C. N. TYLER.

Gas Generator.

No. 29,328. Patented July 24, 1860.

Fig: 1.

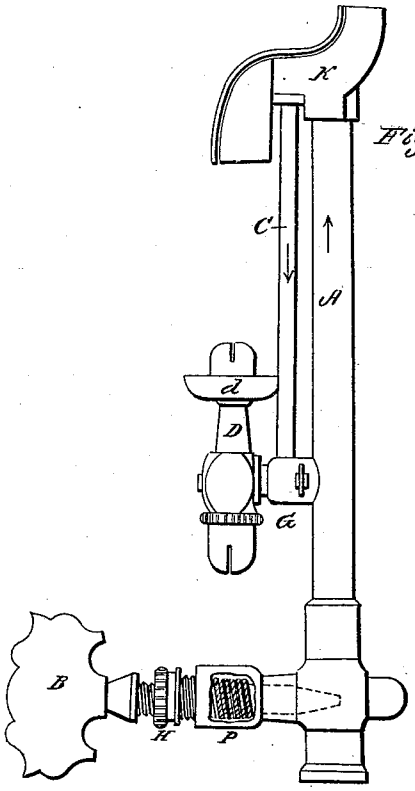


Fig: 3.

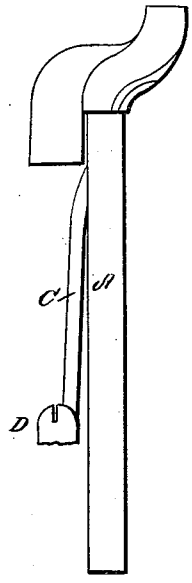


Fig: 2.

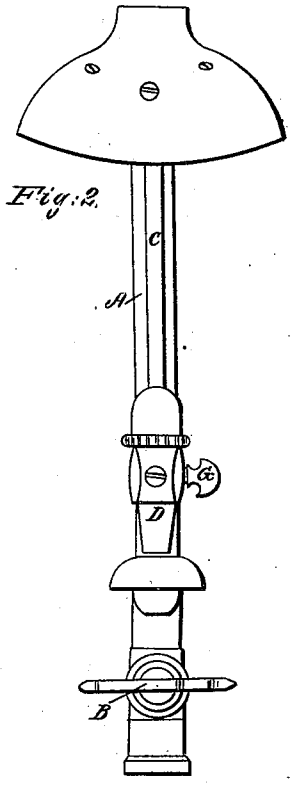


Fig: 4.

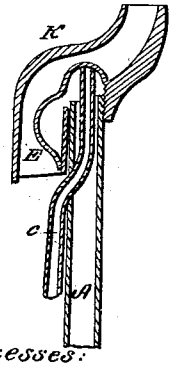


Fig: 5.

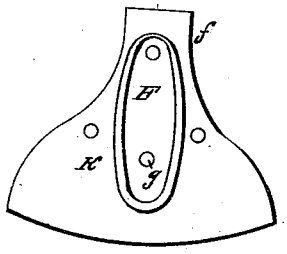
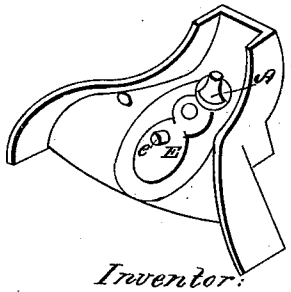


Fig: 6.



Witnesses:

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Inventor:

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UNITED STATES PATENT OFFICE.

CHARLES N. TYLER, OF WASHINGTON, DISTRICT OF COLUMBIA.

GAS GENERATOR AND BURNER.

Specification of Letters Patent No. 29,328, dated July 24, 1860.

To all whom it may concern:

Be it known that I, CHARLES N. TYLER, of Washington, in the District of Columbia, have invented new and useful Improvements in Gas Generators and Burners; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The chief object of my invention is the construction of an apparatus which will secure the greatest amount of illumination from a given quantity of common burning fluid and at the same time prevent the possibility of explosion.

In the accompanying drawings, Figure 1 is a side view of my gas generator and burner. Fig. 2 is a front view of the same. Fig. 3 is a side view of a modified form of the same. Fig. 4 is a vertical section of the upper part of Fig. 3. Figs. 5 and 6 show the interior of the upper part of Figs. 1 and 2, the parts being separated.

