

Furnace for Burning Petroleum.

Patented March 2, 1875.



Chas H Smith
Harold Surrell

Charles Hilbert
per Lemuel W. Perrell
att'y

UNITED STATES PATENT OFFICE.

CHARLES HILBERT, OF SING SING, NEW YORK.

IMPROVEMENT IN FURNACES FOR BURNING PETROLEUM.

Specification forming part of Letters Patent No. **160,267**, dated March 2, 1875; application filed July 28, 1874.

To all whom it may concern:

Be it known that I, CHARLES HILBERT, of Sing Sing, in the county of Westchester and State of New York, have invented an Improvement in Furnaces for Burning Petroleum and other Liquid Hydrocarbons, of which the following is a specification:

In Letters Patent No. 149,931, granted to me for a means for burning petroleum, the vapors of petroleum are caused to commingle with superheated steam, and issue together at the point of combustion.

My present invention is an improvement upon the aforesaid invention; and consists in a superheating-coil exposed to the action of the flame, in connection with a vaporizing and commingling-chamber, wherein the superheated steam vaporizes the petroleum, and the two vapors issue together through orifices, and are burned outside the chamber.

In the drawing, Figure 1 is a vertical section of the apparatus, and Fig. 2 is a plan of the superheating-coil.

The steam is supplied by the pipe *a*, which pipe is coiled at *b*, and inclosed, by preference, in a cast-iron case to protect the same from the intense burning action of the flame; but at the same time the heat is sufficient to highly superheat the steam that is allowed to flow gradually and in the proper regulated quantity through the tube *a*, and issue at *c* into a cap, *e*, and thence by jets to pass into the vaporizing-chamber *f*. This chamber *f* is of any desired size or shape, and perforated around its periphery to any desired extent. The petroleum enters by the pipe *l* and rises into the chamber *f* and overflows therein, and is evaporated by the heat of the apparatus, and the

decomposition of the liquid hydrocarbon and recomposition in the form of a burning gas, in connection with the superheated steam, take place in the chamber *f*, and the jets are burned beneath the boiler or other article to be heated. The body of the apparatus is made of the two conical portions, *h* and *i*, that are bolted together, and the space filled in with plaster-of-paris, or equivalent material, so that it forms a non-conducting base to prevent the heat striking downward, and to keep the petroleum-pipe cool, because it is preferable for the oil to overflow at the end of the pipe instead of being vaporized in such pipe; thereby there will not be any tar or residuum in the pipe.

When the apparatus is lighted, the petroleum or other liquid is allowed to overflow or run into the trough *m*, and there it is ignited and heats up the parts sufficiently to vaporize the petroleum and superheat the steam, and cause the materials to combine and burn, as aforesaid.

I claim as my invention—

The petroleum supply-pipe *l*, passing through the base *h i*, filled with non-conducting material, and entering the mixing-chamber *f* that has jet-holes around the lower portions of such chamber, in combination with the superheating steam-pipe *b*, cap *e*, and jets passing into the chamber *f*, as and for the purposes set forth.

Signed by me this 23d day of July, A. D. 1874.

CHAS. HILBERT.

Witnesses:

GEO. T. PINCKNEY,
CHAS. H. SMITH.