

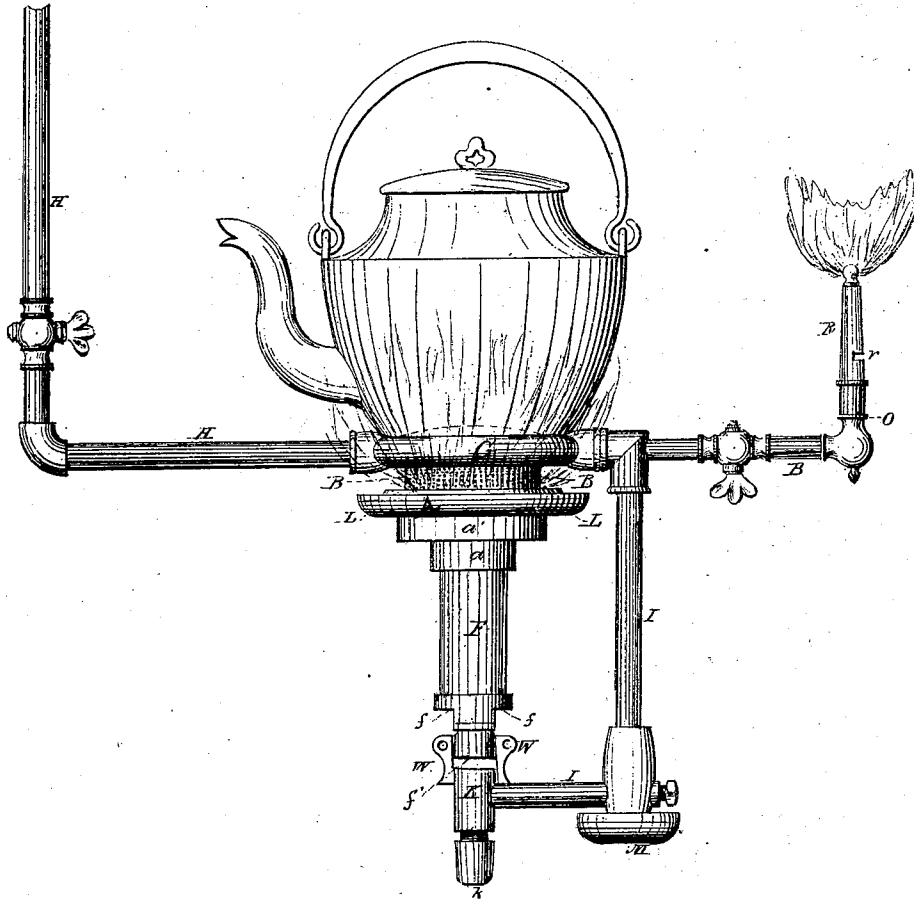
A.L. Bogart.

Improvements in Gas Apparatus.

110729

PATENTED JAN 3 1871

Fig. 1.



Witnesses.

