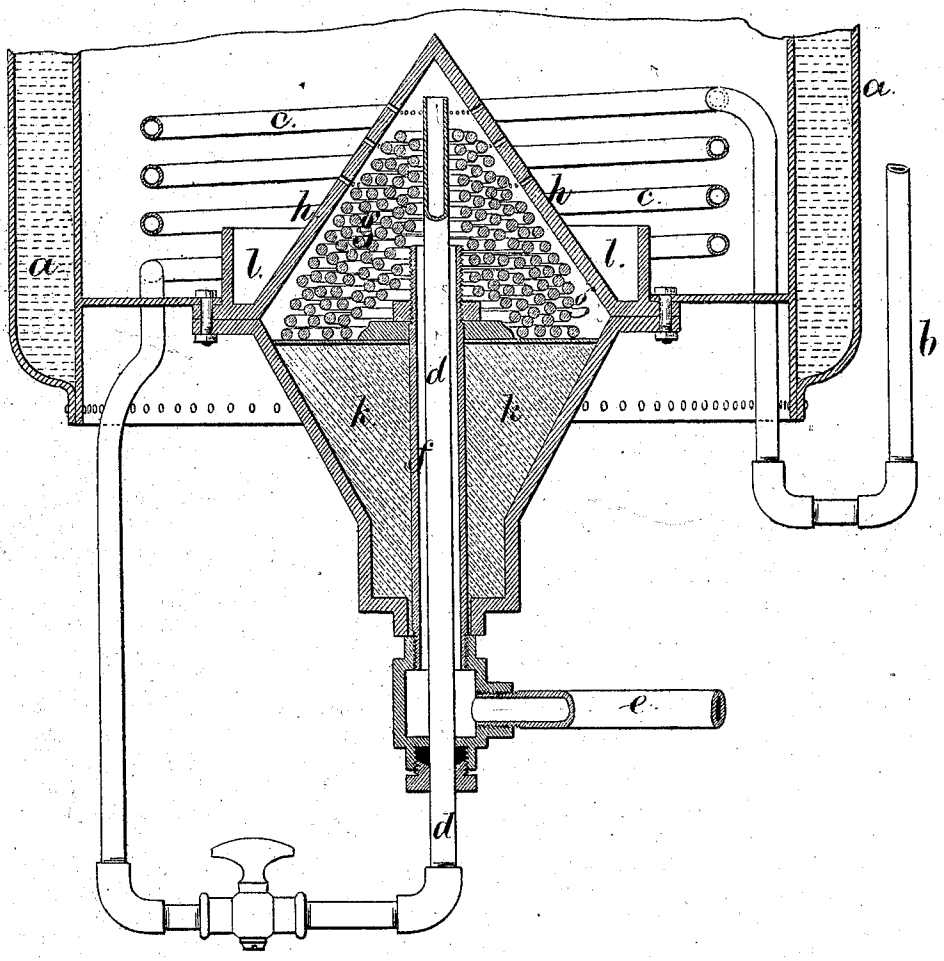
C. HILBERT.

Furnaces for Burning Petroleum and other Liquid Hydrocarbons.

No. 149,931. Patented April 21, 1874.



Witnesses,

Chas. H. Smith

Geo. D. Pinckney

Inventor

Charles Hilbert.

per L. W. Serrell

atty.

UNITED STATES PATENT OFFICE.

CHARLES HILBERT, OF SING SING, NEW YORK.

IMPROVEMENT IN FURNACES FOR BURNING PETROLEUM AND OTHER LIQUID HYDROCARBONS.

Specification forming part of Letters Patent No. **149,931**, dated April 21, 1874; application filed November 25, 1873.

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 Hydrocarbon, of which the following is a specification:

This invention relates to a means for insuring a perfect combustion of petroleum or other liquid hydrocarbon in a furnace, so as to use such liquid in the place of coal or wood, and obtain a steady reliable heat in the generation of steam, or in performing other operations by a fire.

I employ a double decomposition and recomposition of steam and said liquid hydrocarbon in the vaporization and combustion, so that the steam parts with a portion of oxygen that combines with the carbon, and the liberated hydrogen combines with the carbon in the process of combustion, thereby producing an intense heat, and preventing the escape of uncombined carbon in the form of smoke.

In the drawing, I have illustrated my invention by a vertical section.

The portion *a* illustrates part of a steam-boiler. It may, however, be any inclosure in which the heat is to act. Steam is admitted by the pipe *b* from the boiler or other supply, and it is preferable to superheat the same in the coil *c*, and convey the same to the stand-pipe *d*, contiguous to the petroleum-supply pipe *e*, so that the said liquid hydrocarbon shall rise in the pipe *f* around the steam-pipe *d*, and be partially or entirely vaporized as the steam and vapors pass out into the chamber *g*, that is formed within the perforated cone or burner *h*. The steam and petroleum vapors issuing from the burner-holes are ignited, and burn with a rapidity, intensity, and length of flame proportioned to the condition of the apparatus and the amount of liquid hydrocarbon supplied. The combustion will be most perfect when the steam is of a sufficient temperature to vaporize the liquid hydrocarbon and promote the decomposition of the vapor in the flame, so that the oxygen of the water will combine with the carbon, and the hydrogen will also burn with the carbon in the presence of the atmospheric air. The proper amount of air is to be admitted into the furnace in any convenient manner, and atmospheric air may be forced into the burner with the steam.

The coil of wire within the chamber *g* promotes the proper admixture of the gases, and aids in heating them.

By filling the lower part of the apparatus with plaster-of-paris or non-conducting material, as at *k*, the heat radiated downward is lessened.

The supply of steam and of liquid hydrocarbon should be regulated by cocks.

The annular trough at *l* is provided for receiving benzine or other combustible material for heating up the apparatus when the furnace is started.

I claim as my invention—

1. The conical burner *k*, surrounded by the trough *l*, in combination with the supply-pipes *f* and *d*, and non-conducting material *k* below the vapor-chamber *g*, as set forth.

2. The chamber *g* and burner *h*, combined with the coil of wire, introduced within the chamber *g*, and the steam and hydrocarbon supply-pipes, substantially as set forth.

Signed by me this 8th day of November, A. D. 1873.

CHAS. HILBERT.

Witnesses:
EDWARD DENNIS,
G. E. WILLIAMS.