Tyler & Johnston.

Making Hydrocarbon Gas.

No. 91,499. Patented Jun. 15, 1869.

Fig. 3.

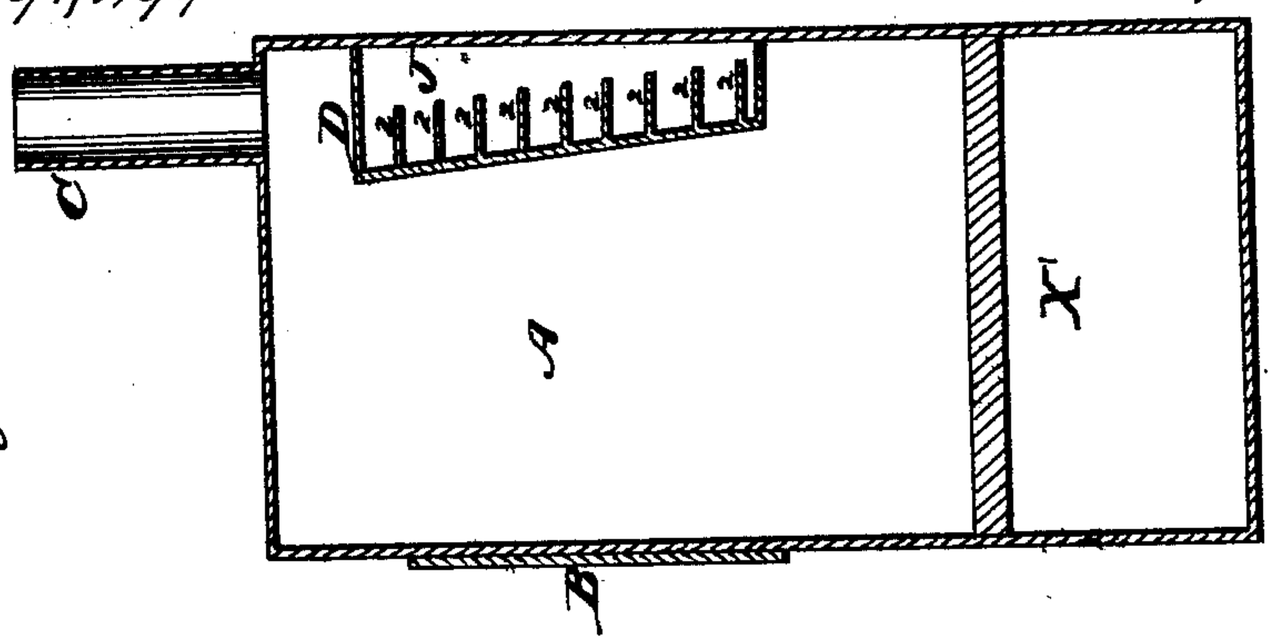


Fig. 2.