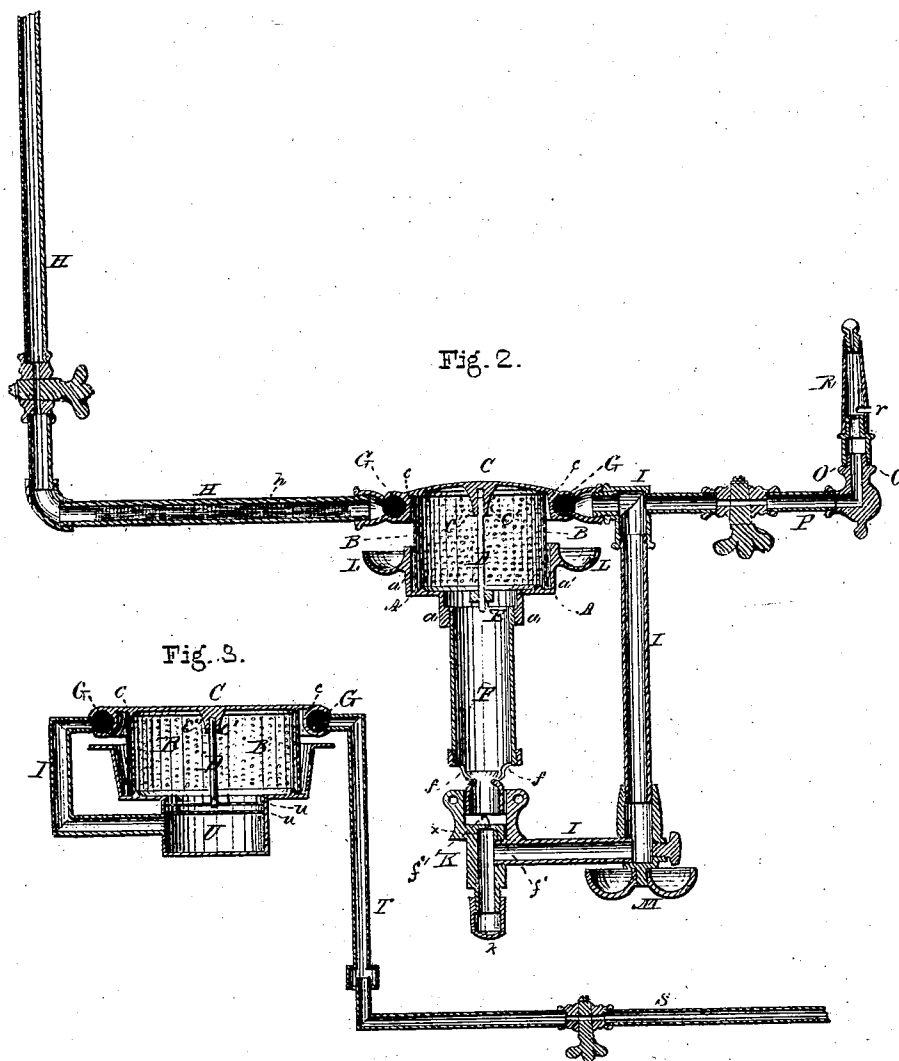
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Improvements in Gas Apparatus.



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# United States Patent Office.

ABRAHAM L. BOGART, OF NEW YORK, N. Y.

Letters Patent No. 110,729, dated January 3, 1871.

## IMPROVEMENT IN GAS APPARATUS.

The Schedule referred to in these Letters Patent and making part of the same.

### *To all whom it may concern:*

Be it known that I, ABRAHAM L. BOGART, of New York city, in the county of New York and in the State of New York, have invented certain new and useful Improvements in Gas Apparatus; and do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 is a side elevation of my apparatus while in operation;

Figure 2 is a central longitudinal section of the same; and

Figure 3 is a like view of a retort for combining oxygen from the air with ordinary coal gas.

Letters of like name and kind refer to like parts in each of the figures.

My invention has for its object the conversion of hydrocarbon liquids into a fixed gas for heating, cooking, and illuminating purposes; and

It consists, principally, in the peculiar construction of the retort, and of its adaptation to and combination with the burner, substantially as is hereinafter shown.

It also consists in the construction of the reservoir for containing alcohol for use in heating the retort, and in the adaptation of said reservoir to the burner, and its combination with the retort, substantially as is hereinafter set forth.

It further consists in the combined burner, retort, and alcohol reservoir, constructed and arranged substantially as and for the purpose hereinafter specified.

It finally consists in the peculiar construction of the illuminating burner, by means of which it is adapted to the use of the gas generated by the machine, as is hereinafter shown.

In the annexed drawing—

A represents an annular metal ring, having secured to and projecting downward from its inner edge a short cylindrical flange, *a*, provided upon its inner surface with a female screw-thread, while from the outer edge of said disk projects upward a second flange, *a'*, within which is placed a cylinder of reticulated sheet metal B, having a height equal to about twice that of said flange, and a diameter somewhat less than the space between its walls.

Resting upon the upper end of the cylinder B is a cap, C, convex upon its upper side, and provided upon its outer edge with a flange, *c*, which projects downward and slightly outward, (as shown in fig. 2.)

A boss, *c'*, projecting downward from the center of said cap, contains one end of a rod, D, the opposite end of which passes downward into a cross-bar, E, spanning the opening in the disk A, and serves to bind said cap, disk, and the cylinder B firmly together.

