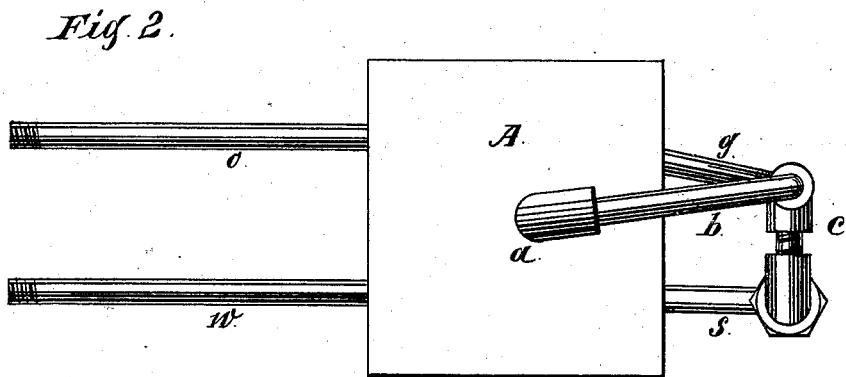
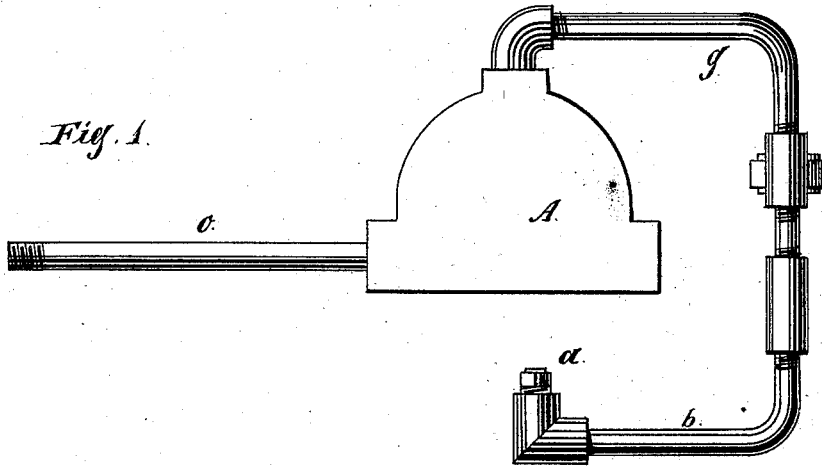


C. HOLLAND.  
Hydrocarbon Vapor-Generator and Burner.  
No. 203,826. Patented May 21, 1878.



*Witnesses:*

*L. L. Bond  
A. V. Bond.*

*Inventor:*

*Charles Holland*

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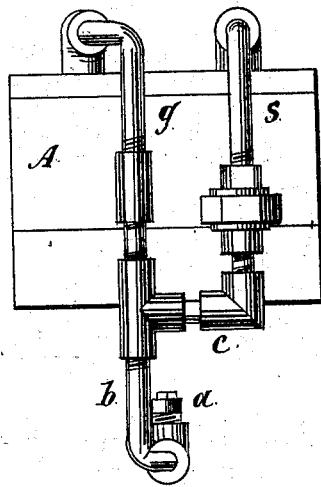
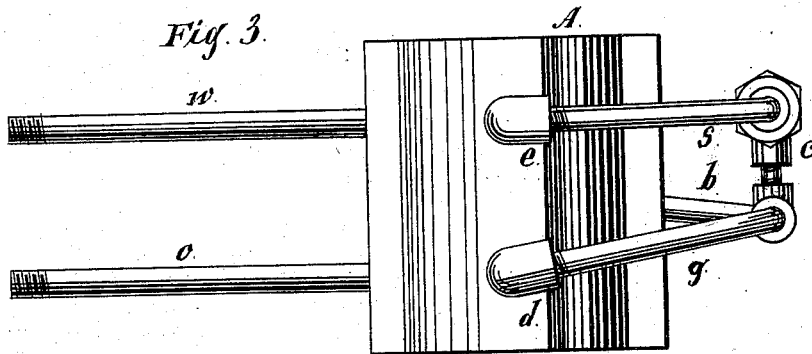


Fig. 4.

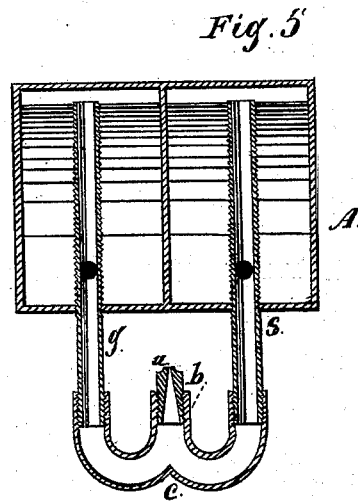


Fig. 5.