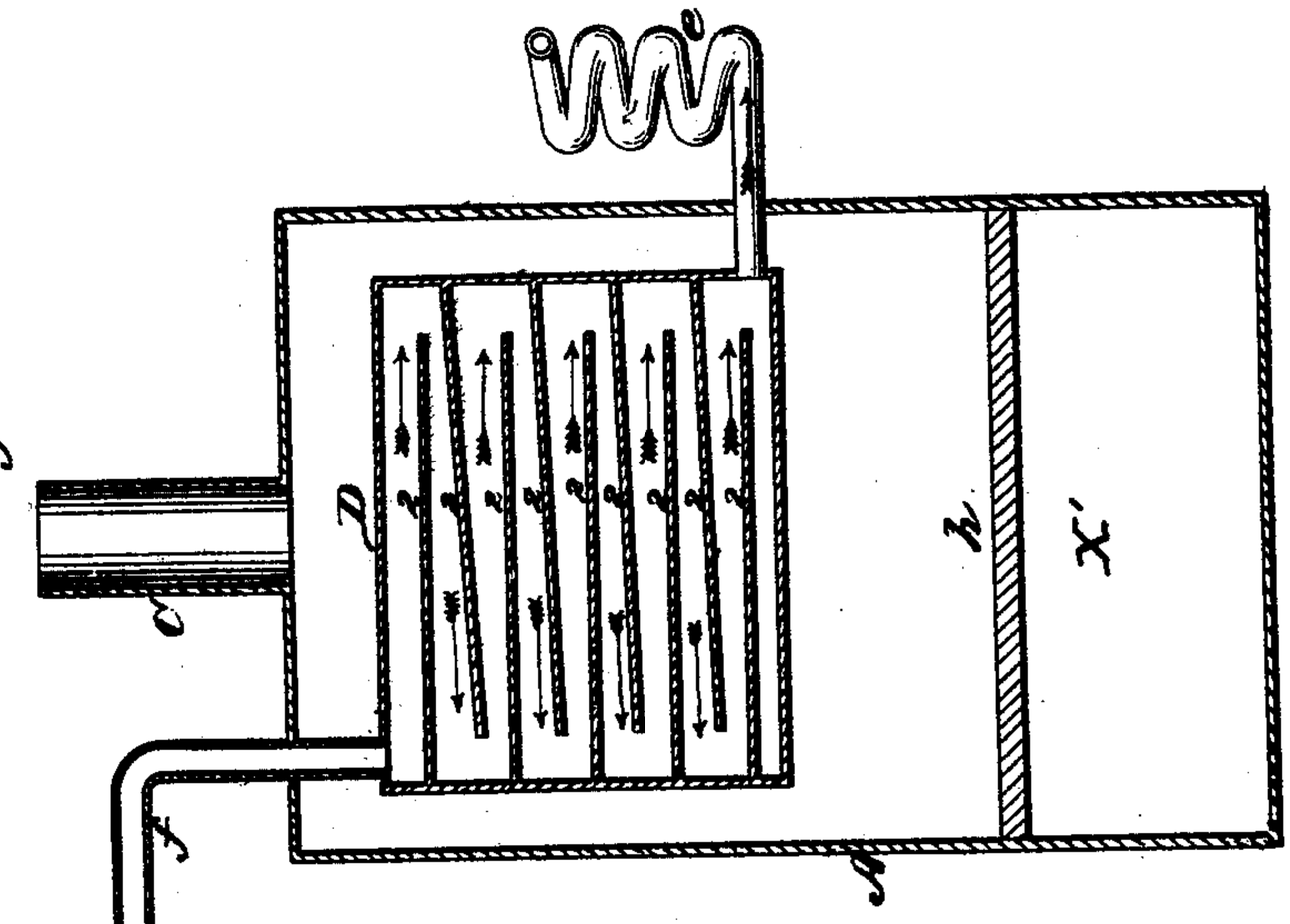
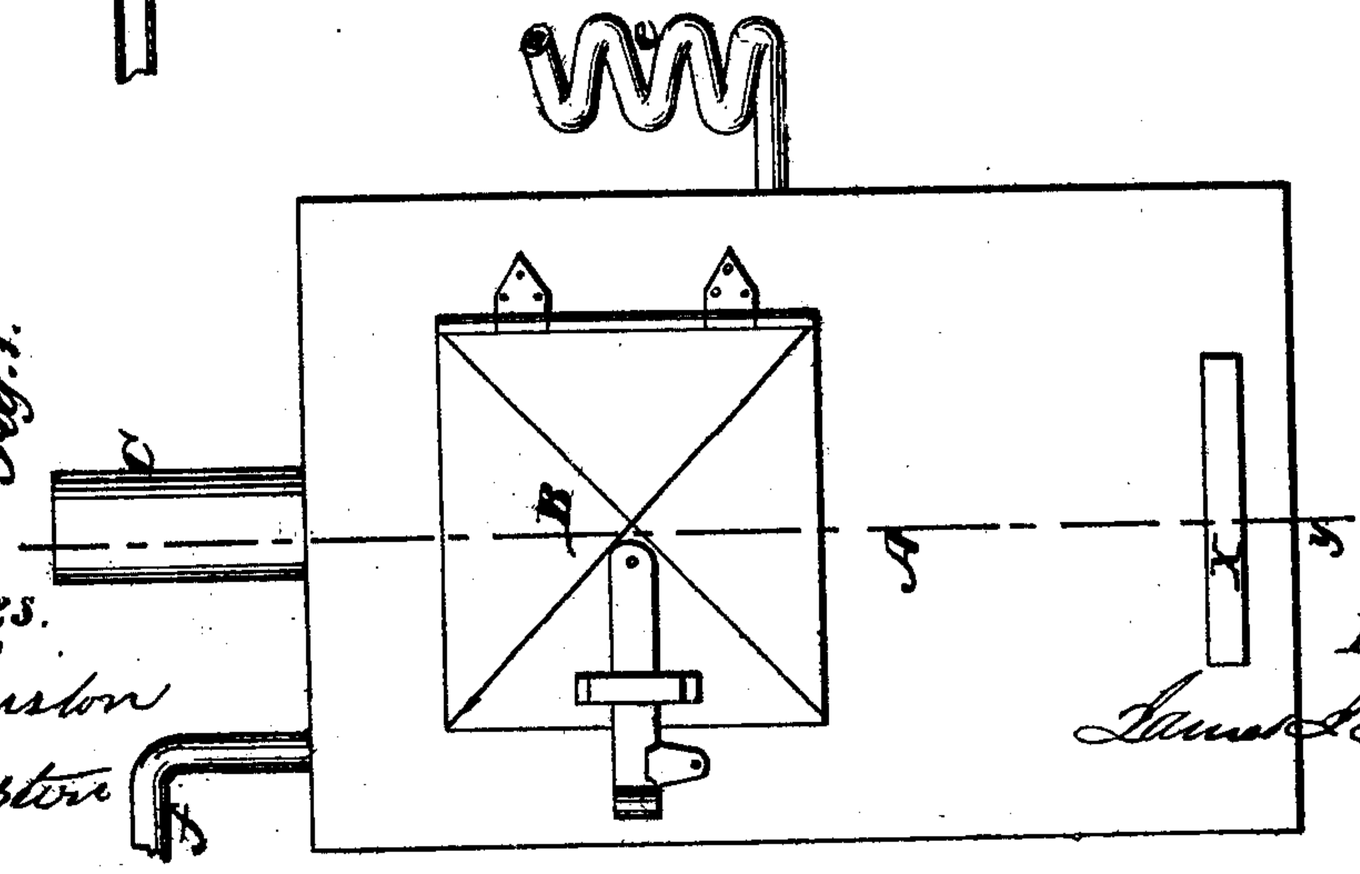


Fig. 1.