My apparatus, Fig. 1, of the accompanying drawings, being connected with a reservoir of burning fluid, the said fluid enters the lower end of tube A, through the stop cock B, and ascends by hydraulic pressure to the heater K, where it passes (in the form of vapor) into retort F, through opening *f*, Fig. 5. This retort being exposed to the flame from the burner D, converts the vapor into gas. From retort F, the gas passes through holes *g*, and *e*, into retort E, where it is exposed to a higher heat. The heat is concentrated upon both sides of these retorts by means of the heater K, which is made broad at the bottom so as to receive the upper part of the flame. The top of the heater is contracted so that the draft concentrates the tip of the flame in the throat of the burner, thus giving a blowpipe action and bringing the most intense heat upon the upper part of retort E. This arrangement burns up any smoke which might otherwise escape from the lamp and prevents incrustation of the apparatus or deposition of carbon either in the heater K or within the retort,—two of the most serious difficulties with gas retorts and fluid lamps. From the retort E, the gas escapes through small fissures cut in the top of tube C, as shown in Fig. 4, and then descends to the burner D. The top of this tube C is situated at the hottest point of the heater, so that the gas passes from the retort at a temperature ready to ignite the moment the gas escapes the burner and comes in contact with the atmospheric air, the oxygen of which is necessary to combustion.

As the heater K is placed far above the burner D, the illuminating power of the flame is not thereby lessened, while the entire heat of said flame is employed in generating gas, thus economizing both light and heat.

My burner D is peculiar in that it is made with two revolving tips. One of these tips is longer than the other and is provided with a cup *d*, for lighting the lamp and commencing the generation of gas. In order to set the lamp in operation, the cup *d* is placed as seen in Fig. 1, and then the small stop cock G is opened when the fluid flows through the longer tip and fills the cup *d*. Now this fluid is ignited and before it is exhausted from the cup both heater and retort are so heated as to produce vapor and thus support the flame until the generation of gas commences. Instead of using burning fluid, alcohol may be put into cup *d*, for lighting the lamp.

When the lamp is in full operation, if only a small light is required, then no change is necessary, but usually it will be best to reverse the revolving burner D, so as to use the larger tip and thus obtain a brighter flame. This larger tip is made shorter, so that in reversing the burners the flame is adjusted in relation to the heater K, the smaller flame being brought near and the larger more distant, in order to regulate the heat and secure the greatest illuminating power of the flame.

The stop cock B, is provided with a peculiar mode of packing, consisting of two bevels or planes, inclined toward the stem of the cock, so that a cord P, (or other fibrous packing) Fig. 1, can be compressed and forced upon the stem of the cock. One of these bevels is upon the nut H and the other in the tube into which nut H is inserted. By this arrangement the joint is made perfectly tight, and when the packing is worn it may be compressed and adjusted by the screw nut H so as to work as when new.

I do not broadly claim the use of a cord

or fibrous material for packing but confine my claim to the peculiar mode above described of compressing such packing and rendering it adjustable. Neither do I in this application broadly claim adjusting the flame by a revolving burner; yet I believe such mode of adjustment to be new and I intend to make a separate application for a patent broadly covering the revolving burner as applied to various purposes.

I am aware that gas generators and burners have been so arranged as to allow the flame to play upon the retort or heater but I think it is new to make the draft pass through the heater as through a chimney, and at the same time to incase or inclose the retort or retorts within the outer wall of such heater. I also know that various forms of chimneys and of caps have been used upon lamps but I believe the peculiar heater above described is new. By means of such heater I am able to produce a gas generating heat, while the so-called gas-generating lamps heretofore used produce only vapor. I am also aware that when only a diffused flame has been employed in heating a considerable volume of gas, the latter may have escaped from the retort or heater at its highest temperature. But my burner or generator after heating the whole volume of gas in the retort by the diffused flame, brings a small jet of such already heated gas directly into the focus of heat of the chimney like heater K, and I believe such superheating of the gas in a small jet at the moment it escapes to the burner, is novel and my own invention. It has the advantage of giving a greater illuminating power to the gas by superheating the same just before ignition, or reaching the flame.

Although my apparatus is intended especially for burning fluid it may be advantageously employed for burning the various oils and mixtures used for illuminating purposes.

Having thus fully described my invention, what I claim and desire to secure by Letters Patent of the United States is—

1. The generation of illuminating gas by the heat of the burner which consumes the same when constructed as described, the flame serving the purpose of illumination and at the same time heating the retort or retorts, substantially as set forth, for the purposes specified.

2. Inclosing the retort or retorts within a heater through which the draft passes, for the purpose of concentrating the heat and thus producing a gas generating temperature from the illuminating flame, substantially as set forth.

3. Placing the end of the gas escape tube C at the hottest point of the retort or in the focus of heat, for the purpose of superheating a small jet of gas as it escapes to the burner, substantially in the manner and for the purposes described.

4. Regulating the heat by the relative adjustment of the flame and heater for the purpose of controlling the amount of illuminating flame, substantially as described.

5. The combination of stop cock G, with the tubes A and C, for the purpose of admitting the flow of fluid directly to the burner or conducting the same to the heater K, and bringing the gas to the burner substantially as set forth.

6. The revolving burner D, in combination with the heater K, and the retort or retorts, substantially as set forth, for the purposes specified.

7. I claim the peculiar mode of packing the stop cock B, by means of the bevel or bevels compressing the cord (or other fibrous packing) upon the stem of the cock, substantially as set forth for the purposes described.

C. N. TYLER.

Witnesses:
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E. D. CLAPP.