Witnesses:  
L L Bond  
O W Bond

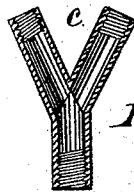


Fig. 6.

Inventor:  
Charles Holland

# UNITED STATES PATENT OFFICE.

CHARLES HOLLAND, OF CHICAGO, ILLINOIS, ASSIGNOR TO PARK HOLLAND,  
OF SAME PLACE.

## IMPROVEMENT IN HYDROCARBON-VAPOR GENERATOR AND BURNER.

Specification forming part of Letters Patent No. **203,826**, dated May 21, 1878; application filed  
April 3, 1878.

*To all whom it may concern:*

Be it known that I, CHARLES HOLLAND, of the city of Chicago, Cook county, State of Illinois, have invented a new and useful Improvement in Hydrocarbon-Vapor Generator and Burner, of which the following is a full description, reference being had to the accompanying drawing, in which—

Figure 1 is a side elevation; Fig. 2, a bottom view; Fig. 3, a top or plan view; Fig. 4, an end view; Figs. 5 and 6, modifications.

The object of this invention is to improve the construction and operation of hydrocarbon or oxyhydrocarbon burners which generate the gases consumed by them; and its nature consists in simplifying the construction and so combining the parts that the several gases will be brought together behind the point of ignition.

In the drawings, A represents the retort, which is made in the form shown, and has its interior divided into two separate and distinct compartments or chambers; *a*, the burner jet or nipple; *b*, the pipe for the combined gases; *c*, the union or coupling; *d e*, retort-connections; *g*, gas-pipe; *s*, steam or water gas pipe; *o*, oil-pipe, and *w* water-pipe. The retort A is made of cast-iron or other suitable metal, and is provided with a partition, dividing its interior into two equal or nearly equal compartments.

The oil-pipe *o* is connected, by suitable extension, with a reservoir located either within or without the building, and the water-pipe *w* is also extended back and connected with a supply-pipe, where there is a regular water-service, or to a suitable tank or reservoir, and at any convenient point along the pipes *w* and *o* valves or cut-offs are applied, to stop or regulate the flow of water or oil to the retort. These pipes near the retort are filled or nearly filled with wire cloth or gauze rolled into a cylindrical form and pushed into them, which also regulate, to some extent, the flow of oil or water into the retort, and prevent any great or sudden flow of either into the retort.

The exit-pipes *g s* are brought together or into a single pipe before reaching the burner *a* by means of the coupling *c*. As shown in

the main figures, the coupling *c* brings the two currents of gas together at right angles. This is avoided by the use of the V-coupling, (shown at Fig. 6,) which has a less tendency to check the flow of the currents, and which may be used with the same pipes.

A modification of both coupling and exit-pipes is shown at Fig. 5, where the pipes project up into the compartments of the retort from the bottom, and lead directly to the burner by the curved coupling.

The burner or jet *a* is provided with a small exit-opening, so that the gases are expelled with considerable velocity into the air and against the bottom of the retort, which expands the flame in all directions, so as to highly heat it and so much of the pipes as is in close proximity thereto.

In operation, the device is first heated by a lighter, such as is shown in another application of this date, or by any other suitable one. When the lighter is started, the oil and water are turned on, and the retort soon becomes sufficiently heated to furnish its own combustible material, when the lighter is extinguished, burned out, or removed.

The oil which drips into the retort is converted into vapor and converted into a gas. As is well known, it will, however, burn well in either form. The water which drips in from the other pipe is converted into vapor or steam and superheated, in which form it will burn when mingled with the carbureted-hydrogen gas from the oil; hydrocarbon oils being the oils usually used. The two gases issue from the retort by or through the pipes *g s*, and are mixed or mingled in the pipe *b*, in which condition they pass through the burner *a*, and are consumed with a high degree of heat.

The heater is self-sustaining, and its operation will be continuous so long as oil and water are supplied.

A very little practice will enable any one to adjust the supply of oil and water so as to produce proper combustion.

I am aware that steam and oil gas or vapor have heretofore been mingled back of the burner, and I do not therefore broadly claim such mingling; but in my device each of the

compartments and connecting-pipes have a separate and distinct operation, and the parts are all kept within the action and influence of the heat, so that the short pipes from the retort to the burner may be used.

What I claim as new, and desire to secure by Letters Patent, is—

The combination of the retort A with the pipes *g s*, union or coupling *c*, pipe *b*, and burner *a*, substantially as described.

CHARLES HOLLAND.

Witnesses:

L. L. BOND,  
O. W. BOND.