Secured within, and projecting vertically downward from the cylindrical flange *a*, is a short pipe, F, the lower end of which is reduced in size about one-half, and provided upon opposite sides with openings *f*, through which air may pass freely to its interior.

As thus constructed the burner is complete, and if a fine jet of gas is admitted to the lower end of pipe F, a current of air is caused to enter through said end and through the opening *f*, and unite with said gas, which from thence passes outward through the reticulated cylinder B, and, upon being ignited, burns with a blue flame.

In order to furnish the necessary supply of gas, the following-described means are employed for vaporizing hydrocarbon oils:

Secured upon the outer edge of the cap C, and forming part of the same, is a circular chamber, G, which entirely surrounds said cap, and is provided upon opposite sides with suitable sockets for the reception of the threaded ends of two pipes, the first of which, H, communicates with the reservoir for containing oil, while the second pipe, I, extending outward, downward, and inward, terminates in a vertical branch, K, immediately beneath the center of the burner, the upper end of said branch K being provided with a small opening, *x*, for the passage of gas, while its lower end is inclosed by means of a screw-cap, *k*.

An annular cup, L, surrounds and forms a part of the flange *a'* of the base of the burner, and a similar cup, M, is placed immediately beneath the vertical portion of the pipe I. A packing of asbestos and wire-gauze, *h*, being placed within the pipe H, between the burner and the reservoir, the device is ready for operation as follows:

The cups L and M being filled with alcohol, the latter is ignited, and, burning upward against the pipe I and the chamber G, heats them rapidly, so that, by the time that the contents of the cup M is burned out, oil may be admitted from the reservoir. The oil, passing through said chamber G and pipe I, becomes vaporized, and, upon issuing from the burner, is ignited by the burning alcohol within the cup L.

In from three to five minutes the chamber or retort G attains a cherry-red heat, after which the oil passing through, is converted into a fixed gas, suitable for either heating or illuminating purposes.

As the gas formed by this method is too rich for use in an illuminating burner that will pass over two feet per hour, it becomes necessary to employ the following-described construction:

A short nipple, O, having in and through its upper end a small aperture, *o*, and provided upon its exterior surface with a male screw-thread, is secured upon a pipe, P, leading from the retort. An ordinary

burner, R, having in one side a slot, *r*, is screwed over the nipple O, from which it receives a small stream of gas that, passing upward, unites with several times its bulk of air, admitted through said slot *r*, and, upon escaping from said burner, and being ignited, burns with a brilliant white flame.

In constructing the hydrocarbon retort and heating-burner, it is necessary that the lower open end of the pipe F should be placed at a short distance above the branch K, so that air may enter freely within said pipe.

In order that the pipe F may be secured in such position, two lugs, W, are attached to the branch K, and, projecting upward upon opposite sides of said pipe, are secured thereto by means of wire passing through suitable openings within said lugs and around said pipe.

For heating purposes, where ordinary coal-gas is used, I have found great advantage to result from the employment of the retort and burner shown in fig. 3, in which said gas is admitted through the pipe S into the open end of the vertical pipe T, unites with an inward-flowing current of air, and passes into and through the retort G, where the chemical combination between said gas and air is perfected.

Upon leaving the retort, the oxygenized gas passes down into the chamber U, beneath the burner, and upward through one or more reticulated diaphragms *u*, into and through said burner, having acquired, by

its passage through the apparatus, far greater heating properties than it before possessed.

Having thus fully set forth the nature and merits of my invention,

What I claim as new is—

1. The retort G, constructed as described, and combined with the heating burner, substantially as and for the purpose specified.

2. The annular cup or alcohol reservoir L, combined with the retort G and with the heating burner, in the manner and for the purpose substantially as described.

3. The combined burner, retort, and alcohol reservoir, when constructed and arranged substantially as shown and for the purpose set forth.

4. The illuminating burner, composed of the perforated nipple O and the burner R, provided with the slot *r*, substantially as and for the purpose shown.

5. In combination with the gas-jet *x* and pipe or mixing-chamber F, the air-passages *f* and *f'*, substantially as and for the purpose set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 17th day of December, 1870.

A. L. BOGART.

Witnesses:

EUGENE E. BOGART,  
R. M. NORTON.