Witnesses.
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Letters Patent No. 91,499, *dated June* 15, 1869; *antedated June* 12, 1869.

IMPROVED APPARATUS FOR MAKING GAS FROM HYDROCARBONS.

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

To all whom it may concern:

Be it known that we, JOHN T. TYLER, of Pittsburg, and JAMES J. JOHNSTON, of Allegheny, City, in the county of Allegheny, and State of Pennsylvania, have invented a new and useful Improvement in Apparatus for Making Gas from Hydrocarbon-Oil; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon.

The nature of our invention consists in passing a very thin and continuous sheet of the lighter products of hydrocarbon-oil through a series of layers of wood-charcoal, placed on a series of inclined ways, arranged within a chamber, provided with a supply and an exit-pipe, said chamber being arranged in a furnace, and subjected to heat, for the purpose of converting the lighter products of hydrocarbon-oil into a fixed gas.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation.

In the accompanying drawings, which form part of our specification—

Figure 1 is a side elevation of our improvement in apparatus for making gas from hydrocarbon-oil.

Figure 2 is a vertical section of the same.

Figure 3 is a vertical section, when cut through at line *y* of fig. 1.

In the drawings—

A represents the furnace, which is made of sheet-metal, and is provided with a fire-door, B, stack C, fire-chamber *h*, and ash-pit *x'*.

Inside of the furnace A is placed a gas-generating chamber, D, which is provided with a series of inclined ways, marked 2, and vapor-space J.

On one end, near the bottom of the chamber D, is attached a coiled pipe, *e*, which may be connected to a vessel containing lime, or other matter used for purifying gas. From this vessel, the gas may pass to a receiver.

To the top, and next one end of the gas-generating chamber D, is connected the supply-pipe *f*, connecting with the oil-reservoir.

This supply-pipe *f* should be provided with a valve, for the purpose of regulating the flow of oil into the gas-generating chamber D.

The side of the gas-generating chamber D next to the fire, and on which the inclined ways 2 are placed, should be inclined, as shown in fig. 3, and the gas-generating chamber D should gradually increase in width from the bottom to its top, (see fig. 3,) for the purpose of having the greatest space for vapor next to the top of gas-generating chamber D.

x represents a narrow opening leading into the ash-pit, for the purpose of admitting air to the fire of the furnace.

As the construction and arrangement of the several parts which compose our improvement in apparatus for making gas from hydrocarbon-oil will readily be understood by the skilful mechanic, by reference to the accompanying drawings, and from the foregoing description, we will, therefore, without further description of its construction, proceed to describe its operation, which is as follows:

Having all things constructed and arranged as hereinbefore described, the pipe *f* being connected to the reservoir of oil, (which oil should be made non-explosive by the means described in the application of John T. Tyler for a patent, being of even date with this application,) and the pipes *e* attached to a suitable purifying-vessel, and it connected to a gasometer, we place, on the inclined ways 2, a layer of small pieces (about the size of small peas) of wood-charcoal.

After an opening made in the gas-generating chamber D, for the purpose of supplying the inclined ways with charcoal, and for any other desirable purpose, has been closed, a fire is started in the furnace, and, as soon as the gas-generating chamber D and the inclined ways, with their layers of charcoal, have become sufficiently heated, the valve of the pipe *f* is opened, so as to allow the hydrocarbon-oil to flow in on the upper inclined way, and, flowing along on it, will drop down, at the end of it, on to the next inclined way, and thus flow along from one inclined way to another, until the oil has passed over the whole series of inclined ways, or until it has become converted into a fixed gas, after which it passes off, through the coiled pipe *e*, into a suitable vessel, in which is placed lime, or other matter used for purifying gas.

From this purifying-vessel, the gas may pass into a gasometer, and from it through pipes, for the purpose of lighting streets, buildings, &c.

Having thus described the nature of our improvement,

What we claim as of our invention, is—

1. Making a fixed gas from the lighter products of hydrocarbon-oil, by causing it to flow through a series of layers of charcoal, placed on inclined ways, arranged in a gas-generating chamber, provided with a supply and an exit-pipe, said chamber being subjected to heat, substantially as herein described, and for the purpose set forth.

2. A series of layers of wood-charcoal, or its equivalent, when used in combination with the inclined ways 2, or their equivalent, arranged within the gas-generating chamber D, as herein described, and for the purpose set forth.

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