point between the burner and carbureter in said

pipe to control the delivery of the carbureted air to the burner. To the bottom of the carbureting-chamber is attached a sliding or adjustable heater, K, of copper or other good conducting material, so arranged that it may be extended at will over the flame of the burner, and transmit a proper amount of heat to the carbureter. The end of the delivery-pipe H within the carbureter is so arranged as to reach just above the level of the mouth of the tube *c* in the vessel *a'* when said vessel is in place, so that the oil, which can never reach above said level in either the vessel *a* or *b*, cannot enter said delivery-pipe.

The operation of our apparatus is as follows: The vessel *a'* is to be removed from the vessel *a* and inverted and filled with any suitable light hydrocarbon, such as gasoline, through the tube *c*. It is then replaced in the vessel *a*, the valve preventing the escape of oil until its stem strikes the bottom of said vessel *a*, when the oil will begin to flow into said vessel, and from thence into the carbureter through the pipes C C until it reaches the mouth of the tube *c*, when, of course, the flow will be stopped. The oil will be absorbed by the capillary material, and becoming vaporized will fill the carbureter, and the vapor, being heavier than air, will descend through the delivery-pipe to the burner, a proper quantity of air entering through the apertures in the top of the carbureter to mix with it. The carbureted air as it issues from the burner may be ignited, and the heater R extended, so as to heat the carbureter, which, by increasing the vaporization of the oil, will greatly enhance the brilliancy of the light. It will be readily perceived that, as the oil diminishes in the carbureter, it will leave the mouth of the tube *c* free, so that a fresh supply of oil will flow into the vessel *a* and the carbureter, thus automatically supplying the oil as it is consumed.

Having described our invention, what we claim is—

1. In a carbureting-lamp, two separate vessels or compartments for the reservoir and carbureter, the reservoir being so constructed as to supply the oil automatically to the carbureter in small quantities, as desired, and the carbureter arranged so as to be heated by the flame, as and for the purposes herein described.

2. A sealed reservoir for the oil, constructed so as to have no communication with the atmosphere, except through the carbureter, as and for the purposes described.

3. The sliding or adjustable heater, in combination with the carbureter, as and for the purpose herein described.

4. The new and improved arrangement of the capillary material in the carbureter, as and for the purposes described; and

5. The combination of the carbureter and reservoir with the standard and stand, as herein described.

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