

J. CHANDLER & D. A. WRAY.

Improvement in Burning Hydrocarbons.

No. 132,440.

Patented Oct. 22, 1872.

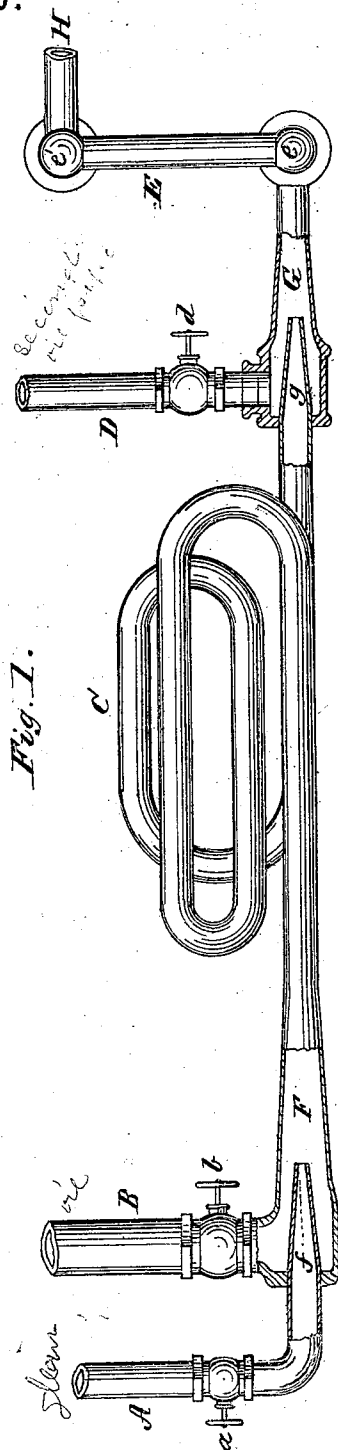


Fig. 1.

Witnesses:

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UNITED STATES PATENT OFFICE.

JOSEPHUS CHANDLER AND DAVID A. WRAY, OF PIONEER, PENNSYLVANIA.

IMPROVEMENT IN BURNING HYDROCARBONS.

Specification forming part of Letters Patent No. 132,440, dated October 22, 1872.

To all whom it may concern:

Be it known that we, JOSEPHUS CHANDLER and DAVID A. WRAY, both of Pioneer, in the county of Venango and State of Pennsylvania, have invented a new and useful Improvement in Burning Hydrocarbons, of which the following is a specification:

This invention relates to that class of apparatus intended for burning hydrocarbons for the production of heat of greater or less intensity in the various metallurgical operations of welding, brazing, heating, melting, deoxidizing, &c.; and it consists in the combination of a steam or air jet, or both, a supply-pipe for the admission of hydrocarbon or hydrocarbon vapors, a coil for superheating a second supply-pipe for the admission of hydrocarbon or hydrocarbon vapor, and a universal joint and nozzle, whereby the fixed gas is generated and carbureted before reaching the place of ignition, and whereby the flame can be directed to any point at the will of the operator. This device, therefore, embodies three principles: First, generating a fixed gas; secondly, carbureting said fixed gas; and, thirdly, the function of a compound blow-pipe.

In the drawing the figure represents our improved hydrocarbon-burner, portion thereof being in section the better to show the operation of our device.

A is the pipe for the passage of air or steam, provided with a stop-cock, *a*, and terminating in a jet or nozzle, *f*, said jet entering the enlargement of pipe F immediately beneath the delivery point of pipe B. B is a tube or pipe connecting with a hydrocarbon-reservoir, and provided with a stop-cock, *b*, for regulating the supply of air or hydrocarbon. This pipe delivers the hydrocarbon or hydrocarbon vapor into the enlarged portion of pipe F, from whence it is impelled forward into superheater C by the jet entering from *f*. The pipe F decreases slightly in diameter, and is coiled to form superheater C. This coil may be inclosed within a fire-chamber separate from or in the same furnace where the metallurgical operations are carried on. After leaving the coil or superheater C the pipe terminates in a jet or nozzle, *g*, which enters the enlarged portion of pipe G beneath and surrounding the

delivery point of pipe D. D is a pipe leading to a second hydrocarbon-reservoir, and is provided with a stop-cock, *d*, to control the flow of liquid or vapor. The pipe G terminates in a joint, *e*, which connects it with pipe E, and a second joint, *e'*, connects pipe E with pipe or nozzle H, the several connections forming a universal joint, whereby the gas can be directed to and burned at any point desired.

When liquid hydrocarbon is used it is fed through pipes B and D (the flow being controlled by stop-cocks *b* and *d*) into the enlarged portions of F and G, where it is vaporized by the jets of air or steam and gas. In this case the reservoir should be above the level of the apparatus; or other means should be provided for securing a steady flow of the hydrocarbon.

When a hydrocarbon vapor is used the vessels or reservoirs should be made of iron or other suitable metal, and arranged with heating-compartments, the vapors generated being conducted into pipes B and D, and from thence taking the same direction and going through a similar process to that employed when the liquid is used.

The operation of the device is thus described: A jet of steam is admitted into pipe A and passes through nozzle *f* into pipe F, carrying with it the vapor or vaporizing the liquid hydrocarbon admitted through pipe B. The gas thus generated passes into the superheater or coil C, where it is subjected to heat and becomes a fixed gas. This fixed gas, as it issues from nozzle *g*, meets a new portion of hydrocarbon vapor or liquid, which it at once seizes upon and converts into a gaseous or vaporous state, itself becoming surcharged or carbureted. The gas then flows through pipe G to nozzle H, and is burned.

In the above statement of operation whenever the word steam is used air or oxygen may be substituted, as the jet entering the pipe A may be either air, steam, or oxygen, (generated by any of the well-known processes,) or of two or more combined. When a great amount of heat is required a number of jets are combined.

Having thus clearly described our invention, what we claim is—

1. The process herein described for generating and carbureting a fixed gas for compound blow-pipes and similar apparatus.

2. The combination of the steam or air jet, the hydrocarbon-jet, and the superheater, as and for the purpose herein set forth.

3. The combination of an air or steam jet, a hydrocarbon-jet, a superheater, a carbureting or second hydrocarbon jet, and a universal jointed nozzle, as and for the purpose set forth.

In testimony that we claim the foregoing we have hereunto signed our names this 17th day of May, 1872.

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Witnesses:

J. J. HOLDEN,
HENRY WHITE.